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November 25, 2013

PG&E Letter DCL-13-106

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

10 CFR 50.90

Diablo Canyon Units 1 and 2
Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
License Amendment Request 13-02
Revision to Technical Specifications to Adopt Risk Informed Completion Times
TSTF-505, Revision 1, "Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4B"

Dear Commissioners and Staff:

In accordance with the provisions of Section 50.90 of Title 10 of the Code of Federal Regulations (10 CFR 50.90), Pacific Gas and Electric Company (PG&E) is submitting a request for an amendment to the Technical Specifications (TS) for Diablo Canyon Units 1 and 2.

The proposed amendment would modify TS requirements to permit the use of Risk Informed Completion Times in accordance with Technical Specifications Task Force (TSTF)-505, Revision 1, "Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b." The availability of this TS improvement was announced in the Federal Register on March 15, 2012 (77 FR 15399).

The Enclosure provides a description and assessment of the proposed change, the requested confirmation of applicability, and plant-specific verifications. Attachment 1 to the Enclosure provides the existing TS pages marked up to show the proposed changes. Attachment 2 to the Enclosure provides revised (clean) TS pages. Attachment 3 to the Enclosure provides existing TS Bases pages marked up to show the proposed changes.

This communication contains new regulatory commitments (as defined by NEI 99-04) to be implemented, which are identified in Attachment 4 to the Enclosure.

Attachments 5 - 16 to the Enclosure provide information identified to support implementation of TSTF-505.

PG&E requests approval of the proposed license amendment by November 30, 2014, with the amendment being implemented within 120 days.

In accordance with 10 CFR 50.91(b)(1), "Notice for Public Comment; State Consultation," a copy of this application, with attachments, is being provided to the California Department of Public Health.

If you have any questions or require additional information, please contact Mr. Tom Baldwin at 805-545-4720.

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

Executed on November 25, 2013.

Sincerely,

Barry S. Allen

Barry S. Allen
Site Vice President

kjse/4328
Enclosure
cc: Diablo Distribution
cc/enc: Thomas R. Hipschman, NRC Senior Resident Inspector
Gonzalo L. Perez, Branch Chief, California Department of Public Health
Jennivine K. Rankin, NRR Project Manager
Steven A. Reynolds, NRC Region IV

Evaluation of the Proposed Change

License Amendment Request 13-02
Revision to Technical Specifications to Adopt
Risk Informed Completion Times TSTF-505, Revision 1,
"Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4B"

ATTACHMENTS:

1. Proposed Technical Specification Change(s)
2. Revised Technical Specification Page(s)
3. Technical Specification Bases Change(s)
4. List of Regulatory Commitments
5. List of Revised Required Actions to Corresponding Probabilistic Risk Assessment (PRA) Functions
6. Information Supporting Consistency with Regulatory Guide 1.200, Revision 2
7. Information Supporting Technical Adequacy of Probabilistic Risk Assessment (PRA) Models Without PRA Standards Endorsed by Regulatory Guide 1.200, Revision 2 (Not Applicable)
8. Information Supporting Justification of Excluding Sources of Risk Not Addressed by the Diablo Canyon Probabilistic Risk Assessment (PRA) Models
9. Baseline Core Damage Frequency (CDF) and Large Early Release Frequency (LERF)
10. Justification of Application of At-Power Probabilistic Risk Assessment Models to Shutdown Modes (Not Applicable)
11. Probabilistic Risk Assessment (PRA) Model Update Process
12. Attributes of the Configuration Risk Management Program (CRMP) Model
13. Key Assumptions and Sources of Uncertainty
14. Program Implementation
15. Monitoring Program
16. Risk Management Action Examples

1.0 DESCRIPTION

The proposed amendment would modify the Technical Specification (TS) requirements related to Completion Times (CTs) for Required Actions (RAs) to provide the option to calculate a longer, risk-informed CT (RICT). A new program, the Risk-Informed Completion Time Program, is added to TS Section 5 Administrative Controls.

The methodology for using the RICT Program is described in NEI 06-09, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," Revision 0, which was approved by the NRC on May 17, 2007. Adherence to NEI 06-09 is required by the RICT Program, and Pacific Gas and Electric Company (PG&E) is not proposing any deviations from the NEI guidance.

The proposed amendment is consistent with Technical Specifications Task Force (TSTF) traveler TSTF-505, Revision 1, "Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b." However, only those RAs described in Attachment 5 to this Enclosure are proposed to be changed. Attachment 5 does not include all of the modified RAs in TSTF-505 and includes some plant-specific RAs not included in TSTF-505.

