Peter Dietrich
Senior Vice President and Chief Nuclear Officer

DTE Electric Company
6400 N. Dixie Highway, Newport, MI 48166
Tel: 734.586.4153
Email: peter.dietrich@dteenergy.com

August 4, 2022 10 CFR 50.90
NRC-22-0023

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Fermi 2 Power Plant
NRC Docket No. 50-341
NRC License No. NPF-43

Subject: Application to Revise Technical Specifications to Adopt TSTF-582, "Reactor Pressure Vessel Water Inventory Control (RPV WIC) Enhancements"

Pursuant to 10 CFR 50.90, DTE Electric Company (DTE) is submitting a request for an amendment to the Technical Specifications (TS) for Fermi Unit 2.

DTE requests adoption of TSTF-582, Revision 0 "Reactor Pressure Vessel Water Inventory Control (RPV WIC) Enhancements." The TS related to RPV WIC are revised to incorporate operating experience and to correct errors and omissions in TSTF-542, Revision 2, "Reactor Pressure Vessel Water Inventory Control."

Enclosure 1 provides a description and assessment of the proposed changes. Enclosure 2 provides the existing TS pages marked to show the proposed changes. Enclosure 3 provides revised (clean) TS pages. Enclosure 4 provides the existing TS Bases pages marked to show revised text associated with the proposed TS changes and is provided for information only.

DTE requests that the amendment be reviewed under the Consolidated Line Item Improvement Process (CLIIP). Approval of the proposed amendment is requested by August 4, 2023. Once approved, the amendment shall be implemented within 90 days.

There are no regulatory commitments made in this submittal.

In accordance with 10 CFR 50.91, a copy of this application, with enclosures, is being provided to the designated Michigan State Official.

Should you have any questions or require additional information, please contact Mr. Eric Frank, Manager – Nuclear Licensing, at (734) 586-4772.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on August 4, 2022

Peter Dietrich
Senior Vice President and Chief Nuclear Officer

Enclosures:

1. Description and Assessment
2. Proposed Technical Specification Changes (Mark-Up)
3. Revised Technical Specification Pages
4. Proposed Technical Specification Bases Changes (Mark-Up) – For Information Only

cc: NRC Project Manager
NRC Resident Office
Regional Administrator, Region III
Michigan Department of Environment, Great Lakes, and Energy

Enclosure 1 to
NRC-22-0023

Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43

Application to Revise Technical Specifications to Adopt TSTF-582, "Reactor Pressure Vessel Water Inventory Control (RPV WIC) Enhancements"

Description and Assessment

1.0 DESCRIPTION

DTE Electric Company (DTE) requests adoption of TSTF-582, "Reactor Pressure Vessel Water Inventory Control (RPV WIC) Enhancements." The Technical Specifications (TS) related to RPV WIC are revised to incorporate operating experience and to correct errors and omissions in TSTF-542, Revision 2, "Reactor Pressure Vessel Water Inventory Control."

2.0 ASSESSMENT

2.1 Applicability of Safety Evaluation

DTE has reviewed the safety evaluation for TSTF-582 provided to the Technical Specifications Task Force in a letter dated August 13, 2020 (ML20219A333). This review included a review of the NRC staff's evaluation, as well as the information provided in TSTF-582. DTE has concluded that the justifications presented in TSTF-582 and the safety evaluation prepared by the NRC staff are applicable to Fermi Unit 2 (Fermi 2) and justify this amendment for the incorporation of the changes to the Fermi 2 TS.

DTE verifies that the required Emergency Core Cooling System (ECCS) injection/spray subsystem can be aligned and the pump started using relatively simple evolutions involving the manipulation of a small number of components. These actions can be performed in a short time (less than the minimum Drain Time of 1 hour) from the control room following plant procedures.

2.2 Optional Changes and Variations

DTE is proposing the following variations from the TS changes described in TSTF-582 or the applicable parts of the NRC staff's safety evaluation. Variations are also included below to adopt TSTF-583-T, Rev 0 (TSTF-583), "TSTF-582 Diesel Generator Variation," and TSTF-587-T, Rev 0 (TSTF-587), "Delete LCO 3.5.2 Note."

The Fermi 2 TS utilize different numbering than the Standard TS (STS) on which TSTF-582 was based. Specifically,

1. When DTE adopted TSTF-542, a variation was taken to add the new "Reactor Pressure Vessel (RPV) Water Inventory Control Instrumentation" at the end of Section 3.3.5, rather than adding in the middle and renumbering. As a result, the Fermi 2 TS 3.3.5.3, "Reactor Pressure Vessel (RPV) Water Inventory Control Instrumentation," corresponds to STS 3.3.5.2 "Reactor Pressure Vessel (RPV) Water Inventory Control Instrumentation." This numbering difference appears not only in Fermi 2 TS 3.3.5.3 (STS TS 3.3.5.2), but any other locations in the TS that cross-reference that numbering. This numbering difference is also reflected in the TS Bases.

2. Fermi 2 TS 3.3.8.1, "Loss of Power (LOP) Instrumentation," Surveillance Requirement (SR) 3.3.8.1.3 corresponds to STS 3.3.8.1, "Loss of Power (LOP) Instrumentation," SR

3.3.8.1.4. This numbering difference appears not only in these SRs, but any other locations in the TS that cross-reference that numbering. This numbering difference is also reflected in the TS Bases. Note that this numbering difference does not impact TSTF-582, but does impact TSTF-583, which is discussed later.

3. When DTE adopted TSTF-542 (ML18247A452), a variation was taken with respect to the numbering of certain SRs in TS 3.5.2, "RPV Water Inventory Control." As a result, Fermi 2 SRs 3.5.2.5 through SR 3.5.2.9 correspond to STS SRs 3.5.2.4 through SR 3.5.2.8. This numbering difference appears not only in these SRs, but any other locations in the TS that cross-reference that numbering. This numbering difference is also reflected in the TS Bases.

4. Fermi 2 TS 3.6.1.3, "Primary Containment Isolation Valves (PCIVs)," Conditions E and F correspond to STS 3.6.1.3, "Primary Containment Isolation Valves (PCIVs)," Conditions F and H, respectively. This numbering difference appears not only in these Conditions, but any other locations in the TS that cross-reference that numbering. This numbering difference is also reflected in the TS Bases.

5. Fermi 2 TS 3.6.1.3, "PCIVs," SRs 3.6.1.3.6, 3.6.1.3.11, 3.6.1.3.12, and 3.6.1.3.13 correspond to STS 3.6.1.3, "PCIVs," SRs 3.6.1.3.7, 3.6.1.3.12, 3.6.1.3.13, and 3.6.1.3.14, respectively. This numbering difference appears not only in these SRs, but any other locations in the TS that cross-reference that numbering. This numbering difference is also reflected in the TS Bases.

6. The proposed changes from TSTF-582 and TSTF-583 for TS 3.8.2, "AC Sources - Shutdown," SR 3.8.2.1 involves the cross-references to several SRs from TS 3.8.1, "AC Sources - Operating." The numbering of the Fermi 2 TS 3.8.1 SRs varies from the numbering of the STS TS 3.8.1 SRs as shown in the table below. This numbering difference appears not only in these SRs, but any other locations in the TS that cross-reference that numbering. This numbering difference is also reflected in the TS Bases.

STS SR	**Equivalent Fermi 2 SR**
3.8.1.1	3.8.1.1
3.8.1.2	3.8.1.2
3.8.1.3	3.8.1.3
3.8.1.4	3.8.1.4
3.8.1.5	3.8.1.5
3.8.1.6	3.8.1.6
3.8.1.7	3.8.1.7
3.8.1.8	N/A
3.8.1.9	3.8.1.8
3.8.1.10	3.8.1.9

STS SR	**Equivalent Fermi 2 SR**
3.8.1.11	3.8.1.10
3.8.1.12	3.8.1.11
3.8.1.13	3.8.1.12
3.8.1.14	3.8.1.13
3.8.1.15	3.8.1.14
3.8.1.16	3.8.1.15
3.8.1.17	N/A
3.8.1.18	3.8.1.16
3.8.1.19	3.8.1.17
3.8.1.20	3.8.1.18

These numbering differences are administrative and do not affect the applicability of TSTF-582 to the Fermi 2 TS.

The Fermi 2 TS contain requirements that differ from the STS on which TSTF-582 was based but are encompassed in the TSTF-582 justification. Variations resulting from these differences are as follows:

7. Fermi 2 TS 3.3.5.3 contains a Note prior to the SR section which states "When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours for Functions 1.a and 2.a, provided the associated Function maintains ECCS initiation capability." With the deletion of Functions 1.a Core Spray System Reactor Steam Dome Pressure Low (Injection Permissive) and 2.a Low Pressure Coolant Injection (LPCI) System Reactor Steam Dome Pressure Low (Injection Permissive) according to TSTF-582, this Fermi 2 plant-specific Note is no longer applicable and is therefore deleted. Reference to this Note is also deleted from corresponding TS Bases B 3.3.5.3, including deletion of Reference #6 which was only provided to support this Note. This has no effect on the adoption of TSTF-582 and is an acceptable variation because the need to delete the Note is directly related to the TSTF-582 proposed change.

8. TSTF-582 corrects the title of STS Section 3.5 which is referenced from the Applicability section of TS Bases 3.5.2, "RPV Water Inventory Control." In the Fermi 2 TS Bases 3.5.2, "RPV Water inventory Control," the reference to Fermi 2 TS Section 3.5 in the Applicability section already more closely matched the actual title. Therefore, not all the proposed changes in TSTF-582 are applicable to Fermi 2. This variation does not affect the applicability of TSTF-582 to the Fermi 2 TS since it is administrative in nature and meets the intent of TSTF-582 in that it ensures that the final Fermi 2 TS Bases 3.5.2 wording matches the actual title of Fermi 2 TS Section 3.5.

9. When Fermi 2 adopted TSTF-542, "Reactor Pressure Vessel Water Inventory Control," the revised page for TS 3.5.2, Required Action D.3 inadvertently omitted the word "each" in "Initiate action to isolate **each** secondary containment penetration flow path or verify it can be manually isolated from the control room" (emphasis added). Note that the word "each" was included in the proposed TS page mark-up for TSTF-542, it was only omitted in the revised TS page. To correct this omission, the word "each" is added to the text of Required Action D.3. This change is administrative, is consistent with TSTF-542, and does not affect the applicability of TSTF-582 to the Fermi 2 TS.

10. TSTF-582 proposes to delete "low pressure coolant injection" and the parentheses around "(LPCI)" from SR 3.5.2.2 since low pressure coolant injection was previously defined as LPCI in the Note associated with Limiting Condition for Operation (LCO) 3.5.2. As will be discussed later in this section, Fermi 2 is also adopting changes from TSTF-587, "Delete LCO 3.5.2 Note," which deletes the Note from LCO 3.5.2, including the definition of LPCI as low pressure coolant injection. Therefore, this TSTF-582 change is not adopted. Fermi 2 SR 3.5.2.2 will remain unchanged as it is now, and will continue to

be the first use of LPCI and the appropriate location to define the acronym. This change is administrative, is consistent with adoption of TSTF-587, and does not affect the applicability of TSTF-582 to the Fermi 2 TS.

11. As identified when Fermi 2 adopted TSTF-542 and in the numbering differences described above, Fermi 2 SR 3.5.2.5 is equivalent to the STS SR 3.5.2.4 (with TSTF-542 revisions). The Fermi 2 TS Bases 3.5.2 discussion of SR 3.5.2.5 does not contain the equivalent text to STS SR 3.5.2.4 that is shown as revised in TSTF-582. Therefore, the proposed change in TSTF-582 to replace "initiation signal" with "actuation" is not applicable to Fermi 2. This has no effect on the adoption of TSTF-582 and is an acceptable variation because it is consistent with the current Fermi 2 TS.

12. Fermi 2 SR 3.5.2.6 contains a Note prior to the SR which states "Not required to be met for system vent flow paths opened under administrative control." This Note is not present in the equivalent SR in the STS (SR 3.5.2.5). With deletion of the SR according to TSTF-582, this Fermi 2 plant-specific Note is no longer applicable and is therefore also deleted. Similarly, discussion of the Note in the Fermi 2 TS Bases for SR 3.5.2.6 is also deleted. This has no effect on the adoption of TSTF-582 and is an acceptable variation because the need to delete the Note is directly related to the TSTF-582 proposed change.

13. The Fermi 2 TS 3.6.1.3, "PCIVs," does not have Condition G. Therefore, the proposed changes in TSTF-582 to STS 3.6.1.3, "PCIVs," Condition G are not applicable to Fermi 2. Similarly, the proposed changes in TSTF-582 for Condition G in the Bases for STS 3.6.1.3 are not applicable to Fermi 2. This variation does not affect the applicability of TSTF-582 to the Fermi 2 TS.

14. The wording of the Applicability section of the Fermi 2 TS Bases 3.6.1.3 differs slightly from the corresponding STS TS Bases 3.6.1.3 wording. Specifically, the Fermi 2 TS 3.6.1.3 Bases do not contain the word "most" which is proposed to be deleted by TSTF-582. Therefore, the proposed change in TSTF-582 to delete "most" is not applicable to Fermi 2. In addition, the wording of the sentences proposed to be deleted in TSTF-582 is slightly different than the wording in the same sentences being deleted in the Fermi 2 TS. This variation does not affect the applicability of TSTF-582 to the Fermi 2 TS since it is administrative in nature and the final wording in the Fermi 2 TS Bases will match the STS as revised by TSTF-582.