2.0 ASSESSMENT

2.1 Applicability of Published Safety Evaluation

PG&E has reviewed the model safety evaluation dated March 6, 2012, as part of the Federal Register Notice for Comment. This review included a review of the Nuclear Regulatory Commission (NRC) staff's evaluation, as well as the supporting information provided to support TSTF-505 and the safety evaluation for NEI 06-09. PG&E has concluded that the technical basis presented in the TSTF-505 proposal and the associated model safety evaluation prepared by the NRC staff are applicable to Diablo Canyon Units 1 and 2 and support incorporation of this amendment in the Diablo Canyon Power Plant (DCPP) TS.

2.2 Verifications and Regulatory Commitments

In accordance with Section 4.0, Limitations and Conditions, of the safety evaluation for NEI 06-09, the following is provided:

1. Attachment 5 to this Enclosure identifies each of the TS RAs to which the RICT Program will apply, with a comparison of the TS functions to the functions modeled in the PRA of the structures, systems and components (SSCs) subject to those actions.

2. Attachment 6 to this Enclosure provides a discussion of the results of peer reviews and self-assessments conducted for the plant-specific PRA models which support the RICT Program, as required by Regulatory Guide (RG) 1.200 Section 4.2.

3. Attachment 7 to this Enclosure is not applicable since each PRA model used for the RICT Program is addressed using a standard endorsed by the NRC.

4. Attachment 8 to this Enclosure provides appropriate justification for excluding sources of risk not addressed by the PRA models.

5. Attachment 9 to this Enclosure provides the plant-specific baseline CDF and LERF to confirm that the potential risk increases allowed under the RICT Program are acceptable.

6. Attachment 10 to this Enclosure is not applicable since the RICT Program is not being applied to shutdown modes.

7. Attachment 11 to this Enclosure provides a discussion of the programs and procedures that assure the PRA models that support the RICT Program are maintained consistent with the as-built, as-operated plant.

8. Attachment 12 to this Enclosure provides a description of how the baseline PRA model, which calculates average annual risk, is evaluated and modified for use in the CRMP to assess real-time configuration risk, and describes the scope of, and quality controls applied to, the CRMP.

9. Attachment 13 to this Enclosure provides a discussion of how the key assumptions and sources of uncertainty in the PRA models were identified for this application, and how their impact on the RICT Program was assessed and dispositioned.

10. Attachment 14 to this Enclosure provides a description of the implementing programs and procedures regarding the plant staff responsibilities for the RICT Program, including risk management action (RMA) implementation.

11. Attachment 15 to this Enclosure provides a description of the implementation and monitoring program as described in NEI 06-09, Section 2.3.2, Step 7.

12. Attachment 16 to this Enclosure provides a description of the process to identify RMAs, including specific example RMAs.

2.3 Optional Changes and Variations

Table 1 identifies each limiting condition of operation (LCO) and RA of TSTF-505 and the corresponding Diablo Canyon plant-specific LCO and RA. Any differences between the plant-specific TS and TSTF-505 are identified and a justification provided.

In general, the DCPP TS are the same as the Standard TS for Westinghouse designed nuclear steam supply system plants on which TSTF-505 was based, but some TS have different numbering or titles. TSTF-505 also has different options available based on the plant-specific design considerations. TSTF-505 also includes TS with MODE 3 and 4 applicability, which Diablo Canyon is not adopting at this time. These editorial differences are not considered optional changes or variations, and do not affect the applicability of TSTF-505 to the DCPP TS.

DCPP TS do not have all of the LCOs and conditions in the scope of TSTF-505. Such cases are identified as variations in Table 1.

There are some plant-specific changes necessary to accommodate implementation of TSTF-505 for the existing DCPP TS structure, as well as some plant-specific TS requirements for which the RICT Program is proposed to apply, and some TSTF-505 conditions where Diablo Canyon is not proposing to apply the RICT Program. These are identified as variations in Table 1.

PG&E has identified four generic issues with TSTF-505 (one affects only the TS Bases), which must be corrected for Diablo Canyon to implement the RICT Program correctly. These are not considered variations since they are not plant-specific issues but rather issues with the TSTF-505 structure, and are identified as editorial changes in Table 1. (Note that TSTF-505 also has spelling and grammar errors which have been corrected in the plant-specific TS markups; these are not identified as changes in Table 1.)