15. TSTF-582 revises the Applicability of TS 3.6.1.3 to be only Modes 1, 2, and 3. Fermi 2 TS 3.6.1.3 has Note 4 prior to the Actions section which includes instructions that only apply in Modes 1, 2, and 3. With the revised Applicability restricted to Modes 1, 2, and 3 per TSTF-582, the Note 4 no longer needs the discussion of Modes since it is already specified by the Applicability. Although not identified in TSTF-582, Fermi 2 has revised LCO 3.6.1.3 Actions Note 4 to delete "…in MODES 1, 2, and 3" to be consistent with

the other TSTF-582 changes to TS 3.6.1.3 that delete the note "Only required to be met in MODES 1, 2, and 3." This variation is consistent with the similar changes to TS 3.6.1.3 that are already justified in TSTF-582. There are no required TS Bases changes associated with this variation because the description of Note 4 in the TS 3.6.1.3 Bases does not discuss the applicability.

16. TSTF-582 proposes to delete the Note "Only required to be met in MODES 1, 2, and 3" from multiple SRs in TS 3.6.1.3, "PCIVs." Fermi 2 TS 3.6.1.3 does not have the Note in SR 3.6.1.3.6 (STS SR 3.6.1.3.7), SR 3.6.1.3.11 (STS SR 3.6.1.3.12), and 3.6.1.3.12 (STS SR 3.6.1.3.13). The Fermi 2 TS do not have SRs equivalent to STS SR 3.6.1.3.1, 3.6.1.3.2, and 3.6.1.3.15 to require deletion of the Note as shown in TSTF-582. Therefore, the proposed changes in TSTF-582 to delete the Note from those SRs are not applicable to Fermi 2. Similarly, the proposed changes in TSTF-582 to delete the Note from those SRs in the TS Bases are not applicable to Fermi 2. This variation does not affect the applicability of TSTF-582 to the Fermi 2 TS.

17. As will be discussed later in this section, Fermi 2 is also adopting changes from TSTF-583, "TSTF-582 Diesel Generator Variation," which expand upon the TSTF-582 changes to TS 3.8.2. The Fermi 2 TS 3.8.2, "AC Sources-Shutdown," SR 3.8.2.1 Note currently lists Fermi 2 SR 3.8.1.2 as an SR that is not required to be performed. Although the STS SR 3.8.1.2 and Fermi 2 SR 3.8.1.2 are equivalent, the STS SR 3.8.2.1 Note does not include SR 3.8.1.2 as an SR that is not required to be performed and TSTF-582 (and TSTF-583) also does not include it in the Note as part of the changes. DTE will retain Fermi 2 SR 3.8.1.2 in the list of SRs that are not required to be performed in the Note for Fermi 2 SR 3.8.2.1. This has no effect on the adoption of TSTF-582 (or TSTF-583) and is an acceptable variation because it is consistent with the current Fermi 2 TS.

18. The Fermi 2 TS 3.8.2, "AC Sources-Shutdown," SR 3.8.2.1 Note currently lists Fermi 2 SRs 3.8.1.7 and 3.8.1.11 as SRs that are not required to be performed. Although STS SRs 3.8.1.7 and 3.8.1.12 are equivalent to Fermi 2 SRs 3.8.1.7 and 3.8.1.11 (see numbering differences discussion above), the STS SR 3.8.2.1 Note does not include these SRs in the list of those not required to be performed. This difference has no effect on the adoption of TSTF-582 (or TSTF-583) because the SRs are made not applicable and the final Fermi 2 list of applicable SRs will match the STS as revised by TSTF-582 (and TSTF-583).

19. Fermi 2 TS 3.8.2, "AC Sources – Shutdown," does not have the second Note prior to SR 3.8.2.1 which states "SR 3.8.1.12 and SR 3.8.1.19 are not required to be met when associated ECCS subsystem(s) are not required to be OPERABLE per LCO 3.5.2, 'ECCS-Shutdown'." Therefore, the proposed change by TSTF-582 (and TSTF-583) to delete the second Note prior to SR 3.8.2.1 is not applicable to Fermi 2. Similarly, the proposed change in TSTF-582 (and TSTF-583) to delete the Note from the SR in the TS Bases is not applicable to Fermi 2. This variation does not affect the applicability of TSTF-582 (or TSTF-583) to the Fermi 2 TS.

20. The Fermi 2 TS Bases 3.8.2, "AC Sources - Shutdown," LCO Section does not contain the statement which is contained in the STS Bases that "Automatic initiation of the required DG during shutdown conditions is specified in LCO 3.3.8.1, 'LOP Instrumentation'." Although no changes to this statement in the STS Bases are proposed by TSTF-582, it is proposed to be deleted in TSTF-583. Since the Fermi 2 TS Bases does not contain this statement, the change is not applicable to Fermi 2. This variation does not affect the applicability of TSTF-582 (or TSTF-583) to the Fermi 2 TS since it is administrative nature and the final wording in the Fermi 2 TS Bases will match the STS as revised by TSTF-583.

21. The Fermi 2 TS do not contain SRs equivalent to the STS SRs 3.8.1.8 and 3.8.1.17 that are referenced in STS SR 3.8.2.1. Therefore, the proposed changes in TSTF-582 (and TSTF-583) that affect these SRs are not applicable to Fermi 2. Similarly, the proposed changes in TSTF-582 (and TSTF-583) for these SRs in the TS Bases are not applicable to Fermi 2. This variation does not affect the applicability of TSTF-582 (or TSTF-583) to the Fermi 2 TS.

22. The Fermi 2 TS and TS Bases use the phrase Emergency Diesel Generators (EDGs) rather than the more generic phrase Diesel Generators (DGs) used in the STS. In addition, since the Fermi 2 design is based on two EDGs per division rather than the STS which is one DG per train, the Fermi 2 TS and TS Bases use EDGs plural when sometimes the STS uses DG singular. When incorporating the TSTF-582 (and TSTF-583) changes to TS Bases Section 3.8.2, the acronym EDG is used rather than DG and plural grammar is used rather than singular grammar when necessary. This variation does not affect the applicability of TSTF-582 (or TSTF-583) to the Fermi 2 TS since it is administrative in nature and meets the intent of TSTF-582 (and TSTF-583).

Changes in TSTF-582 were incorporated in the Fermi 2 TS as variations during adoption of TSTF-542. Therefore, in some cases, the TSTF-582 changes are not needed. Other changes were added as variations during adoption of TSTF-542 which have been superseded by the requirements in TSTF-582. In some cases, these plant-specific changes are replaced by the TSTF-582 generic requirements. The variations for changes adopted in TSTF-542 are described below:

23. As a result of variations taken during adoption of TSTF-542, the current Fermi 2 TS 3.3.5.3 Condition D is equivalent to a combination of Conditions D and E from STS 3.3.5.2. Deletion of Conditions D and E from the STS and STS Bases as shown in TSTF-582 is accomplished by deletion of Condition D from the Fermi 2 TS and TS Bases. This has no effect on the adoption of the TSTF-582 and is an acceptable variation. (Reference DTE Letter NRC-18-0045 dated August 7, 2018, ML18219A659).

24. As a result of variations taken during adoption of TSTF-542, the Fermi 2 TS SR 3.3.5.3.3 referenced for the manual initiation functions in Table 3.3.5.3-1 is for a Channel Functional Test rather than the Logic System Functional Test in the STS SR 3.3.5.2.3. Deletion of SR 3.3.5.2.3 for Logic System Functional Test from the STS and STS Bases

as shown in TSTF-582 is accomplished by deletion of SR 3.3.5.3.3 for Channel Functional Test from the Fermi 2 TS and TS Bases. This has no effect on the adoption of the TSTF-582 and is an acceptable variation. (Reference DTE Letter NRC-18-0040 dated June 27, 2018, ML18178A134).

25. As a result of variations taken during adoption of TSTF-542, the Fermi 2 Table 3.3.5.3-1 and TS Bases B 3.3.5.3 do not contain the equivalent of STS Table 3.3.5.2-1 Function 1.b, "Core Spray Pump Discharge Flow - Low (Bypass)," or Function 2.b, "Low Pressure Coolant Injection Pump Discharge Flow - Low (Bypass)." Functions 1.b and 2.b in the Fermi 2 TS Table 3.3.5.3-1 are instead the functions for Manual Initiation for Core Spray and LPCI, respectively, and the Fermi 2 TS Table 3.3.5.3-1 has no Functions 1.c and 2.c. In addition, Footnote (a) is assigned to the Required Channels per Function column for Functions 1.a and 2.a, a Fermi 2 plant-specific Footnote (c) is assigned to the Required Channels per Function column for Functions 1.b and 2.b, and the wording "1 per subsystem" is used rather than "1" for the Required Channels per Function column for Function 2.b. Deletion of the entirety of Functions 1 and 2, as well as deletion of Footnote (c), from Fermi 2 TS Table 3.3.5.3-1 and the corresponding TS Bases changes accomplishes the intent of the corresponding TSTF-582 changes regardless of the number of subfunctions and footnotes. This has no effect on the adoption of the TSTF-582 and is an acceptable variation. (Reference DTE Letter NRC-17-0067, dated August 31, 2017, ML17243A422).

26. As a result of variations taken during adoption of TSTF-542, the Fermi 2 TS Bases B 3.3.6.1, "Primary Containment Isolation Instrumentation," reference to Action J.2 was previously deleted and the Action J.1 text was revised. However, the resultant wording in the Fermi 2 TS Bases for Action J.1 based on the TSTF-542 variation does not match the proposed TSTF-582 TS Bases changes. For this reason, the Fermi 2 TS Bases for Action J.1 is revised so that it will match what is shown in TSTF-582 with the exception that the phrase "these Required Actions allow" is revised to "the Required Action allows" to reflect that there is a single action (J.1). This minor exception appears to be an oversight in TSTF-582. This has no effect on the adoption of the TSTF-582 and is an acceptable variation. (Reference DTE Letter NRC-17-0067, dated August 31, 2017, ML17243A422).

27. As a result of variations taken during adoption of TSTF-542, the Fermi 2 TS SR 3.5.2.9 currently states to "Verify the required ECCS injection/spray subsystem can be manually operated." Therefore, the proposed changes in TSTF-582 to revise STS SR 3.5.2.8 are not required; the Fermi 2 TS already reflect the change. However, the wording in the Fermi 2 TS Bases for SR 3.5.2.9 based on the TSTF-542 variation does not currently match the proposed TSTF-582 TS changes. For this reason, the Fermi 2 TS Bases for SR 3.5.2.9 are revised to match TSTF-582. This has no effect on the adoption of the TSTF-582 and is an acceptable variation. (Reference DTE Letter NRC-18-0032, dated May 17, 2018, ML18138A149).

In addition to the above variations, DTE proposes the following additional minor editorial variations associated with the TS Bases.

28. Although TSTF-582 proposes no changes to the description of Actions A.1 and B.1 in the Bases for TS 3.5.2, the pages are shown in TSTF-582. While reviewing TSTF-582, it was identified that the Fermi 2 TS Bases description of Actions A.1 and B.1 contains the text in a single paragraph rather than two paragraphs as shown in the STS pages included with the TSTF-582. To maintain consistency with the STS, the Fermi 2 TS Bases description of Actions A.1 and B.1 is revised to split the single paragraph into two paragraphs. This minor editorial improvement to the Fermi 2 TS Bases has no effect on the adoption of TSTF-582 and is an acceptable variation.

29. TSTF-582 adds a new Note 2 to STS SR 3.5.2.6 (renumbered as STS SR 3.5.2.5) to allow credit for normal system operation to satisfy the SR. The information added to the associated Bases in TSTF-582 identifies the RHR mode of LPCI as an example of normal system operation. The justification in TSTF-582 refers more specifically to RHR shutdown cooling. To more closely match the justification in TSTF-582 and be consistent with typical usage at Fermi 2, the Fermi 2 Bases discussion of the new Note 2 clarifies that an example of normal system operation is the "**shutdown cooling** mode of **RHR**" (emphasis added). This minor editorial improvement to the Fermi 2 TS Bases has no effect on the adoption of TSTF-582 and is an acceptable variation.

30. The Fermi 2 Bases for SR 3.5.2.9 (STS SR 3.5.2.8) contains the phrase "required CS subsystem**s** or LPCI subsystem" (emphasis added) which is grammatically inconsistent. This inconsistent use of plural vs. singular in the Fermi 2 and STS Bases was introduced by TSTF-542. TSTF-582 modifies the sentence containing this phrase but does not correct the phrase itself. In addition to adopting the TSTF-582 changes, the Fermi 2 TS Bases for SR 3.5.2.9 is also revised to use the singular "subsystem" for both CS and LPCI. This minor editorial improvement to the Fermi 2 TS Bases has no effect on the adoption of TSTF-582 and is an acceptable variation.

The following proposed variation is consistent with TSTF-583-T, "TSTF-582 Diesel Generator Variation." Explanation and justification of the TSTF-583-T changes are provided as follows.

TSTF-582, "RPV WIC Enhancements," states:

> The ECCS injection/spray subsystem required to be operable by LCO 3.5.2 must be capable of being manually started as defense-in-depth against an unexpected draining event. … However, LCO 3.5.2 does not assume that the onsite electrical power source will start automatically on an ECCS or loss of power signal.
>
> LCO 3.8.2, "AC Sources - Shutdown," requires one offsite circuit and one diesel generator to be operable in Modes 4 and 5. SR 3.8.2.1 lists the TS 3.8.1, "AC Sources - Operating," SRs that are applicable in Modes 4 and 5. In an oversight in TSTF-542, the

> TS 3.8.1 SRs that test automatic start and loading of a diesel generator on an ECCS or loss of offsite power signal were not excluded from SR 3.8.2.1.

TSTF-582 revised Technical Specification (TS) 3.8.2, "AC Sources – Shutdown," Surveillance Requirement (SR) 3.8.2.1, to exclude additional SRs that verify the ability of the diesel generators to automatically start and load on an ECCS initiation signal or loss of offsite power signal.