- TS 3.3.1 Functions 6, 7, 8A, 8B, 9, 10, 12, 13, 14, 17, 19, 20, and 21 in Table 3.3-1 of TSTF-505 only identify the Condition associated with one channel inoperable, but do not identify the new Conditions applicable for the RICT Program which address more than one channel inoperable. PG&E is proposing to include these additional Conditions to correct this apparent oversight in TSTF-505.

- TS 3.7.2 for main steam isolation valves (MSIV) in TSTF-505 provides for unlimited operation in MODE 2 with one or more inoperable MSIVs provided the inoperable MSIVs are closed. The Condition applicable in MODE 1 for two or more inoperable MISVs (Condition C) requires a shutdown to MODE 4 if the MSIVs are not restored to operable. This structure is not correct, since once MODE 1 is exited, operation in MODE 2 is permitted allowing continued operation in MODE 2 with MSIVs inoperable but closed. In order to establish the correct structure for the DCPP TS, PG&E is proposing that the existing MODE 2 shutdown condition, applicable when one MSIV is inoperable in MODE 1, be made the subsequent action when two or more MSIVs are inoperable in MODE 1. The order of Conditions B and C in TSTF-505 is swapped to make the TS structure logically correct.

- TS 3.8.9 Condition D is a new Condition in TSTF-505 which specifically addresses loss of safety function due to multiple inoperable distribution subsystems – Conditions involving a loss of a safety function are prohibited from applying the RICT Program per the NEI guidance. Further, the other Conditions (A, B, and C) are modified by TSTF-505 to address more than one inoperable distribution subsystem, so adopting TSTF-505 Condition D is considered unnecessary. Therefore, PG&E is not proposing to adopt this Condition.

- The TSTF-505 bases have typographical errors and differences in wording for similar actions. The plant-specific bases, provided for information in Attachment 3, correct these errors, and use common phrasing for similar actions to avoid potential confusion in implementation.

There are four plant-specific conditions for which PG&E is proposing to apply the RICT Program. These conditions are variations as identified in Table 1 with additional detailed justification provided below:

- TS 3.3.1, Function 14B, Condition X (renumbered to JJ) and TS 3.3.2 Function 6D2 Condition M (renumbered to V) address steam generator (SG) Water Level – Low Low Trip Time Delay. These are separate plant-specific conditions not found in the Standard TS or TSTF-505. RA X.2 (renumbered to JJ.2) and M.2 (renumbered V.2) place the affected channel in trip, which is the same action as Functions 14A and 6D1, which address channel inoperability for other causes. Since the TSTF-505 equivalent of Functions 14A and 6D1 are in scope, PG&E is proposing to apply the RICT Program to TS 3.3.1 Function 14B and TS 3.3.2 Function 6D2.

- TS 3.3.2, Function 7, Condition K (renumbered to S) addresses the Residual Heat Removal Pump Trip on Refueling Water Storage Tank Level – Low. This is a plant-specific function and condition not found in the Standard TS or TSTF-505. RA K.1.2 (renumbered S.2) is to restore the channel to operable status. Since similar required actions for other functions are in the TSTF-505 scope, PG&E is proposing to apply the RICT Program to TS 3.3.2 Function 7, and to also include a condition to address two or more inoperable channels, consistent with other similar functions in TSTF-505.

- TS 3.6.6 addresses containment cooling systems (containment sprays and containment fan cooling units (CFCUs)). The Diablo Canyon plant-specific design has five CFCUs instead of the two trains assumed in Standard TS and TSTF-505, and thus has additional plant-specific Conditions involving unique combinations of CFCUs and/or spray trains inoperable. PG&E is proposing to apply the RICT Program to the plant-specific RAs involving restoring the inoperable equipment to OPERABLE status.

- TS 3.8.1 addresses the electric power systems including the diesel generators (DGs). Diablo Canyon plant-specific design has a shared fuel oil system, and the TS include Conditions F and G which address inoperability of the shared fuel oil system. PG&E is proposing to apply the RICT Program to the plant-specific RAs involving restoring the inoperable shared fuel oil equipment to OPERABLE status.

Finally, two TS have plant-specific RAs which differ from TSTF-505, which are proposed to be changed to be consistent with TSTF-505 to better accommodate implementation.

- TS 3.5.2 addresses Emergency Core Cooling Systems (ECCS) and includes separate RAs (A.1 and A.2.1, 2, and 3) for planned and unplanned Condition Entry. These changes were approved by the NRC in License Amendments 203 (Unit 1) and 202 (Unit 2) in December, 2008. The plant-specific RAs in A.2 provide a 14-day CT for unplanned maintenance when only one subsystem of the ECCS is inoperable, and no common cause failure exists in the redundant susbsystem, compared to a 72-hour CT in TSTF-505. A note specifies the applicability of RAs A.1 and A.2.1, 2, and 3, and the Condition also has a restriction that 100 percent of the flow equivalent to a single OPERABLE ECCS train must be available. PG&E proposes to adopt the TSTF-505 structure by eliminating the extended 14-day CT of RAs A.2.1, 2, and 3, and the associated note and condition restriction.
- TS 3.6.6 addresses Containment Spray and Cooling Systems and includes separate RAs (A.1 and A.2) for planned and unplanned Condition Entry. These changes were approved by NRC in TS License Amendments 203 (Unit 1) and 202 (Unit 2) in December, 2008. The plant-specific RA A.2 provides a 14-day CT for unplanned maintenance when one Containment Spray train is inoperable, compared to a 72-hour CT in TSTF-505. A note specifies the applicability of RAs A.1 and A.2. PG&E proposes to adopt the TSTF-505 structure by eliminating the extended 14-day CT of RA A.2 and the associated note.

Table 1

TSTF-505 LCO / RA	DCPP LCO / RA (if different)	NOTES
3.3.1 Function 1 Condition B, C		
3.3.1 Function 1 Condition D, E	N/A	OPTIONAL CHANGE: This RA has MODE 3 - 5 applicability only; PG&E is not proposing to apply the RICT Program in MODES 3 - 5. Renumbering of condition is the only change.
3.3.1 Function 2A Condition F, G	3.3.1 Function 2A Condition E, F	EDITORIAL: DCPP TS for Function 2A do not include the Standard TS optional RAs (F.1.1 and F.1.2) to reduce reactor power below 75% with one power range high flux channel inoperable, which changes the numbering of RAs to which the RICT Program applies.
3.3.1 Function 2B Condition H, I	3.3.1 Function 2B Condition G, H	
3.3.1 Function 3A Condition H, I	3.3.1 Function 3 Condition G, H	EDITORIAL: DCPP TS Function 3A is numbered as 3.
3.3.1 Function 3B Condition H, I	N/A	VARIATION: DCPP TS do not have Function 3B.
3.3.1 Function 4 Condition J, K	3.3.1 Function 4 Condition I, J	EDITORIAL: Renumbering of conditions is the only change.
3.3.1 Function 5 Condition L, M, N	3.3.1 Function 5 Condition K, L, O	EDITORIAL: Renumbering of conditions is the only change.
3.3.1 Condition O	3.3.1 Condition N	EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.
	3.3.1 Function 5 Condition O	EDITORIAL: Renumbering of plant-specific condition is the only change.

Table 1		
TSTF-505 LCO / RA	**DCPP LCO / RA (if different)**	**NOTES**
3.3.1 Function 6 Condition H	3.3.1 Function 6 Condition G, H	EDITORIAL: TSTF-505 condition addressing more than one inoperable channel should apply to this function.
3.3.1 Function 7 Condition H	3.3.1 Function 6 Condition G, H	EDITORIAL: TSTF-505 condition addressing more than one inoperable channel should apply to this function.
3.3.1 Function 8A Condition P	3.3.1 Function 8A Condition P, Q	EDITORIAL: TSTF-505 condition addressing more than one inoperable channel should apply to this function. EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.
3.3.1 Function 8B Condition H	3.3.1 Function 8B Condition G, H	EDITORIAL: TSTF-505 condition addressing more than one inoperable channel should apply to this function.
3.3.1 Function 9 Condition P	3.3.1 Function 9 Condition P, Q	EDITORIAL: TSTF-505 condition addressing more than one inoperable channel should apply to this function.
3.3.1 Function 10 Condition P	3.3.1 Function 10 Condition P, Q	EDITORIAL: TSTF-505 condition addressing more than one inoperable channel should apply to this function.
3.3.1 Condition R		
3.3.1 Function 11A Condition S, T	N/A	VARIATION: DCPP TS do not have Function 11A.
3.3.1 Condition U	N/A	VARIATION: DCPP TS do not have Function 11A.
3.3.1 Function 11B Condition V, W	3.3.1 Function 11 Condition S, T	EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.
3.3.1 Condition X	3.3.1 Condition U	EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.