The NRC Safety Evaluation for TSTF-582 (ADAMS Accession No. ML20223A000, dated, August 13, 2020), Section 3.6, "Alternating Current Sources - Shutdown, STS 3.8.2," states:

> STS 3.5.2, "Reactor Pressure Vessel Water Inventory Control (RPV WIC)," does not require automatic ECCS initiation to mitigate a draining event in Modes 4 and 5, and the ECCS initiation signal related to the automatic ECCS initiation is removed from the STS. Because the automatic ECCS initiation and related ECCS initial signal in Modes 4 and 5 are eliminated, the automatic start of the DG on an ECCS initiation signal is not required in Modes 4 and 5. … [T]he NRC finds that STS 3.5.2 provides enough time from the onset of the [loss of offsite power] LOOP event for the operator to manually start the DG required to supply power to the water injection equipment to mitigate the draining event in Modes 4 and 5. In addition, STS 3.5.2 does not require the automatic initiation of the ECCS injection/spray subsystem or the additional method of water injection. Therefore, since STS 3.5.2 allows enough time to manually start the DG and the equipment for water injection, the NRC staff finds that the automatic start and loading of the DG are not necessary on a LOOP signal or LOOP concurrent with an ECCS initiation signal to mitigate a draining event in Modes 4 and 5.
>
> Furthermore, the NRC staff notes that other events postulated in Modes 4 and 5 (e.g., FHA, waste gas tank rupture) and during movement of recently irradiated fuel assemblies in the primary and secondary containment do not assume a LOOP event or an automatic ECCS initiation.

TSTF-582 did not include all of the TS changes needed to reflect that TS 3.8.2 does not require automatic start and loading of a diesel generator within 10 seconds on an ECCS initiation signal or a loss of offsite power signal. Therefore, in addition to the changes included in TSTF-582, the following changes are made to TS 3.8.2 based on TSTF-583.

- TS 3.3.8.1, "Loss of Power (LOP) Instrumentation," is currently applicable in Modes 1, 2, and 3, and when the associated emergency diesel generator is required to be operable by TS 3.8.2. TSTF-582 revised TS 3.8.2 to no longer require automatic start and loading of a diesel generator on a loss of offsite power signal. Consequently, the LOP instrumentation that generates the loss of offsite power signal should not be required to be operable when the emergency diesel generator is required to be operable by TS 3.8.2. The Applicability of LCO 3.3.8.1 is revised to not include the specified condition "When the associated emergency diesel generator (EDG) is required to be OPERABLE by LCO

3.8.2, 'AC Sources – Shutdown'." Note that as a minor editorial variation to TSTF-583, DTE is adding a period to the end of Applicability after deleting the text per TSTF-583.

- SR 3.8.2.1 currently requires TS SR 3.8.1.7 and SR 3.8.1.14 to be met. SR 3.8.1.7 and SR 3.8.1.14 require that the EDG starts from standby or hot conditions, respectively, and achieves required voltage and frequency within 10 seconds. The 10 second start requirement supports the assumptions in the design basis LOCA analysis. This capability is not required during a manual emergency diesel generator start to respond to a draining event, which has a minimum Drain Time of one hour. Therefore, SR 3.8.2.1 is revised to add SR 3.8.1.7 and SR 3.8.1.14 to the list of TS 3.8.1 SRs that are not applicable.

- SR 3.8.2.1 currently requires SR 3.8.1.16 to be met but not performed. SR 3.8.1.16 states, "Verify interval between each sequenced load block is within ± 10% of design interval for each load sequencer timer." The load sequencer is only used for the automatic start and loading of the emergency diesel generator and is not used during a manual emergency diesel generator start. Therefore, SR 3.8.2.1 is revised to add SR 3.8.1.16 to the list of TS 3.8.1 SRs that are not applicable.

- SR 3.8.2.1 lists the TS 3.8.1 SRs that are not applicable to TS 3.8.2. With the proposed change, approximately half of the TS 3.8.1 SRs are not applicable. Therefore, as an editorial improvement, SR 3.8.2.1 is revised to list the TS 3.8.1 SRs that are applicable instead of the TS 3.8.1 SRs that are not applicable. This has no effect on the requirements. The SR 3.8.2.1 Bases continue to explain why certain TS 3.8.1 SRs are omitted from the list.

The TS Bases are revised to reflect the above proposed changes. The TS 3.3.8.1 Bases are revised to reflect the change in the TS Applicability. The Bases for TS 3.8.2 LCO and SR 3.8.2.1 are revised to reflect the proposed changes and to state that TS 3.8.2 assumes that a required emergency diesel generator is manually started.

The above proposed changes based on TSTF-583 provide consistency within the TS after incorporating TSTF-582.

Note that variations 2, 6, 17, 18, 19, 20, 21, and 22 described above for TSTF-582 also apply to or are related to TSTF-583.

The following proposed variation is consistent with TSTF-587-T, "Delete LCO 3.5.2 Note." Explanation and justification of the TSTF-587-T changes are provided as follows.

Fermi 2 TS LCO 3.5.2 is modified by a Note that states:

> A Low Pressure Coolant Injection (LPCI) subsystem may be considered Operable during alignment and operation for decay heat removal if capable of being manually realigned and not otherwise inoperable.

TSTF-582 adoption includes deletion of Fermi 2 SR 3.5.2.6 (STS SR 3.5.2.5), which required verification that each manual, power operated, and automatic valve in the required ECCS injection/spray subsystem flow path that is not locked, sealed, or otherwise secured in position is in the correct position. Section 3.4.2.1 to the NRC Safety Evaluation for TSTF-582 (ADAMS Accession No. ML20223A000, dated August 13, 2020) states:

> There is no longer a specified "correct position" for the subsystem valves to support initiation from the ECCS instrumentation. The changes to STS 3.5.2 no longer credit the use of automatic valves that respond to an ECCS signal. The STS 3.5.2 permits the use of operator action to align power operated valves. Licensee control of manual valves will be as needed to support manual alignment and initiation of the ECCS subsystem from the control room.

Therefore, the required ECCS subsystem is operable while being used for decay heat removal if it can be realigned and started in injection mode from the control room. This renders the LCO Note unnecessary.

Fermi 2 SR 3.5.2.7 (STS SR 3.5.2.6) requires operating the ECCS subsystem periodically to verify its operability. Adoption of TSTF-582 included addition of a Note to SR 3.5.2.7 (and renumbering it to SR 3.5.2.6) that permits the ECCS subsystem to be credited for operating in normal mode as demonstrating operation of the required ECCS subsystem. As stated in the TSTF-582 justification, "This Note permits crediting the normal operation of an RHR Shutdown Cooling subsystem to satisfy the SR. The revised SR continues to ensure the ECCS injection/spray subsystem can inject water into the RPV if needed for defense-in-depth, while eliminating unnecessary testing."

The removal of Fermi 2 SR 3.5.2.6 and the addition of the Note to Fermi 2 SR 3.5.2.7 (renumbered as SR 3.5.2.6) by TSTF-582 eliminates the need for the Fermi 2 TS LCO 3.5.2 Note and it is deleted. Discussion of the Note is also deleted from the corresponding TS Bases section.

Note that variation 10 described above for TSTF-582 also applies to or is related to TSTF-587.

TSTF-586-T, "Correct LCO 3.5.2 Note Bases," also included revision to the TS Bases for the LCO 3.5.2 Note. With adoption of TSTF-587 as described above, the changes in TSTF-586-T are no longer applicable to Fermi 2. Therefore, TSTF-586-T is not adopted by Fermi 2.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Analysis

DTE requests adoption of TSTF-582, "Reactor Pressure Vessel Water Inventory Control (RPV WIC) Enhancements." The Technical Specifications (TS) related to RPV WIC are revised to incorporate operating experience and to correct errors and omissions that were incorporated into

the plant TS when adopting TSTF-542, Revision 2, "Reactor Pressure Vessel Water Inventory Control." TSTF-582 includes the following changes to the TS:

1. The TS are revised to eliminate the requirement for a manual Emergency Core Cooling System (ECCS) initiation signal to start the required ECCS injection/spray subsystem, and to instead rely on manual valve alignment and pump start.

2. The Drain Time definition is revised to move the examples of common mode failure mechanisms to the Bases and seismic events are no longer considered a common mode failure mechanism.

3. The Drain Time definition exception from considering the Drain Time for penetration flow paths isolated with manual or automatic valves that are "locked, sealed, or otherwise secured" is revised to apply the exception for manual or automatic valves that are "closed and administratively controlled."

4. The TS are revised to permit placing an inoperable isolation channel in trip as an alternative to declaring the associated penetration flow path incapable of automatic isolation.

5. A Surveillance Requirement (SR) that requires operating the required ECCS injection/spray subsystem for at least 10 minutes through the recirculation line, is modified to permit crediting normal operation of the system to satisfy the SR and to permit operation through the test return line.

6. The Applicability of TS 3.6.1.3, "Primary Containment Isolation Valves (PCIVs)," is revised to delete the phrase, "When associated instrumentation is required to be OPERABLE per Limiting Condition for Operation (LCO) 3.3.6.1, 'Primary Containment Isolation Instrumentation'." This makes TS 3.6.1.3 only applicable in Modes 1, 2, and 3. Following adoption of TSTF-542, no functions in LCO 3.3.6.1 are applicable outside of Modes 1, 2, or 3. The Actions and SRs are revised to reflect this change. These changes are made for clarity and have no effect on the application of the TS.

7. TS 3.8.2, "AC Sources - Shutdown," SR 3.8.2.1, is revised to not require SRs that test the ability of the automatic diesel generator to start in Modes 4 and 5. Automatic ECCS initiation in Modes 4 and 5 was eliminated in TSTF-542. This was an oversight in TSTF-542.

8. The TS are revised to use wording and to define acronyms in a manner consistent with the remainder of the TS. These changes are made for consistency and have no effect on the application of the TS.

DTE has evaluated if a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No

   The proposed change incorporates operating experience and corrects errors and omissions that were incorporated into the plant TS when adopting TSTF-542, Revision 2, "Reactor Pressure Vessel Water Inventory Control." Draining of RPV water inventory in Mode 4 (i.e., cold shutdown) and Mode 5 (i.e., refueling) is not an accident previously evaluated and, therefore, revising the existing TS controls to prevent or mitigate such an event has no effect on any accident previously evaluated. RPV water inventory control in Mode 4 or Mode 5 is not an initiator of any accident previously evaluated. The existing and revised TS controls are not mitigating actions assumed in any accident previously evaluated.

   Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No

   The proposed change incorporates operating experience and corrects errors and omissions that were incorporated into the plant TS when adopting TSTF-542, Revision 2, "Reactor Pressure Vessel Water Inventory Control." The event of concern under the current requirements and the proposed change is an unexpected draining event. The TS have contained requirements related to an unexpected draining event during shutdown for over 40 years and this event does not appear as an analyzed event in the Updated Final Safety Analysis Report (UFSAR) for any plant or in the NRC's Standard Review Plan (NUREG-0800). Therefore, an unexpected draining event is not a new or different kind of accident not considered in the design and licensing bases that would have been considered a design basis accident in the UFSAR had it been previously identified.

   None of the equipment affected by the proposed change has a design function described in the UFSAR to mitigate an unexpected draining event in Modes 4 or 5, although the equipment may be used for that purpose. Therefore, the proposed amendment will not change the design function of the affected equipment. The proposed change will affect the operation of certain equipment, such as the manual initiation function and related instrumentation to permit initiation of the required ECCS injection/spray subsystem, and the control of valves credited for preventing a draining event. However, these changes provide adequate protection to prevent or mitigate an unexpected draining event and do

not create the possibility of a new or different kind of accident due to credible new failure mechanisms, malfunctions, or accident initiators not considered in the design and licensing bases.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No

The proposed change incorporates operating experience and corrects errors and omissions that were incorporated into the plant TS when adopting TSTF-542, Revision 2, "Reactor Pressure Vessel Water Inventory Control."

The safety basis for the RPV WIC requirements is to protect Safety Limit 2.1.1.3. The proposed change does not affect any specific values that define a safety margin as established in the licensing basis. The proposed change does not affect a design basis or safety limit, or any controlling value for a parameter established in the UFSAR or the license. Therefore, the proposed change does not significantly reduce the margin of safety.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, DTE concludes that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

3.2 Conclusion

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

4.0 ENVIRONMENTAL EVALUATION

The proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. The proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or

cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed change.

Enclosure 2 to
NRC-22-0023

Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43

Application to Revise Technical Specifications to Adopt TSTF-582, "Reactor Pressure Vessel Water Inventory Control (RPV WIC) Enhancements"

Proposed Technical Specification Changes (Mark-Up)

1.1 Definitions (continued)

CORE OPERATING LIMITS REPORT (COLR)	The COLR is the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific limits shall be determined for each reload cycle in accordance with Specification 5.6.5. Plant operation within these limits is addressed in individual Specifications.
DOSE EQUIVALENT I-131	DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries/gram) that alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, AEC, 1962, "Calculation of Distance Factors for Power and Test Reactor Sites."
DRAIN TIME	The DRAIN TIME is the time it would take for the water inventory in and above the Reactor Pressure Vessel (RPV) to drain to the top of the active fuel (TAF) seated in the RPV assuming: a) The water inventory above the TAF is divided by the limiting drain rate; b) The limiting drain rate is the larger of the drain rate through a single penetration flow path with the highest flow rate, or the sum of the drain rates through multiple penetration flow paths susceptible to a common mode failure ~~(e.g., seismic event, loss of normal power, single human error)~~, for all penetration flow paths below the TAF except: 1. Penetration flow paths connected to an intact closed system, or isolated by manual or automatic valves that are ~~locked, sealed, or otherwise secured~~ in the closed position, blank flanges, or other devices that prevent flow of reactor coolant through the penetration flow paths;

closed and administratively controlled

(continued)

3.3 INSTRUMENTATION

3.3.5.3 Reactor Pressure Vessel (RPV) Water Inventory Control Instrumentation

LCO 3.3.5.3 The RPV Water Inventory Control instrumentation for each Function in Table 3.3.5.3-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5.3-1.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~A. One or more channels inoperable.~~	~~A.1 Enter the Condition referenced in Table 3.3.5.3-1 for the channel.~~	~~Immediately~~ Immediately
~~B. As required by Required Action A.1 and referenced in Table 3.3.5.3-1.~~	~~B.1~~ Declare associated penetration flow path(s) incapable of automatic isolation.	Immediately
	~~AND~~ AND	
	~~B.2 Calculate DRAIN TIME.~~	Immediately
~~C. As required by Required Action A.1 and referenced in Table 3.3.5.3-1.~~	~~C.1 Place channel in trip.~~	~~1 hour~~

~~(continued)~~

A.1 Initiate action to place channel in trip.

OR

A. One or more channels inoperable.

A.2.1

A.2.2 Initiate action to calculate DRAIN TIME.

Increase the indent to move AND to this location

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. As required by Required Action A.1 and referenced in Table 3.3.5.3-1. OR Required Action and associated Completion Time of Condition C not met.	D.1 Declare associated low pressure ECCS injection/spray subsystem inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

Delete "S"

NOTES

1. Refer to Table 3.3.5.3-1 to determine which SRs apply for each ECCS Function.

These SRs apply to each Function in

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours for Functions 1.a and 2.a, provided the associated Function maintains ECCS initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.5.3.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.3.2	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.3.3	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

Table 3.3.5.3-1 (page 1 of 1)
RPV Water Inventory Control Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Core Spray System					
a. Reactor Steam Dome Pressure – Low (Injection Permissive)	4,5	4(a)	C	SR 3.3.5.3.1 SR 3.3.5.3.2	≥ 441 psig
b. Manual Initiation	4,5	1 per subsystem (a), (c)	D	SR 3.3.5.3.3	NA
2. Low Pressure Coolant Injection (LPCI) System					
a. Reactor Steam Dome Pressure – Low (Injection Permissive)	4,5	4(a)	C	SR 3.3.5.3.1 SR 3.3.5.3.2	≥ 441 psig
b. Manual Initiation	4,5	1 per subsystem (a), (c)	D	SR 3.3.5.3.3	NA
3. RHR System Isolation					
a. Reactor Vessel Water Level – Low, Level 3	(b)	2 in one trip system	B	SR 3.3.5.3.1 SR 3.3.5.3.2	≥ 171.9 inches
4. Reactor Water Cleanup (RWCU) System Isolation					
a. Reactor Vessel Water Level – Low Low, Level 2	(b)	2 in one trip system	B	SR 3.3.5.3.1 SR 3.3.5.3.2	≥ 103.8 inches

(a) Associated with an ECCS subsystem required to be OPERABLE by LCO 3.5.2, "Reactor Pressure Vessel Water Inventory Control."

(b) When automatic isolation of the associated penetration flow path(s) is credited in calculating DRAIN TIME.

(c) Individual component controls.

3.3 INSTRUMENTATION

3.3.8.1 Loss of Power (LOP) Instrumentation

LCO 3.3.8.1 The LOP instrumentation for each Function in Table 3.3.8.1-1 shall be OPERABLE.

Change comma to a period.

APPLICABILITY: MODES 1, 2, and 3~~,~~.
~~When the associated emergency diesel generator (EDG) is required to be OPERABLE by LCO 3.8.2, "AC Sources – Shutdown."~~

ACTIONS

NOTE
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more buses with one or more channels inoperable.	A.1 Restore channel to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A not met. OR One or more buses with LOP trip capability not maintained.	B.1 Declare associated EDG inoperable.	Immediately

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), RPV WATER INVENTORY CONTROL, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.2 Reactor Pressure Vessel (RPV) Water Inventory Control

LCO 3.5.2 DRAIN TIME of RPV water inventory to the top of active fuel (TAF) shall be ≥ 36 hours.

AND

One low pressure ECCS injection/spray subsystem shall be OPERABLE.

~~NOTE~~
~~A Low Pressure Coolant Injection (LPCI) subsystem may be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned and not otherwise inoperable.~~

APPLICABILITY: MODES 4 and 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required ECCS injection/spray subsystem inoperable.	A.1 Restore required ECCS injection/spray subsystem to OPERABLE status.	4 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action to establish a method of water injection capable of operating without offsite electrical power.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. DRAIN TIME < 36 hours and ≥ 8 hours.	C.1 Verify secondary containment boundary is capable of being established in less than the DRAIN TIME. AND	4 hours
	C.2 Verify each secondary containment penetration flow path is capable of being isolated in less than the DRAIN TIME. AND	4 hours
	C.3 Verify one standby gas treatment subsystem is capable of being placed in operation in less than the DRAIN TIME.	4 hours

(SGT)

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. DRAIN TIME < 8 hours.	D.1	--------NOTE-------- Required ECCS injection/spray subsystem or additional method of water injection shall be capable of operating without offsite electrical power. ---------- Initiate action to establish an additional method of water injection with water sources capable of maintaining RPV water level > TAF for ≥ 36 hours.	Immediately
	AND		
	D.2	Initiate action to establish secondary containment boundary.	Immediately
	AND		
	D.3	Initiate action to isolate secondary containment penetration flow path or verify it can be manually isolated from the control room.	Immediately
	AND		
	D.4	Initiate action to verify one ~~standby gas treatment~~ subsystem is capable of being placed in operation.	Immediately

each

SGT

(continued)

For Information Only
No Changes Made
(Variation 10)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition C or D not met. OR DRAIN TIME < 1 hour.	E.1 Initiate action to restore DRAIN TIME to ≥ 36 hours.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	Verify DRAIN TIME ≥ 36 hours.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.2	Verify, for a required low pressure coolant injection (LPCI) subsystem, the suppression pool water level is ≥ -66 inches.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.3	Verify, for a required Core Spray (CS) subsystem, the: a. Suppression pool water level is ≥ -66 inches; or b. Condensate storage tank water level is ≥ 19 ft.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.4	Verify correct voltage and breaker alignment to the LPCI swing bus.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.5	Verify, for the required ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program
~~SR 3.5.2.6~~	~~----------NOTE---------- Not required to be met for system vent flow paths opened under administrative control. ----------~~	
	~~Verify, for the required ECCS injection/spray subsystem, each manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.~~	~~In accordance with the Surveillance Frequency Control Program~~
~~SR 3.5.2.7~~	Operate the required ECCS injection/spray subsystem ~~through the recirculation line~~ for ≥ 10 minutes.	In accordance with the Surveillance Frequency Control Program
~~SR 3.5.2.8~~	Verify each valve credited for automatically isolating a penetration flow path actuates to the isolation position on an actual or simulated isolation signal.	In accordance with the Surveillance Frequency Control Program

SR 3.5.2.6

SR 3.5.2.7

----------NOTES----------
1. Operation may be through the test return line.
2. Credit may be taken for normal system operation to satisfy this SR.

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
~~SR 3.5.2.9~~	----------NOTE---------- Vessel injection/spray may be excluded. ----------	
SR 3.5.2.8	Verify the required ECCS injection/spray subsystem can be manually operated.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.1.3 Primary Containment Isolation Valves (PCIVs)

LCO 3.6.1.3 Each PCIV, except reactor building-to-suppression chamber vacuum breakers, shall be OPERABLE.

Change comma to period.

APPLICABILITY: MODES 1, 2, and 3~~, When associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation."~~

ACTIONS

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

1. Penetration flow paths may be unisolated intermittently under administrative controls.
2. Separate Condition entry is allowed for each penetration flow path.
3. Enter applicable Conditions and Required Actions for systems made inoperable by PCIVs.
4. Enter applicable Conditions and Required Actions of LCO 3.6.1.1, "Primary Containment," when PCIV leakage results in exceeding overall containment leakage rate acceptance criteria ~~in MODES 1, 2, and 3~~.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ---------NOTE--------- Only applicable to penetration flow paths with two PCIVs. ---------- One or more penetration flow paths with one PCIV inoperable, except due to leakage not within limit.	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. AND	4 hours except for main steam line AND 8 hours for main steam line

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition A, B, C, or D not met ~~in MODE 1, 2, or 3~~.	E.1 Be in MODE 3. AND E.2 Be in MODE 4.	12 hours 36 hours
~~F. Required Action and associated Completion Time of Condition A, B, C, or D not met for RHR-SDC PCIV(s) required to be OPERABLE during MODE 4 or 5.~~	~~F.1 Initiate action to restore valve(s) to OPERABLE status.~~	~~Immediately~~

For Information Only
No Changes Made

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.1	----------NOTE---------- Not required to be met when the isolation valves for one purge or containment pressure control supply line and one purge or containment pressure control exhaust line are open for inerting, de-inerting, pressure control, ALARA or air quality considerations for personnel entry, or Surveillances that require the valves to be open. ---------- Verify each drywell and suppression chamber purge system and containment pressure control isolation valve is closed.	In accordance with the Surveillance Frequency Control Program
SR 3.6.1.3.2	----------NOTES---------- 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for PCIVs that are open under administrative controls. ---------- Verify each primary containment isolation manual valve and blind flange that is located outside primary containment and is not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed.	In accordance with the Surveillance Frequency Control Program

(continued)

For Information Only
No Changes Made

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.6	Perform leakage rate testing for each primary containment purge valve with resilient seals.	In accordance with the Surveillance Frequency Control Program AND Once within 92 days after opening the valve
SR 3.6.1.3.7	Verify the isolation time of each MSIV is ≥ 3 seconds and ≤ 5 seconds.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.6.1.3.8	Verify each automatic PCIV actuates to the isolation position on an actual or simulated isolation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.1.3.9	Verify a representative sample of reactor instrumentation line EFCVs actuates on a simulated instrument line break to restrict flow.	In accordance with the Surveillance Frequency Control Program
SR 3.6.1.3.10	Remove and test the explosive squib from each shear isolation valve of the TIP System.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.11	Verify the combined leakage rate for all secondary containment bypass leakage paths that are not provided with a seal system is ≤ 0.10 L_a when pressurized to ≥ 56.5 psig.	In accordance with the Primary Containment Leakage Rate Testing Program and INSERVICE TESTING PROGRAM
SR 3.6.1.3.12	Verify combined MSIV leakage rate for all four main steam lines is ≤ 250 scfh and ≤ 100 scfh for any one steam line when tested at ≥ 25 psig.	In accordance with the Primary Containment Leakage Rate Testing Program
SR 3.6.1.3.13	~~----------NOTE----------~~ ~~Only required to be met in MODES 1, 2, and 3.~~ ~~----------~~ Verify combined leakage rate through hydrostatically tested lines that penetrate the primary containment is within limits.	In accordance with the Primary Containment Leakage Rate Testing Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or both required EDGs inoperable.	B.1 Suspend CORE ALTERATIONS. AND	Immediately
	B.2 Suspend movement of recently irradiated fuel assemblies in secondary containment. AND	Immediately
	B.3 Initiate action to restore required EDGs to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.2.1 ~~----------NOTE---------- The following SRs are not required to be performed: SR 3.8.1.2, SR 3.8.1.3, and SR 3.8.1.7 through SR 3.8.1.17. ----------~~ ~~For AC sources required to be OPERABLE SR 3.8.1.1 through SR 3.8.1.17, are applicable.~~	In accordance with applicable SRs

----------NOTE----------
The following SRs are not required to be performed: SR 3.8.1.2, SR 3.8.1.3, SR 3.8.1.8, SR 3.8.1.9, SR 3.8.1.13, and SR 3.8.1.15.

The following SRs are applicable for AC sources required to be OPERABLE:

SR 3.8.1.1
SR 3.8.1.2
SR 3.8.1.3
SR 3.8.1.4
SR 3.8.1.5
SR 3.8.1.6
SR 3.8.1.8
SR 3.8.1.9
SR 3.8.1.13
SR 3.8.1.15

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Application to Revise Technical Specifications to Adopt TSTF-582, "Reactor Pressure Vessel Water Inventory Control (RPV WIC) Enhancements"

Revised Technical Specification Pages

1.1 Definitions (continued)

CORE OPERATING LIMITS REPORT (COLR)	The COLR is the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific limits shall be determined for each reload cycle in accordance with Specification 5.6.5. Plant operation within these limits is addressed in individual Specifications.
DOSE EQUIVALENT I-131	DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries/gram) that alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, AEC, 1962, "Calculation of Distance Factors for Power and Test Reactor Sites."
DRAIN TIME	The DRAIN TIME is the time it would take for the water inventory in and above the Reactor Pressure Vessel (RPV) to drain to the top of the active fuel (TAF) seated in the RPV assuming: a) The water inventory above the TAF is divided by the limiting drain rate; b) The limiting drain rate is the larger of the drain rate through a single penetration flow path with the highest flow rate, or the sum of the drain rates through multiple penetration flow paths susceptible to a common mode failure, for all penetration flow paths below the TAF except: 1. Penetration flow paths connected to an intact closed system, or isolated by manual or automatic valves that are closed and administratively controlled in the closed position, blank flanges, or other devices that prevent flow of reactor coolant through the penetration flow paths;

(continued)

3.3 INSTRUMENTATION

3.3.5.3 Reactor Pressure Vessel (RPV) Water Inventory Control Instrumentation

LCO 3.3.5.3 The RPV Water Inventory Control instrumentation for each Function in Table 3.3.5.3-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5.3-1.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Initiate action to place channel in trip.	Immediately
	OR	
	A.2.1 Declare associated penetration flow path(s) incapable of automatic isolation.	Immediately
	AND	
	A.2.2 Initiate action to calculate DRAIN TIME.	Immediately

SURVEILLANCE REQUIREMENTS

----------NOTE----------
These SRs apply to each Function in Table 3.3.5.3-1.