Table 1		
TSTF-505 LCO / RA	**DCPP LCO / RA (if different)**	**NOTES**
3.3.1 Function 12 Condition P	3.3.1 Function 12 Condition P, Q	EDITORIAL: TSTF-505 condition addressing more than one inoperable channel should apply to this function.
3.3.1 Function 13 Condition P	3.3.1 Function 13 Condition P, Q	EDITORIAL: TSTF-505 condition addressing more than one inoperable channel should apply to this function.
3.3.1 Function 14 Condition H	3.3.1 Function 14A Condition G, H	EDITORIAL: TSTF-505 condition addressing more than one inoperable channel should apply to this function.
	3.3.1 Function 14B Condition JJ	VARIATION: DCPP TS has a separate function for channel trip time delay (14B) and other inoperabilities (14A); RA for placing channel in trip is the same for both conditions, and so the RICT is applied to both actions.
3.3.1 Function 15 Condition H	N/A	VARIATION: DCPP TS do not have Function 15.
3.3.1 Function 16A Condition Y, Z	3.3.1 Function 16A Condition V, W	EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.
3.3.1 Function 16B Condition Y, Z	3.3.1 Function 16B Condition X	EDITORIAL: DCPP TS have separate conditions for low pressure auto stop oil trip, and single condition for one or more turbine stop valve inputs, resulting in differing numbering.
3.3.1 Condition AA	3.3.1 Condition Y	EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.
3.3.1 Function 17 Condition BB	3.3.1 Function 17 Condition Z, AA	EDITORIAL: TSTF-505 condition addressing more than one inoperable channel should apply to this function. EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.

Table 1

TSTF-505 LCO / RA	DCPP LCO / RA (if different)	NOTES
3.3.1 Function 18A and E Condition FF	3.3.1 Function 18A and E Condition DD	EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.
3.3.1 Function 18B, C, D, and F Condition GG	3.3.1 Function 18B, C, D, and F Condition EE	EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.
3.3.1 Condition HH	3.3.1 Condition FF	EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.
3.3.1 Function 19 Condition DD, EE	3.3.1 Function 19 Condition BB, CC	EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.
3.3.1 Function 19 Condition D	N/A	OPTIONAL CHANGE: This RA has MODE 3 - 5 applicability only; PG&E is not proposing to apply the RICT Program in MODES 3 - 5. Renumbering of condition is the only change.
3.3.1 Function 20 Condition II	3.3.1 Function 20 Condition GG,HH	EDITORIAL: TSTF-505 condition addressing more than one inoperable channel should apply to this function. EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.
3.3.1 Function 20 Condition D	N/A	OPTIONAL CHANGE: This RA has MODE 3 - 5 applicability only; PG&E is not proposing to apply the RICT Program in MODES 3 - 5. Renumbering of condition is the only change.
3.3.1 Function 21 Condition BB	3.3.1 Function 21 Condition Z, AA	EDITORIAL: TSTF-505 condition addressing more than one inoperable channel should apply to this function. EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.

Table 1

TSTF-505 LCO / RA	DCPP LCO / RA (if different)	NOTES
3.3.1 Function 21 Condition D	N/A	OPTIONAL CHANGE: This RA has MODE 3 - 5 applicability only; PG&E is not proposing to apply the RICT Program in MODES 3 - 5. Renumbering of condition is the only change.
	3.3.1 Function 22 Condition II	EDITORIAL: Renumbering of plant-specific condition is the only change.
3.3.1 Condition KK		
3.3.2 Function 1A Condition B, C		
3.3.2 Function 1B Condition D, E		
3.3.2 Function 1C Condition F, G	3.3.2 Function 1C Condition X, Y	EDITORIAL: Plant-specific TS condition and RA differs from TSTF-505 only due to the details of the note applicable for channel testing.
3.3.2 Function 1D Condition F, G		
3.3.2 Function 1E1 Condition F, G		
3.3.2 Function 1E2 Condition F, G	N/A	VARIATION: DCPP TS do not have Function 1E2.
3.3.2 Function 1F Condition F, G	N/A	VARIATION: DCPP TS do not have Function 1F.
3.3.2 Function 1G Condition F, G	N/A	VARIATION: DCPP TS do not have Function 1G.
3.3.2 Function 2A Condition B, C		
3.3.2 Function 2B Condition D, E		

Table 1

TSTF-505 LCO / RA	DCPP LCO / RA (if different)	NOTES
3.3.2 Function 2C Condition H, I	3.3.2 Function 2C1 Condition Z, AA	EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only. EDITORIAL: Plant-specific TS condition and RA differs from TSTF-505 only due to the details of the note applicable for channel testing.
3.3.2 Function 2D Condition H, I	N/A	VARIATION: DCPP TS do not have Function 2D.
3.3.2 Function 3A1 Condition B, C		
3.3.2 Function 3A2 Condition D, E		
3.3.2 Function 3B1 Condition B, C		
3.3.2 Function 3B2 Condition D, E		
3.3.2 Function 3B3 Condition H, I	3.3.2 Function 3B3 Condition Z, AA	EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only. EDITORIAL: Plant-specific TS condition and RA differs from TSTF-505 only due to the details of the note applicable for channel testing.
3.3.2 Function 4A Condition J, K	N/A	VARIATION: DCPP TS Function 4A has a plant-specific RA to declare the affected MSIV inoperable after 48 hours. Since the MSIV TS has the RICT Program applicable, PG&E does not propose to apply the RICT Program to TS 3.3.2 Function 4A. Renumbering of plant-specific condition is the only change.
3.3.2 Function 4B Condition L, M	3.3.2 Function 4B Condition K, L	EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.

Table 1		
TSTF-505 LCO / RA	**DCPP LCO / RA (if different)**	**NOTES**
3.3.2 Function 4C Condition F, G	3.3.2 Function 4C Condition H, I	EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.
3.3.2 Function 4D1 Condition F, G		
3.3.2 Function 4D2 Condition F, G	N/A	OPTIONAL CHANGE: This function has MODE 3 applicability only; PG&E is not proposing to apply the RICT Program in MODE 3. Renumbering of plant-specific condition is only change.
3.3.2 Function 4E Condition F, G	N/A	VARIATION: DCPP TS do not have Function 4E.
3.3.2 Function 4F Condition F, G	N/A	VARIATION: DCPP TS do not have Function 4F.
3.3.2 Function 4G Condition F, G	N/A	VARIATION: DCPP TS do not have Function 4G.
3.3.2 Function 4H Condition F, G	N/A	VARIATION: DCPP TS do not have Function 4H.
3.3.2 Function 5A Condition N, O, L, M	3.3.2 Function 5A Condition M, N	OPTIONAL CHANGE: DCPP TS has a plant-specific end state of MODE 3, so Conditions N, O are applicable and not L, M. TSTF-505 accommodates the plant-specific end state as an option. Plant-specific TS differs from TSTF-505 in numbering only.
3.3.2 Function 5B Condition P, Q, F, G	3.3.2 Function 5B Condition R, S	OPTIONAL CHANGE: DCPP TS has a plant-specific end state of MODE 3, so Conditions P, Q (plant-specific numbering R, S) are applicable and not F, G. TSTF-505 accommodates the plant-specific end state as an option. Plant-specific TS differs from TSTF-505 in numbering only.
	3.3.2 Function 6A Condition W	EDITORIAL: Renumber of plant-specific condition is the only change.

Table 1

TSTF-505 LCO / RA	DCPP LCO / RA (if different)	NOTES
3.3.2 Function 6A Condition L, M	3.3.2 Function 6B Condition K, L	EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.
3.3.2 Function 6B Condition L, M	N/A	VARIATION: DCPP TS do not have Function 6B.
3.3.2 Function 6C Condition F, G	3.3.2 Function 6D1 Condition F, G	EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.
	3.3.2 Function 6D2 Condition V	VARIATION: DCPP TS has a separate function for channel trip time delay (6D2) and other inoperabilities (6D1); RA for placing channel in trip is the same for both conditions, and so the RICT is applied to both actions.
3.3.2 Function 6E Condition J, K	N/A	VARIATION: DCPP TS do not have Function 6E.
3.3.2 Function 6F Condition P, Q	3.3.2 Function 6G Condition O, P	EDITORIAL: Plant-specific TS differs from TSTF-505 in numbering only.
3.3.2 Function 6G Condition R, S	N/A	VARIATION: DCPP TS do not have Function 6G.
3.3.2 Function 6H Condition J, K	N/A	VARIATION: DCPP TS do not have Function 6H.
3.3.2 Function 7A Condition D, E	N/A	VARIATION: DCPP TS do not have Function 7A.
3.3.2 Function 7B Condition T, U	N/A	VARIATION: DCPP TS do not have Function 7B.
3.3.2 Function 7C Condition T, U	N/A	VARIATION: DCPP TS do not have Function 7C.