SURVEILLANCE		FREQUENCY
SR 3.3.5.3.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.3.2	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

Table 3.3.5.3-1 (page 1 of 1)
RPV Water Inventory Control Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	ALLOWABLE VALUE
1. RHR System Isolation			
a. Reactor Vessel Water Level – Low, Level 3	(a)	2 in one trip system	≥ 171.9 inches
2. Reactor Water Cleanup (RWCU) System Isolation			
a. Reactor Vessel Water Level – Low Low, Level 2	(a)	2 in one trip system	≥ 103.8 inches

(a) When automatic isolation of the associated penetration flow path(s) is credited in calculating DRAIN TIME.

3.3 INSTRUMENTATION

3.3.8.1 Loss of Power (LOP) Instrumentation

LCO 3.3.8.1 The LOP instrumentation for each Function in Table 3.3.8.1-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more buses with one or more channels inoperable.	A.1 Restore channel to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A not met. OR One or more buses with LOP trip capability not maintained.	B.1 Declare associated EDG inoperable.	Immediately

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), RPV WATER INVENTORY CONTROL, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.2 Reactor Pressure Vessel (RPV) Water Inventory Control

LCO 3.5.2 DRAIN TIME of RPV water inventory to the top of active fuel (TAF) shall be ≥ 36 hours.

AND

One low pressure ECCS injection/spray subsystem shall be OPERABLE.

APPLICABILITY: MODES 4 and 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required ECCS injection/spray subsystem inoperable.	A.1 Restore required ECCS injection/spray subsystem to OPERABLE status.	4 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action to establish a method of water injection capable of operating without offsite electrical power.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. DRAIN TIME < 36 hours and ≥ 8 hours.	C.1	Verify secondary containment boundary is capable of being established in less than the DRAIN TIME.	4 hours
	AND		
	C.2	Verify each secondary containment penetration flow path is capable of being isolated in less than the DRAIN TIME.	4 hours
	AND		
	C.3	Verify one standby gas treatment (SGT) subsystem is capable of being placed in operation in less than the DRAIN TIME.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. DRAIN TIME < 8 hours.	D.1	--------NOTE-------- Required ECCS injection/spray subsystem or additional method of water injection shall be capable of operating without offsite electrical power. ---------- Initiate action to establish an additional method of water injection with water sources capable of maintaining RPV water level > TAF for ≥ 36 hours.	Immediately
	AND		
	D.2	Initiate action to establish secondary containment boundary.	Immediately
	AND		
	D.3	Initiate action to isolate each secondary containment penetration flow path or verify it can be manually isolated from the control room.	Immediately
	AND		
	D.4	Initiate action to verify one SGT subsystem is capable of being placed in operation.	Immediately

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.4	Verify correct voltage and breaker alignment to the LPCI swing bus.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.5	Verify, for the required ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.6	----------NOTES---------- 1. Operation may be through the test return line. 2. Credit may be taken for normal system operation to satisfy this SR. ---------- Operate the required ECCS injection/spray subsystem for ≥ 10 minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.7	Verify each valve credited for automatically isolating a penetration flow path actuates to the isolation position on an actual or simulated isolation signal.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.8	----------NOTE---------- Vessel injection/spray may be excluded. ---------- Verify the required ECCS injection/spray subsystem can be manually operated.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.1.3 Primary Containment Isolation Valves (PCIVs)

LCO 3.6.1.3 Each PCIV, except reactor building-to-suppression chamber vacuum breakers, shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----------NOTES----------
1. Penetration flow paths may be unisolated intermittently under administrative controls.

2. Separate Condition entry is allowed for each penetration flow path.

3. Enter applicable Conditions and Required Actions for systems made inoperable by PCIVs.

4. Enter applicable Conditions and Required Actions of LCO 3.6.1.1, "Primary Containment," when PCIV leakage results in exceeding overall containment leakage rate acceptance criteria.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ---------NOTE--------- Only applicable to penetration flow paths with two PCIVs. ---------- One or more penetration flow paths with one PCIV inoperable, except due to leakage not within limit.	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. AND	4 hours except for main steam line AND 8 hours for main steam line

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition A, B, C, or D not met.	E.1 Be in MODE 3. AND E.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.11	Verify the combined leakage rate for all secondary containment bypass leakage paths that are not provided with a seal system is $\leq$ 0.10 L_a when pressurized to $\geq$ 56.5 psig.	In accordance with the Primary Containment Leakage Rate Testing Program and INSERVICE TESTING PROGRAM
SR 3.6.1.3.12	Verify combined MSIV leakage rate for all four main steam lines is $\leq$ 250 scfh and $\leq$ 100 scfh for any one steam line when tested at $\geq$ 25 psig.	In accordance with the Primary Containment Leakage Rate Testing Program
SR 3.6.1.3.13	Verify combined leakage rate through hydrostatically tested lines that penetrate the primary containment is within limits.	In accordance with the Primary Containment Leakage Rate Testing Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or both required EDGs inoperable.	B.1 Suspend CORE ALTERATIONS. AND B.2 Suspend movement of recently irradiated fuel assemblies in secondary containment. AND B.3 Initiate action to restore required EDGs to OPERABLE status.	Immediately Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.2.1	----------NOTE---------- The following SRs are not required to be performed: SR 3.8.1.2, SR 3.8.1.3, SR 3.8.1.8, SR 3.8.1.9, SR 3.8.1.13, and SR 3.8.1.15. ---------- The following SRs are applicable for AC sources required to be OPERABLE. SR 3.8.1.1 SR 3.8.1.6 SR 3.8.1.2 SR 3.8.1.8 SR 3.8.1.3 SR 3.8.1.9 SR 3.8.1.4 SR 3.8.1.13 SR 3.8.1.5 SR 3.8.1.15	In accordance with applicable SRs

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Application to Revise Technical Specifications to Adopt TSTF-582, "Reactor Pressure Vessel Water Inventory Control (RPV WIC) Enhancements"

Proposed Technical Specification Bases Changes
(Mark-Up) – For Information Only

B 3.3 INSTRUMENTATION

B 3.3.5.3 Reactor Pressure Vessel (RPV) Water Inventory Control Instrumentation

BASES

BACKGROUND

The RPV contains penetrations below the top of the active fuel (TAF) that have the potential to drain the reactor coolant inventory to below the TAF. If the water level should drop below the TAF, the ability to remove decay heat is reduced, which could lead to elevated cladding temperatures and clad perforation. Safety Limit 2.1.1.3 requires the RPV water level to be above the top of the active irradiated fuel at all times to prevent such elevated cladding temperatures.

Technical Specifications are required by 10 CFR 50.36 to include limiting safety system settings (LSSS) for variables that have significant safety functions. LSSS are defined by the regulation as "Where a LSSS is specified for a variable on which a safety limit has been placed, the setting must be chosen so that automatic protective actions will correct the abnormal situation before a Safety Limit (SL) is exceeded." The Analytical Limit is the limit of the process variable at which a safety action is initiated to ensure that a SL is not exceeded. Any automatic protection action that occurs on reaching the Analytical Limit therefore ensures that the SL is not exceeded. However, in practice, the actual settings for automatic protection channels must be chosen to be more conservative than the Analytical Limit to account for instrument loop uncertainties related to the setting at which the automatic protective action would actually occur. The actual settings for the automatic isolation channels are the same as those established for the same functions in MODES 1, 2, and 3 in ~~LCO 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation," or~~ LCO 3.3.6.1, "Primary Containment Isolation Instrumentation."

With the unit in MODE 4 or 5, RPV water inventory control is not required to mitigate any events or accidents evaluated in the safety analyses. RPV water inventory control is required in MODES 4 and 5 to protect Safety Limit 2.1.1.3 and the fuel cladding barrier to prevent the release of radioactive material should a draining event occur. Under the definition of DRAIN TIME, some penetration flow paths may be excluded from the DRAIN TIME calculation if they will be isolated by valves that will close automatically without offsite power prior to the RPV water level being equal to

BASES

BACKGROUND (continued)

the TAF when actuated by RPV water level isolation instrumentation.

The purpose of the RPV Water Inventory Control Instrumentation is to support the requirements of LCO 3.5.2, "Reactor Pressure Vessel (RPV) Water Inventory Control," and the definition of DRAIN TIME. There are functions that ~~are required for manual initiation or operation of the ECCS injection/spray subsystem required to be OPERABLE by LCO 3.5.2 and other functions that~~ support automatic isolation of Residual Heat Removal subsystem and Reactor Water Cleanup system penetration flow path(s) on low RPV water level.

~~The RPV Water Inventory Control Instrumentation supports operation of core spray (CS) and low pressure coolant injection (LPCI). The equipment involved with each of these systems is described in the Bases for LCO 3.5.2.~~

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

With the unit in MODE 4 or 5, RPV water inventory control is not required to mitigate any events or accidents evaluated in the safety analyses. RPV water inventory control is required in MODES 4 and 5 to protect Safety Limit 2.1.1.3 and the fuel cladding barrier to prevent the release of radioactive material should a draining event occur.

A double-ended guillotine break of the Reactor Coolant System (RCS) is not ~~postulated~~ considered in MODES 4 and 5 due to the reduced RCS pressure, reduced piping stresses, and ductile piping systems. Instead, an event is ~~postulated~~ considered in which ~~a single operator error or~~ an initiating event allows draining of the RPV water inventory through a single penetration flow path with the highest flow rate, or the sum of the drain rates through multiple penetration flow paths susceptible to a common mode failure ~~(e.g., seismic event, loss of normal power, single human error)~~. It is assumed, based on engineering judgment, that while in MODES 4 and 5, one low pressure ECCS injection/spray subsystem can be manually initiated to maintain adequate reactor vessel water level.

As discussed in References 1, 2, 3, 4, and 5, operating experience has shown RPV water inventory to be significant to public health and safety. Therefore, RPV Water Inventory Control satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

Permissive and interlock setpoints are generally considered as nominal values without regard to measurement accuracy.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

The specific Applicable Safety Analyses, LCO, and Applicability discussions are listed below on a Function by Function basis.

~~Core Spray and Low Pressure Coolant Injection Systems~~

~~1.a, 2.a. Reactor Steam Dome Pressure - Low (Injection Permissive)~~

~~Low reactor steam dome pressure signals are used as permissives for the low pressure ECCS injection/spray subsystem manual injection functions. This function ensures that, prior to opening the injection valves of the low pressure ECCS subsystems, the reactor pressure has fallen to a value below these subsystems' maximum design pressure. While it is assured during MODES 4 and 5 that the reactor steam dome pressure will be below the ECCS maximum design pressure, the Reactor Steam Dome Pressure - Low signals are assumed to be OPERABLE and capable of permitting initiation of the ECCS.~~

~~The Reactor Steam Dome Pressure - Low signals are initiated from four pressure transmitters that sense the reactor dome pressure. The transmitters are connected to four trip units. The outputs of the trip units are connected to relays whose contacts are arranged in a one-out-of-two taken twice logic.~~

~~The Allowable Value is low enough to prevent overpressuring the equipment in the low pressure ECCS.~~

~~The four channels of Reactor Steam Dome Pressure - Low Function are required to be OPERABLE in MODES 4 and 5 when ECCS manual initiation is required to be OPERABLE by LCO 3.5.2.~~

~~1.b, 2.b. Manual Initiation~~

~~The Manual Initiation channel provides manual initiation capability by means of individual component controls. There is one manual initiation channel for each of the CS and LPCI subsystems (i.e., four for CS and four for LPCI).~~

~~There is no Allowable Value for this Function since the channels are mechanically actuated based solely on the position of the individual components. Each channel of the Manual Initiation Function is only required to be OPERABLE~~

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

~~in MODES 4 and 5 when the associated ECCS subsystems are required to be OPERABLE per LCO 3.5.2.~~

RHR System Isolation

1

~~3~~.a - Reactor Vessel Water Level - Low, Level 3

The definition of Drain Time allows crediting the closing of penetration flow paths that are capable of being isolated by valves that will close automatically without offsite power prior to the RPV water level being equal to the TAF when actuated by RPV water level isolation instrumentation. The Reactor Vessel Water Level - Low, Level 3 Function associated with RHR System isolation may be credited for automatic isolation of penetration flow paths associated with the RHR System.

Reactor Vessel Water Level - Low, Level 3 signals are initiated from four level transmitters that sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level (variable leg) in the vessel. While four channels (two channels per trip system) of the Reactor Vessel Water Level - Low, Level 3 Function are available, only two channels (both in the same trip system) are required to be OPERABLE.

The Reactor Vessel Water Level - Low, Level 3 Allowable Value was chosen to be the same as the Primary Containment Isolation Instrumentation Reactor Vessel Water Level - Low, Level 3 Allowable Value (LCO 3.3.6.1), since the capability to cool the fuel may be threatened.

The Reactor Vessel Water Level - Low, Level 3 Function is only required to be OPERABLE when automatic isolation of the associated penetration flow path is credited in calculating DRAIN TIME (i.e., this Function must be OPERABLE if the DRAIN TIME calculation assumes the RHR System would be automatically isolated).