Table 1		
TSTF-505 LCO / RA	**DCPP LCO / RA (if different)**	**NOTES**
	3.3.2 Function 7 Condition S, T	VARIATION: DCPP plant-specific refueling water storage tank (RWST) low-low level function 7 for trip of residual heat removal (RHR) pumps is analogous to Functions 7A – 7C of TSTF-505. This is not a plant-specific design to trip RHR pumps rather than initiate switchover to the sump.
3.3.2 Function 8A Condition J, K		VARIATION: Diablo Canyon is not proposing to apply the RICT Program to this condition. Renumber of plant-specific condition is the only change.
3.3.2 Function 8B Condition V		VARIATION: Diablo Canyon is not proposing to apply the RICT Program to this condition. Renumber of plant-specific condition is the only change.
3.3.2 Function 8C Condition	N/A	VARIATION: DCPP TS do not have Function 8C.
3.4.5 A.1		OPTIONAL CHANGE: This LCO has MODE 3 applicability only; PG&E is not proposing to apply the RICT Program in MODE 3.
3.4.5 C.1		OPTIONAL CHANGE: This LCO has MODE 3 applicability only; PG&E is not proposing to apply the RICT Program in MODE 3.
3.4.9 B.1		
3.4.9 C.1		
3.4.9 D.1		
3.4.9 D.2		

Table 1		
TSTF-505 LCO / RA	**DCPP LCO / RA (if different)**	**NOTES**
3.4.10 A.1		
3.4.11 B.3		EDITORIAL: DCPP TS separately address Non-Class 1 and Class 1 power operated relief valves (PORVs) in the RAs; PG&E does not propose to apply the RICT Program to required actions associated with the Non-Class 1 PORV since these actions do not require restoration of the PORV to operable status.
3.4.11 C.2		EDITORIAL: DCPP TS separately address Non-Class 1 and Class 1 PORVs in the RAs; PG&E does not propose to apply the RICT Program to RAs associated with Non-Class 1 PORV since these actions do not require restoration of the PORV to operable status.
3.4.11 E.3	3.4.11 E.4	EDITORIAL: DCPP TS differ from Standard TS in that they have a requirement to immediately initiate action to restore PORVs to OPERABLE status as plant-specific RA E.1, which changes the numbering of applicable action for RICT Program.
3.4.11 F.1	3.4.11 F.2 AND F.3	EDITORIAL: DCPP TS differ from Standard TS in that they have a requirement to place associated PORV in manual control as plant-specific RA F.1, which changes numbering of applicable actions for RICT Program. EDITORIAL: In addition, DCPP TS have three RAs based on differing requirements for block valves associated with Class 1 and Non-Class 1 PORVs. PG&E does not propose to apply the RICT Program to the action associated with the Non-Class 1 PORV block valve since the RA does not involve restoration to OPERABLE status.

Table 1		
TSTF-505 LCO / RA	**DCPP LCO / RA (if different)**	**NOTES**
3.4.11 G.1 AND G.2	3.4.11 G.2 AND G.3	EDITORIAL: DCPP TS differ from Standard TS in that they have a requirement to immediately initiate action to restore PORV block valves to OPERABLE status as plant-specific RA G.1, which changes numbering of applicable action for RICT Program.
3.4.14 C.1	N/A	VARIATION: DCPP TS do not have Condition C.
3.5.1 A.1		
3.5.1 B.1		
3.5.1 C.1		
3.5.1 D.1 AND D.2		EDITORIAL: TSTF-505 identifies each of the separate conditions to which these final shutdown actions apply; this is unnecessary since Condition D is applicable to all conditions when the RA(s) are not completed.

Table 1		
TSTF-505 LCO / RA	**DCPP LCO / RA (if different)**	**NOTES**
3.5.2 A.1		VARIATION: DCPP TS differ from TSTF-505 in three ways: (1) The requirement that 100% of ECCS flow equivalent is available is included in condition A; this is no longer required when adopting TSTF-505 since this is addressed in the new condition 3.5.2 B. (2) Separate plant-specific RAs exist for planned and unplanned maintenance or inspections, and the unplanned actions are restricted to a single subsystem. The existing TS are inconsistent in that RA A.1 only applies to planned maintenance, and it would be a violation of the RICT program to plan maintenance on more than one train although RA A.1 is to restore train(s) to operable status. (3) RA A.2.2 addresses common cause failure mechanisms; this is no longer required when adopting TSTF-505 since common cause failure mechanisms is addressed within the RICT Program for unplanned corrective maintenance. The plant-specific actions were incorporated into the DCPP TS by License Amendments 203 (Unit 1) and 202 (Unit 2)[1]. In order to adopt TSTF-505, PG&E proposes to restructure its plant-specific TS 3.5.2 consistent with TSTF-505. The existing plant-specific RA A.2.1 no longer applies since an extended CT on unplanned single subsystem repairs is addressed by A.1. Existing RA A.2.2 to determine common cause impacts on unplanned inoperabilities is already a requirement for using the RICT Program to extend the CT beyond 72 hours for unplanned corrective maintenance. The 14-day CT is eliminated, since the RICT Program will be applied to unplanned single subsystem inoperabilities to establish the correct CT by RA A.1. New condition 3.5.2 B of TSTF-505 is also adopted.