This Function isolates the Group 3 valves.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

2

Reactor Water Cleanup (RWCU) System Isolation

4.a - Reactor Vessel Water level - Low Low, Level 2

The definition of Drain Time allows crediting the closing of penetration flow paths that are capable of being isolated by valves that will close automatically without offsite power prior to the RPV water level being equal to the TAF when actuated by RPV water level isolation instrumentation. The Reactor Vessel Water Level - Low Low, Level 2 Function associated with RWCU System isolation may be credited for automatic isolation of penetration flow paths associated with the RWCU System.

Reactor Vessel Water Level - Low Low, Level 2 signals are initiated from four level transmitters that sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level (variable leg) in the vessel. While four channels (two channels per trip system) of the Reactor Vessel Water Level - Low, Level 2 Function are available, only two channels (both in the same trip system) are required to be OPERABLE.

Low

The Reactor Vessel Water Level - Low Low, Level 2 Allowable Value was chosen to be the same as the ECCS Reactor Vessel Water Level - Low Low, Level 2 Allowable Value (LCO 3.3.5.1), since the capability to cool the fuel may be threatened.

The Reactor Vessel Water Level - Low Low, Level 2 Function is only required to be OPERABLE when automatic isolation of the associated penetration flow path is credited in calculating DRAIN TIME (i.e., this Function must be OPERABLE if the DRAIN TIME calculation assumes the RWCU System would be automatically isolated).

This Function isolates the Group 10 and 11 valves.

BASES

ACTIONS

A Note has been provided to modify the ACTIONS related to RPV Water Inventory Control instrumentation channels. Section 1.3, Completion Times, specifies that once a Condition has been entered, subsequent divisions, subsystems, components, or variables expressed in the Condition discovered to be inoperable or not within limits will not result in separate entry into the Condition. Section 1.3 also specifies that Required Actions continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable RPV Water Inventory Control instrumentation channels provide appropriate compensatory measures for separate inoperable Condition entry for each inoperable RPV Water Inventory Control instrumentation channel.

~~A.1~~

~~Required Action A.1 directs entry into the appropriate Condition referenced in Table 3.3.5.3-1. The applicable Condition referenced in the Table is Function dependent. Each time a channel is discovered inoperable, Condition A is entered for that channel and provides for transfer to the appropriate subsequent Condition.~~

A.1, A.2.1, and A.2.2

~~B.1 and B.2~~

RHR System Isolation, Reactor Vessel Water Level - Low Level 3, and Reactor Water Cleanup System, Reactor Vessel Water Level - Low Low, Level 2 functions are applicable when automatic isolation of the associated penetration flow path is credited in calculating DRAIN TIME. If the instrumentation is inoperable, Required Action B.1 directs ~~an immediate declaration that~~ the associated penetration flow path(s) are incapable of automatic isolation. Required Action B.2 directs ~~calculation of~~ DRAIN TIME. The calculation cannot credit automatic isolation of the affected penetration flow paths.

A

immediate action to place the channel in trip. With the inoperable channel in the tripped condition, the remaining channel will isolate the penetration flow path on low water level. If both channels are inoperable and placed in trip, the penetration flow path will be isolated. Alternatively, Required Action A.2.1 requires

A.2.2

~~C.1~~

to be immediately declared

initiating action to calculate

~~Low reactor steam dome pressure signals are used as permissives for the low pressure ECCS injection/spray subsystem manual injection functions. If the permissive is inoperable, manual initiation of ECCS is prohibited. Therefore, the permissive must be placed in the trip condition within 1 hour. With the permissive in the trip condition, manual initiation may be performed. Prior to placing the permissive in the tripped condition, the~~

BASES

ACTIONS (continued)

operator can take manual control of the pump and the injection valve to inject water into the RPV.

The Completion Time of 1 hour is intended to allow the operator time to evaluate any discovered inoperabilities and to place the channel in trip.

D.1

If a manual initiation function is inoperable, the associated low pressure ECCS injection/spray subsystem may be incapable of performing the intended function, and must be declared inoperable immediately.

With the Required Action and associated Completion Time of Condition C not met, the associated low pressure ECCS injection/spray subsystem may be incapable of performing the intended function, and must be declared inoperable immediately.

SURVEILLANCE REQUIREMENTS

As noted in the beginning of the SRs, the SRs for each RPV Water Inventory Control instrument Function are found in the SRs column of Table 3.3.5.3-1.

The following SRs apply to

The Surveillances are modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours for Functions 1.a and 2.a provided the associated Function maintains ECCS initiation capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This Note is based on the reliability analysis (Ref. 6) assumption of the average time required to perform channel surveillance. The analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the ECCS will initiate when necessary.

SR 3.3.5.3.1

Performance of the CHANNEL CHECK ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is

BASES

SURVEILLANCE REQUIREMENTS (continued)

based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the instrument channels could be an indication of excessive instrument drift in one of the channels or something even more serious. A CHANNEL CHECK guarantees that undetected outright channel failure is limited; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL FUNCTIONAL TEST.

Agreement criteria are determined by the plant staff, based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limit.

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

The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the LCO.

SR 3.3.5.3.2 ~~and SR 3.3.5.3.3~~

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests.

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

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

BASES

REFERENCES

1. Information Notice 84-81 "Inadvertent Reduction in Primary Coolant Inventory in Boiling Water Reactors During Shutdown and Startup," November 1984.

2. Information Notice 86-74, "Reduction of Reactor Coolant Inventory Because of Misalignment of RHR Valves," August 1986.

3. Generic Letter 92-04, "Resolution of the Issues Related to Reactor Vessel Water Level Instrumentation in BWRs Pursuant to 10 CFR 50.54(F)," August 1992.

4. NRC Bulletin 93-03, "Resolution of Issues Related to Reactor Vessel Water Level Instrumentation in BWRs," May 1993.

5. Information Notice 94-52, "Inadvertent Containment Spray and Reactor Vessel Draindown at Millstone 1," July 1994.

~~6. NEDC-30936-P-A, "BWR Owners' Group Technical Specification Improvement Analyses for ECCS Actuation Instrumentation, Part 2," December 1988.~~

BASES

ACTIONS (continued)

The 1 hour Completion Time is acceptable because it minimizes risk while allowing sufficient time for personnel to isolate the RWCU System.

J.1

~~If the channel is not restored to OPERABLE status or placed in trip within the allowed Completion Time, action is immediately initiated to restore the channel to OPERABLE status. Actions must continue until the channel is restored to OPERABLE status.~~

SURVEILLANCE REQUIREMENTS

As noted at the beginning of the SRs, the SRs for each Primary Containment Isolation instrumentation Function are found in the SRs column of Table 3.3.6.1-1.

The Surveillances are modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed. Upon completion of the Surveillance, or expiration of the allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This Note is based on the reliability analysis (Refs. 5 and 6) assumption of the average time required to perform channel surveillance. That analysis demonstrated that the testing allowance does not significantly reduce the probability that the PCIVs will isolate the penetration flow path(s) when necessary. Note 2.b clarifies that the isolation function is maintained for Function 5.c, RWCU Area Differential Temperature-High, provided Function 5.b, RWCU Area Temperature-High is OPERABLE in the affected area.

If the channel is not restored to OPERABLE status or placed in trip within the allowed Completion Time, the associated penetration flow path should be closed. However, if the shutdown cooling function is needed to provide core cooling, the Required Action allows the penetration flow path to remain unisolated provided action is immediately initiated to restore the channel to OPERABLE status. Actions must continue until the channel is restored to OPERABLE status.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

1. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)

Loss of voltage on a 4.16 kV emergency bus indicates that offsite power may be completely lost to the respective emergency bus and is unable to supply sufficient power for proper operation of the applicable equipment. Therefore, the power supply to the bus is transferred from offsite power to EDG power when the voltage on the bus drops below the Loss of Voltage Function Allowable Values (loss of voltage with a short time delay). This ensures that adequate power will be available to the required equipment.

The Bus Undervoltage Allowable Values are low enough to prevent inadvertent power supply transfer, but high enough to ensure that power is available to the required equipment. The Time Delay Allowable Values are long enough to provide time for the offsite power supply to recover to normal voltages, but short enough to ensure that power is available to the required equipment.

Four channels of 4.16 kV Emergency Bus Undervoltage (Loss of Voltage) Function per associated emergency bus are only required to be OPERABLE when the associated EDG is required to be OPERABLE to ensure that no single instrument failure can preclude the EDG function. Refer to LCO 3.8.1, "AC Sources – Operating," ~~and 3.8.2, "AC Sources – Shutdown,"~~ for Applicability Bases for the EDGs.

2. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)

A reduced voltage condition on a 4.16 kV emergency bus indicates that, while offsite power may not be completely lost to the respective emergency bus, available power may be insufficient for starting large ECCS motors without risking damage to the motors that could disable the ECCS function. Therefore, power supply to the bus is transferred from offsite power to onsite EDG power when the voltage on the bus drops below the Degraded Voltage Function Allowable Values (degraded voltage with a time delay). This ensures that adequate power will be available to the required equipment.

The Bus Undervoltage Allowable Values are low enough to prevent inadvertent power supply transfer, but high enough to ensure that sufficient power is available to the required equipment. The Time Delay Allowable Values are long enough

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

to provide time for the offsite power supply to recover to normal voltages, but short enough to ensure that sufficient power is available to the required equipment.

An additional time delay logic for degraded voltage (with LOCA) ensures a more rapid transfer of power from the offsite power system to the onsite power system if a LOCA condition is sensed during sustained degraded voltage. This additional logic ensures that the timing requirements in the accident analysis will be met under degraded voltage conditions.

Four channels of 4.16 kV Emergency Bus Undervoltage (Degraded Voltage) Function per associated bus are only required to be OPERABLE when the associated EDG is required to be OPERABLE to ensure that no single instrument failure can preclude the EDG function. Refer to LCO 3.8.1 ~~and LCO 3.8.2~~ for Applicability Bases for the EDGs.

ACTIONS

A Note has been provided to modify the ACTIONS related to LOP instrumentation channels. Section 1.3, Completion Times, specifies that once a Condition has been entered, subsequent divisions, subsystems, components, or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition. Section 1.3 also specifies that Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable LOP instrumentation channels provide appropriate compensatory measures for separate inoperable channels. As such, a Note has been provided that allows separate Condition entry for each inoperable LOP instrumentation channel.

A.1

With one or more channels of a Function inoperable, the Function may not be capable of performing the intended function (if LOP trip capability is lost, Condition B is also required to be entered). Therefore, 72 hours are allowed to restore the inoperable channel to OPERABLE status. If the inoperable channel cannot be restored to OPERABLE status within the allowable out of service time, Condition B must be entered and its Required Action taken.

BASES

ACTIONS (continued)

The Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. The 72 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of channels.

B.1

If Required Action A.1 and associated Completion Time is not met, or the associated Function is not capable of performing the intended function, the associated EDG(s) is declared inoperable immediately. This requires entry into applicable Conditions and Required Actions of LCO 3.8.1 ~~and LCO 3.8.2,~~ which provide appropriate actions for the inoperable EDG(s).

SURVEILLANCE REQUIREMENTS

As noted at the beginning of the SRs, the SRs for each LOP instrumentation Function are located in the SRs column of Table 3.3.8.1-1.

SR 3.3.8.1.1

S

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

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

SR 3.3.8.1.2

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint

BASES

SURVEILLANCE REQUIREMENTS (continued)

methodology. This SR also ensures the sum of the degraded voltage time delay and the longest time delay of the four associated bus undervoltage relays remains consistent with the plant specific setpoint methodology.

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

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

SR 3.3.8.1.3

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required actuation logic for a specific channel. The system functional testing performed in LCO 3.8.1 ~~and LCO 3.8.2~~ overlaps this Surveillance to provide complete testing of the assumed safety functions.

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

REFERENCES

1. UFSAR, Figure 8.3-8.
2. UFSAR, Section 3.6.
3. UFSAR, Section 6.3.
4. UFSAR, Chapter 15.

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), RPV WATER INVENTORY CONTROL, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

B 3.5.2 Reactor Pressure Vessel (RPV) Water Inventory Control

BASES

BACKGROUND

The RPV contains penetrations below the top of the active fuel (TAF) that have the potential to drain the reactor coolant inventory to below the TAF. If the water level should drop below the TAF, the ability to remove decay heat is reduced, which could lead to elevated cladding temperatures and clad perforation. Safety Limit 2.1.1.3 requires the RPV water level to be above the top of the active irradiated fuel at all times to prevent such elevated cladding temperatures.

APPLICABLE SAFETY ANALYSES

With the unit in MODE 4 or 5, RPV water inventory control is not required to mitigate any events or accidents evaluated in the safety analyses. RPV water inventory control is required in MODES 4 and 5 to protect Safety Limit 2.1.1.3 and the fuel cladding barrier to prevent the release of radioactive material to the environment should an unexpected draining event occur.

considered

A double-ended guillotine break of the Reactor Coolant System (RCS) is not ~~postulated~~ in MODES 4 and 5 due to the reduced RCS pressure, reduced piping stresses, and ductile piping systems. Instead, an event is considered in which ~~single operator error or~~ initiating event allows draining of the RPV water inventory through a single penetration flow path with the highest flow rate, or the sum of the drain rates through multiple penetration flow paths susceptible to a common mode failure (e.g., ~~seismic event,~~ loss of normal power, ~~single human error~~). It is assumed, based on engineering judgment, that while in MODES 4 and 5, one low pressure ECCS injection/spray subsystem can maintain adequate reactor vessel water level.

an

or a

an event that creates a drain path through multiple vessel penetrations located below top of active fuel, such as

As discussed in References 1, 2, 3, 4, and 5, operating experience has shown RPV water inventory to be significant to public health and safety. Therefore, RPV Water Inventory Control satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO

The RPV water level must be controlled in MODES 4 and 5 to ensure that if an unexpected draining event should occur, the reactor coolant water level remains above the top of the active irradiated fuel as required by Safety Limit 2.1.1.3.

The Limiting Condition for Operation (LCO) requires the DRAIN TIME of RPV water inventory to the TAF to be ≥ 36 hours. A DRAIN TIME of 36 hours is considered reasonable to identify and initiate action to mitigate unexpected draining of reactor coolant. An event that could cause loss of RPV water inventory and result in the RPV water level reaching the TAF in greater than 36 hours does not represent a significant challenge to Safety Limit 2.1.1.3 and can be managed as part of normal plant operation.

aligned and

from the control room

One low pressure ECCS ~~injection/spray~~ subsystem is required to be OPERABLE and capable of being ~~manually~~ started to provide defense-in-depth should an unexpected draining event occur. A low pressure ECCS injection/spray subsystem consists of either one Core Spray (CS) subsystem or one Low Pressure Coolant Injection (LPCI) subsystem. Each CS subsystem consists of one motor driven pump, piping, and valves to transfer water from the suppression pool or condensate storage tank (CST) to the RPV. Each LPCI subsystem consists of one motor driven pump, piping, and valves to transfer water from the suppression pool to the RPV. In MODES 4 and 5, the RHR System cross tie valve is not required to be closed.

OPERABILITY of the ECCS injection/spray subsystem includes any necessary valves, instrumentation, or controls needed to manually align and start the subsystem from the control room.

~~The LCO is modified by a Note which allows a required LPCI subsystem to be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned (remote or local) to the LPCI mode and is not otherwise inoperable. Alignment and operation for decay heat removal includes when the required RHR pump is not operating or when the system is realigned from or to the RHR shutdown cooling mode. This allowance is necessary since the RHR System may be required to operate in the shutdown cooling mode to remove decay heat and sensible heat from the reactor. Because of the restrictions on DRAIN TIME, sufficient time will be available following an unexpected draining event to manually align and initiate LPCI subsystem operation to maintain RPV water inventory prior to the RPV water level reaching the TAF.~~ Management of gas voids is important to ECCS injection/spray subsystem OPERABILITY.

BASES

"

APPLICABILITY RPV water inventory control is required in MODES 4 and 5. Requirements on water inventory control in other MODES are contained in LCOs in Section 3.3, Instrumentation, and other LCOs in Section 3.5, ECCS, RPV Water Inventory Control, and RCIC. RPV water inventory control is required to protect Safety Limit 2.1.1.3 which is applicable whenever irradiated fuel is in the reactor vessel.

System."

ACTIONS A.1 and B.1

If the required low pressure ECCS injection/spray subsystem is inoperable, it must be restored to OPERABLE status within 4 hours. In this Condition, the LCO controls on DRAIN TIME minimize the possibility that an unexpected draining event could necessitate the use of the ECCS injection/spray subsystem, however the defense-in-depth provided by the ECCS injection/spray subsystem is lost. The 4 hour Completion Time for restoring the required low pressure ECCS injection/spray subsystem to OPERABLE status is based on engineering judgment that considers the LCO controls on DRAIN TIME and the low probability of an unexpected draining event that would result in loss of RPV water inventory. If the inoperable ECCS injection/spray subsystem is not restored to OPERABLE status within the required Completion Time, action must be initiated immediately to establish a method of water injection capable of operating without offsite electrical power. The method of water injection includes the necessary instrumentation and controls, water sources, and pumps and valves needed to add water to the RPV or refueling cavity should an unexpected draining event occur. The method of water injection may be manually initiated and may consist of one or more systems or subsystems, and must be able to access water inventory capable of maintaining the RPV water level above the TAF for ≥ 36 hours. If recirculation of injected water would occur, it may be credited in determining the necessary water volume.

Make a separate paragraph.

C.1, C.2, and C3

With the DRAIN TIME less than 36 hours but greater than or equal to 8 hours, compensatory measures should be taken to ensure the ability to implement mitigating actions should an unexpected draining event occur. Should a draining event lower the reactor coolant level to below the TAF, there is

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BASES

ACTIONS (continued)

The required verification is an administrative activity and does not require manipulation or testing of equipment.

D.1, D.2, D.3, and D.4

With the DRAIN TIME less than 8 hours, mitigating actions are implemented in case an unexpected draining event should occur. Note that if the DRAIN TIME is less than 1 hour, Required Action E.1 is also applicable.

Required Action D.1 requires immediate action to establish an additional method of water injection augmenting the ECCS injection/spray subsystem required by the LCO. The additional method of water injection includes the necessary instrumentation and controls, water sources, and pumps and valves needed to add water to the RPV or refueling cavity should an unexpected draining event occur. The Note to Required Action D.1 states that either the ECCS injection/spray subsystem or the additional method of water injection must be capable of operating without offsite electrical power. The additional method of water injection may be manually initiated and may consist of one or more systems or subsystems. The additional method of water injection must be able to access water inventory capable of being injected to maintain the RPV water level above the TAF for ≥ 36 hours. The additional method of water injection and the ECCS injection/spray subsystem may share all or part of the same water sources. If recirculation of injected water would occur, it may be credited in determining the required water volume.

Should a draining event lower the reactor coolant level to below the TAF, there is potential for damage to the reactor fuel cladding and release of radioactive material. Additional actions are taken to ensure that radioactive material will be contained, diluted, and processed prior to being released to the environment.

The secondary containment provides a control volume in which fission products can be contained, diluted, and processed prior to release to the environment. Required Action D.2 requires that actions be immediately initiated to establish the secondary containment boundary. With the secondary containment boundary established, one SGT subsystem is capable of maintaining a negative pressure in the secondary containment with respect to the environment.

BASES

ACTIONS (continued)

The secondary containment penetrations form a part of the secondary containment boundary. Required Action D.3 requires that actions be immediately initiated to verify that each secondary containment penetration flow path is isolated or to verify that it can be manually isolated from the control room.

One SGT subsystem is capable of maintaining the secondary containment at a negative pressure with respect to the environment and filter gaseous releases. Required Action D.4 requires that actions be immediately initiated to verify that at least one SGT subsystem is capable of being placed in operation. The required verification is an administrative activity and does not require manipulation or testing of equipment.

E.1

If the Required Actions and associated Completion times of Conditions C or D are not met or if the DRAIN TIME is less than 1 hour, actions must be initiated immediately to restore the DRAIN TIME to ≥ 36 hours. In this condition, there may be insufficient time to respond to an unexpected draining event to prevent the RPV water inventory from reaching the TAF. Note that Required Actions D.1, D.2, D.3, and D.4 are also applicable when DRAIN TIME is less than 1 hour.

SURVEILLANCE REQUIREMENTS

SR 3.5.2.1

This Surveillance verifies that the DRAIN TIME of RPV water inventory to the TAF is ≥ 36 hours. The period of 36 hours is considered reasonable to identify and initiate action to mitigate draining of reactor coolant. Loss of RPV water inventory that would result in the RPV water level reaching the TAF in greater than 36 hours does not represent a significant challenge to Safety Limit 2.1.1.3 and can be managed as part of normal plant operation.

The definition of DRAIN TIME states that realistic cross-sectional areas and drain rates are used in the calculation. A realistic drain rate may be determined using a single, step-wise, or integrated calculation considering the changing RPV water level during a draining event. For a Control Rod RPV penetration flow path with the Control Rod Drive Mechanism removed and not replaced with a blank

BASES

SURVEILLANCE REQUIREMENTS (continued)

flange, the realistic cross-sectional area is based on the control rod blade seated in the control rod guide tube. If the control rod blade will be raised from the penetration to adjust or verify seating of the blade, the exposed cross-sectional area of the RPV penetration flow path is used.

The definition of DRAIN TIME excludes from the calculation those penetration flow paths connected to an intact closed system, or isolated by manual or automatic valves that are ~~locked, sealed, or otherwise secured in the closed position~~, blank flanges, or other devices that prevent flow of reactor coolant through the penetration flow paths. A blank flange or other bolted device must be connected with a sufficient number of bolts to prevent draining ~~in the event of an Operating Basis Earthquake~~. Normal or expected leakage from closed systems or past isolation devices is permitted. Determination that a system is intact and closed or isolated must consider the status of branch lines ~~and ongoing plant maintenance and testing activities~~.

closed and administratively controlled

The Residual Heat Removal (RHR) Shutdown Cooling System is only considered an intact closed system when misalignment issues (Reference 6) have been precluded by functional valve interlocks or by isolation devices, such that redirection of RPV water out of an RHR subsystem is precluded. Further, RHR Shutdown Cooling System is only considered an intact closed system if its controls have not been transferred to Remote Shutdown, which disables the interlocks and isolation signals.

Replace with text from "Insert 1"

The exclusion of penetration flow paths from the determination of DRAIN TIME must consider the potential effects of a single operator error or initiating event on items supporting maintenance and testing (rigging, scaffolding, temporary shielding, piping plugs, snubber removal, freeze seals, etc.). If failure of such items could result and would cause a draining event from a closed system or between the RPV and the isolation device, the penetration flow path may not be excluded from the DRAIN TIME calculation.

Surveillance Requirement 3.0.1 requires SRs to be met between performances. Therefore, any changes in plant conditions that would change the DRAIN TIME requires that a new DRAIN TIME be determined.

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

Insert 1

The exclusion of a single penetration flow path, or multiple penetration flow paths susceptible to a common mode failure, from the determination of DRAIN TIME should consider the effects of temporary alterations in support of maintenance (rigging, scaffolding, temporary shielding, piping plugs, freeze seals, etc.). If reasonable controls are implemented to prevent such temporary alternations from causing a draining event from a closed system, or between the RPV and the isolation device, the effect of the temporary alterations on DRAIN TIME need not be considered. Reasonable controls include, but are not limited to, controls consistent with the guidance in NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Revision 4, NUMARC 91-06, "Guidelines for Industry Actions to Assess Shutdown Management," or commitments to NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants."

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.2.5

The Bases provided for SR 3.5.1.3 is applicable to SR 3.5.2.5.

~~SR 3.5.2.6~~

~~Verifying the correct alignment for manual, power operated, and automatic valves in the required ECCS subsystem flow path provides assurance that the proper flow paths will be available for ECCS operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an initiation signal is allowed to be in a nonaccident position provided the valve will automatically reposition in the proper stroke time. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.~~

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

~~The Note exempts system vent flow paths opened under administrative control. The administrative control should be proceduralized and include stationing a dedicated individual at the system vent flow path who is in continuous communication with the operators in the control room. This individual will have a method to rapidly close the system vent flow path if directed.~~

SR 3.5.2.~~7~~ 6

Verifying that the required ECCS injection/spray subsystem can be manually started and operate for at least 10 minutes demonstrates that the subsystem is available to mitigate a draining event. ~~Testing~~ the ECCS injection/spray subsystem through the ~~recirculation~~ line ~~is necessary~~ to avoid overfilling the refueling cavity. The minimum operating time of 10 minutes was based on engineering judgement.

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

aligned, and the pump

d

This SR is modified by two Notes. Note 1 states that testing

may be done

test return

Note 2 states that credit for meeting the SR may be taken for normal system operation that satisfies the SR, such as using the shutdown cooling mode of RHR for ≥ 10 minutes.

BASES

SURVEILLANCE REQUIREMENTS (continued)

7

SR 3.5.2.8

Verifying that each valve credited for automatically isolating a penetration flow path actuates to the isolation position on an actual or simulated RPV water level isolation signal is required to prevent RPV water inventory from dropping below the TAF should an unexpected draining event occur.

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

8

SR 3.5.2.9

Delete "s"

a

~~The required ECCS subsystem shall be capable of being manually operated. This Surveillance verifies that manual initiation by means of individual component controls will cause the required CS subsystems or LPCI subsystem to start and operate as designed, including pump startup and actuation of all valves to their required positions.~~

can be manually aligned and started from the control room, including any necessary valve alignment, instrumentation, or controls, to transfer water from the suppression pool or CST to the RPV.

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

This SR is modified by a Note that excludes vessel injection/spray during the Surveillance. Since all active components are testable and full flow can be demonstrated by recirculation through the test line, coolant injection into the RPV is not required during the Surveillance.

REFERENCES

1. Information Notice 84-81 "Inadvertent Reduction in Primary Coolant Inventory in Boiling Water Reactors During Shutdown and Startup," November 1984.

2. Information Notice 86-74, "Reduction of Reactor Coolant Inventory Because of Misalignment of RHR Valves," August 1986.

3. Generic Letter 92-04, "Resolution of the Issues Related to Reactor Vessel Water Level Instrumentation in BWRs Pursuant to 10 CFR 50.54(f)," August 1992.

4. NRC Bulletin 93-03, "Resolution of Issues Related to Reactor Vessel Water Level Instrumentation in BWRs," May 1993.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.3.5

The RCIC System is required to actuate automatically in order to verify its design function satisfactorily. This Surveillance verifies that, with a required system initiation signal (actual or simulated), the automatic initiation logic of the RCIC System will cause the system to operate as designed, including actuation of the system throughout its emergency operating sequence; that is, automatic pump startup and actuation of all automatic valves to their required positions. This test also ensures that the RCIC System will automatically restart on an RPV low water level (Level 2) signal received subsequent to an RPV high water level (Level 8) trip and that the suction is automatically transferred from the CST to the suppression pool. The LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.2 overlaps this Surveillance to provide complete testing of the assumed safety function.

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

This SR is modified by a Note that excludes vessel injection during the Surveillance. Since all active components are testable and full flow can be demonstrated by recirculation through the test line, coolant injection into the RPV is not required during the Surveillance.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 33.

2. UFSAR, Section 5.5.6.

3. Memorandum from R.L. Baer (NRC) to V. Stello, Jr. (NRC), "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975.

4. NEDC-32988-A, Revision 2, Technical Justification to Support Risk Informed Modification to Selected Required End States for BWR Plants, December 2002.

BASES

LCO (continued)

or open under administrative controls. Normally closed automatic PCIVs, are required to have isolation times within limits and actuate on an automatic isolation signal. These passive isolation valves and devices are those listed in Reference 2.

Purge valves with resilient seals, secondary containment bypass valves, MSIVs, and hydrostatically tested valves must meet leakage rate requirements in addition to the other PCIV leakage rates which are addressed by LCO 3.6.1.1, "Primary Containment," as Type B or C testing.

This LCO provides assurance that the PCIVs will perform their designed safety functions to minimize the loss of reactor coolant inventory and establish the primary containment boundary during accidents.

APPLICABILITY

In MODES 1, 2, and 3, a DBA could cause a release of radioactive material to primary containment. In MODES 4 and 5, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, PCIVs are not required to be OPERABLE in MODES 4 and 5. ~~Certain valves, however, are required to be OPERABLE when the associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation." (This does not include the valves that isolate the associated instrumentation.)~~

ACTIONS

The ACTIONS are modified by a Note allowing penetration flow path(s) to be unisolated intermittently under administrative controls. These controls consist of stationing a dedicated operator at the controls of the valve, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for primary containment isolation is indicated.

BASES

ACTIONS (continued)

leaking PCIV(s) remain inoperable due to leakage and Condition D remains applicable. Required Action D.2 must also be performed to verify the penetration is isolated on a periodic basis. This is necessary to ensure that primary containment penetrations required to be isolated following an accident are isolated. The Completion Time of "once per 31 days for isolation devices outside primary containment" is appropriate because the devices are operated under administrative controls and the probability of their misalignment is low. For the devices inside primary containment, the time period specified "prior to entering MODE 2 or 3 from MODE 4, if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the devices and other administrative controls ensuring that device misalignment is an unlikely possibility.

Required Action D.2 is modified by three Notes. Note 1 applies to valves and blind flanges located in high radiation areas and allows them to be verified by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of these valves, once they have been verified to be in the proper position, is low. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. Note 3 states that verification that the penetration is isolated applies only to penetration flow paths isolated to restore leakage within limits.

E.1 and E.2

If any Required Action and associated Completion Time cannot be met ~~in MODE 1, 2, or 3~~, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full

BASES

ACTIONS (continued)

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

~~F.1~~

~~If any Required Action and associated Completion Time cannot be met, the unit must be placed in a condition in which the LCO does not apply. If the shutdown cooling function is needed to provide core cooling, the Required Action allows the penetration flow path to remain unisolated provided action is immediately initiated to restore the valve to OPERABLE status. Actions must continue until the valve is restored to OPERABLE status.~~

SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.1

This SR ensures that the drywell and suppression chamber purge system isolation valves (6 inch, 10 inch, 20 inch, and 24 inch) and the containment pressure control valves (1 inch) are closed as required or, if open, open for an allowable reason. If a purge or containment pressure control valve is open in violation of this SR, the valve is considered inoperable. If the inoperable valve is not otherwise known to have excessive leakage when closed, it is not considered to have leakage outside of limits. Primary containment purge and containment pressure control valves are only required to be closed in MODES 1, 2, and 3 (i.e., no isolation instrumentation functions of LCO 3.3.6.1 are required to be OPERABLE for isolation of these valves outside of MODES 1, 2, and 3). If a LOCA inside primary containment occurs in these MODES, the purge valves may not be capable of closing before the pressure pulse affects systems downstream of the purge valves. At other times (e.g., during handling of irradiated fuel), pressurization concerns are not present and the purge and containment pressure control valves are allowed to be open. The SR is modified by a Note stating that the SR is not required to be met when the purge or containment pressure control valves are open for the stated reasons. The Note states that these

SURVEILLANCE REQUIREMENTS (continued)

valves may be opened for inerting, de-inerting, pressure control, ALARA or air quality considerations for personnel entry, or Surveillances that require the valves to be open. The purge valves (6 inch, 10 inch, 20 inch, and 24 inch) and the containment pressure control valves (1 inch) are capable of closing in the environment following a LOCA. Therefore, these valves are allowed to be open for limited periods of time. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.6.1.3.2

This SR verifies that each primary containment isolation manual valve and blind flange that is located outside primary containment and is not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside the primary containment boundary is within design limits.

This SR does not require any testing or valve manipulation. Rather, it involves verification that those PCIVs outside primary containment, and capable of being mispositioned, are in the correct position. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

Two Notes have been added to this SR. The first Note allows valves and blind flanges located in high radiation areas to be verified by use of administrative controls. Allowing verification by administrative controls is considered acceptable since access to these areas is typically restricted during MODES 1, 2, and 3 for ALARA reasons. Therefore, the probability of misalignment of these PCIVs, once they have been verified to be in the proper position, is low. A second Note has been included to clarify that PCIVs that are open under administrative controls are not required to meet the SR during the time that the PCIVs are open. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position since these were verified to be in the correct position upon locking, sealing, or securing.

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.3.5

Verifying the isolation time of each power operated automatic PCIV is within limits is required to demonstrate OPERABILITY. MSIVs may be excluded from this SR since MSIV full closure isolation time is demonstrated by SR 3.6.1.3.7. The isolation time test ensures that the valve will isolate in a time period less than or equal to that assumed in the safety analyses. The isolation time and Frequency of this SR are in accordance with the requirements of the INSERVICE TESTING PROGRAM.

SR 3.6.1.3.6

For primary containment purge valves with resilient seals (6 inch, 10 inch, 20 inch, and 24 inch), additional leakage rate testing beyond the test requirements of 10 CFR 50, Appendix J, Option B (Ref. 3), is required to ensure OPERABILITY. This will ensure that leakage is $\leq$ 0.05 La when tested at Pa. Operating experience has demonstrated that this type of seal has the potential to degrade in a shorter time period than do other seal types. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

Additionally, this SR must be performed once within 92 days after opening the valve. The 92 day Frequency was chosen recognizing that cycling the valve could introduce additional seal degradation (beyond that which occurs to a valve that has not been opened). Thus, performing this SR within 92 days is a prudent measure after a valve has been opened.

The primary containment purge valves are only required to meet leakage rate testing requirements in MODES 1, 2, and 3. (i.e., no isolation instrumentation functions of LCO 3.3.6.1 are required to be OPERABLE for purge system isolation outside of MODES 1, 2, and 3). If a LOCA inside primary containment occurs in these MODES, purge valve leakage must be minimized to ensure offsite radiological release is within limits. At other times (e.g., during handling of irradiated fuel), pressurization concerns are not present and the purge valves are not required to meet any specific leakage criteria.

SURVEILLANCE REQUIREMENTS (continued)

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

SR 3.6.1.3.10

The TIP shear isolation valves are actuated by explosive charges. An in place functional test is not possible with this design. The explosive squib is removed and tested to provide assurance that the valves will actuate when required. The replacement charge for the explosive squib shall be from the same manufactured batch as the one fired or from another batch that has been certified by having one of the batch successfully fired. No squib will remain in service beyond the expiration of its shelf life or its operating life. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.6.1.3.11

This SR ensures that the leakage rate of secondary containment bypass leakage paths is $\leq$ 0.10 L_a. This provides assurance that the assumptions in the radiological evaluations of Reference 1 are met. The leakage rate of each bypass leakage path is assumed to be the maximum pathway leakage (leakage through the worse of the two isolation valves) unless the penetration is isolated by use of one closed and de-activated automatic valve, closed manual valve, or blind flange. In this case, the leakage rate of the isolated bypass leakage path is assumed to be the actual pathway leakage through the isolation device. If both isolation valves in the penetration are closed, the actual leakage rate is the lesser leakage rate of the two valves. The frequency is required by the Primary

BASES

SURVEILLANCE REQUIREMENTS (continued)

Containment Leakage Rate Testing Program. This SR simply imposes additional acceptance criteria. Additionally, some secondary containment bypass paths (refer to UFSAR 6.2.1.2.2.3) use non-PCIVs and therefore are not addressed by the testing Frequency of 10 CFR 50, Appendix J, testing. To address the testing for these valves, the Frequency also includes a requirement to be in accordance with the INSERVICE TESTING PROGRAM.

Secondary containment bypass leakage is also considered part of L_a.

SR 3.6.1.3.12

The analyses in References 1 and 4 are based on leakage that is less than the specified leakage rate. Leakage through all four main steam lines must be ≤ 250 scfh, and ≤ 100 scfh for any one steam line, when tested at ≥ P_t (25 psig). This leakage test is performed in lieu of 10 CFR 50, Appendix J, Type C test requirements, based on an exemption to 10 CFR 50, Appendix J. MSIVs have separate leakage limits, and the dose consequence of this leakage path is evaluated separately and added to those calculated from primary containment L_a leakage, including secondary containment bypass leakage. As such, this leakage is not combined with the Type B and C leakage rate totals. The Frequency is required by the Primary Containment Leakage Rate Testing Program.

SR 3.6.1.3.13

Surveillance of hydrostatically tested lines provides assurance that the calculation assumptions of Reference 4 are met. The acceptance criteria for the combined leakage of all hydrostatically tested lines is 1 gpm times the number of valves per penetration, not to exceed 3 gpm, when tested at 1.1 P_a (≥ 62.2 psig). Additionally, a combined leakage rate limit of ≤ 5 gpm when tested at 1.1 P_a (≥ 62.2 psig) is applied for all hydrostatically tested PCIVs that penetrate containment. The combined leakage rates must be demonstrated in accordance with the leakage rate test Frequency required by Primary Containment Leakage Rate Testing Program.

~~This SR has been modified by a Note that states that these valves are only required to meet the combined leakage rate~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~in MODES 1, 2, and 3, since this is when the Reactor Coolant System is pressurized and primary containment is required.~~

~~In some instances, the valves are required to be capable of automatically closing during MODES other than MODES 1, 2, and 3. However, specific leakage limits are not applicable in these other MODES or conditions.~~

REFERENCES

1. UFSAR, Chapter 15.

2. UFSAR, Table 6.2-2.

3. 10 CFR 50, Appendix J, Option B.

4. UFSAR, Section 6.2.

5. UFSAR, Section 15.6.2.

6. GE BWROG B21-00658-01, " Excess Flow Check Valve Testing Relaxation," dated November 1998.

7. Technical Requirements Manual, Section TR 3.6.3

BASES

LCO

One offsite circuit capable of supplying the onsite Class 1E power distribution subsystem(s) of LCO 3.8.8, "Distribution Systems-Shutdown," ensures that all required loads are capable of being powered from offsite power. An OPERABLE Division of onsite power, consisting of two EDGs associated with Distribution System Engineered Safety Feature (ESF) buses required OPERABLE by LCO 3.8.8, ensures that a diverse power source is available for providing electrical power support ~~assuming a loss of the offsite circuit. Together, OPERABILITY of the required offsite circuit and~~ EDGs ensures the availability of sufficient AC sources to operate the plant in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents involving recently irradiated fuel).

the ability to manually start

The qualified offsite circuit(s) must be capable of maintaining rated frequency and voltage while connected to their respective ESF bus(es), and of accepting required loads during an accident. Qualified offsite circuits are those that are described in the UFSAR and are part of the licensing basis for the unit. The offsite circuit consists of incoming breakers and disconnect to the station service 64 or 65 transformer, and the respective circuit path including feeder breakers to all 4.16 kV ESF buses required by LCO 3.8.8.

being manually started

The required EDGs must be capable of ~~starting~~, accelerating to rated speed and voltage, connecting to their respective ESF buses ~~on detection of bus undervoltage~~, and accepting required loads. ~~This sequence must be accomplished within 10 seconds. Each EDG must also be capable of accepting required loads within the assumed loading sequence intervals, and must continue to operate until offsite power can be restored to the ESF buses. These capabilities are required to be met from a variety of initial conditions such as EDG in standby with engine hot and EDG in standby with engine at ambient conditions.~~

~~Proper sequencing of loads, including tripping of nonessential loads, is a required function for EDG OPERABILITY.~~

It is acceptable for divisions to be cross tied during shutdown conditions, permitting a single offsite power circuit to supply all required divisions.

BASES

ACTIONS (Continued)

immediately entered. This Note allows Condition A to provide requirements for the loss of the offsite circuit whether or not a division is de-energized. LCO 3.8.8 provides the appropriate restrictions for the situation involving a de-energized division.

SURVEILLANCE REQUIREMENTS

SR 3.8.2.1

SR 3.8.2.1 requires the SRs from LCO 3.8.1 that are necessary for ensuring the OPERABILITY of the AC sources in other than MODES 1, 2, and 3. SR 3.8.1.18 is excepted because starting independence is not required with the EDGs that are not required to be OPERABLE. Refer to the corresponding Bases for LCO 3.8.1 for a discussion of each SR.

SR 3.8.1.7, SR 3.8.1.10, SR 3.8.1.11, SR 3.8.1.12, SR 3.8.1.14, SR 3.8.1.16, and SR 3.8.1.17 are not required to be met because EDG start and load within a specified time and response on an offsite power or ECCS initiation signal is not required.

which precludes

This SR is modified by a Note. ~~The reason for the Note is to preclude~~ requiring the OPERABLE EDGs from being paralleled with the offsite power network or otherwise rendered inoperable during the performance of SRs, and to preclude deenergizing a required 4160 V ESF bus or disconnecting a required offsite circuit during performance of SRs. With limited AC sources available, a single event could compromise both the required circuit and a required EDG. It is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when the EDGs and offsite circuit are required to be OPERABLE.

REFERENCES None.