Table 1		
TSTF-505 LCO / RA	**DCPP LCO / RA (if different)**	**NOTES**
3.5.2 B.1		
3.5.2 C.1 AND C.2		
3.5.3 B.1		OPTIONAL CHANGE: This LCO has MODE 4 applicability only; PG&E is not proposing to apply the RICT Program in MODE 4.
3.5.4 A.1		
3.5.4 B.1		
3.5.6.A.1	N/A	VARIATION: DCPP TS do not have LCO 3.5.6.
3.6.2 C.3		
3.6.3 A.1		
3.6.3 B.1		
3.6.3 C.1		
3.6.3 D.1	N/A	VARIATION: DCPP TS do not have condition D of TSTF-505.

Table 1		
TSTF-505 LCO / RA	**DCPP LCO / RA (if different)**	**NOTES**
3.6.3 E.1	3.6.3 D.1	EDITORIAL: DCPP TS numbering is different since it does not have Condition D of TSTF-505. VARIATION: DCPP TS conservatively include exhaust and vacuum / pressure relief valves in this condition; the 24-hour CT for restoration in Condition D is more restrictive than the 72-hour CT in the Standard TS Condition C. TSTF-505 applies the RICT Program to both conditions.
3.6.6A A.1	3.6.6 A.1	VARIATION: DCPP TS differ from TSTF-505 in that they have plant-specific separate RAs with different CTs for planned and unplanned activities. The plant-specific actions were incorporated into the DCPP TS by License Amendments 203 (Unit 1) and 202 (Unit 2)[1]. PG&E proposes to eliminate the extended 14-day CT for unplanned activities so that the plant-specific TS would be identical with 72-hour CT of TSTF-505.
3.6.6A C.1	3.6.6 C.1	VARIATION: DCPP TS include in the additional condition that a minimum of two CFCUs remain OPERABLE.
	3.6.6 D.1	VARIATION: DCPP TS have a plant-specific condition associated with one containment spray train inoperable coincident with one CFCU system inoperable and two CFCUs OPERABLE. This condition accommodates the plant-specific design which has five CFCUs instead of two trains. PG&E proposes to apply the RICT Program for this condition which involves restoration of equipment to OPERABLE status.

Table 1		
TSTF-505 LCO / RA	**DCPP LCO / RA (if different)**	**NOTES**
3.6.6A D.1	3.6.6 E.1	VARIATION: DCPP TS for inoperability of all CFCUs (equivalent of TSTF-505 3.6.6A D) does not provide a 72-hour CT. This condition is therefore included in Condition E with a 1-hour CT.
3.6.6A E.1	3.6.6 E.1	VARIATION: The equipment inoperability combinations currently delineated in plant-specific TS Condition F have been incorporated into Condition E with its 1-hour CT as these are analogous to the combinations of equipment inoperabilities addressed in TSTF-505 Condition E.
3.6.9	N/A	EDITORIAL: DCPP TS do not have LCO 3.6.9.
3.6.10	N/A	EDITORIAL: DCPP TS do not have LCO 3.6.10.
3.6.14	N/A	EDITORIAL: DCPP TS do not have LCO 3.6.14.
3.6.15	N/A	EDITORIAL: DCPP TS do not have LCO 3.6.15.
3.6.16	N/A	EDITORIAL: DCPP TS do not have LCO 3.6.16.
3.6.17	N/A	EDITORIAL: DCPP TS do not have LCO 3.6.17.
3.6.18	N/A	EDITORIAL: DCPP TS do not have LCO 3.6.18.
3.7.2 A.1		

Table 1

TSTF-505 LCO / RA	DCPP LCO / RA (if different)	NOTES
3.7.2 C.1	3.7.2 B.1	EDITORIAL: The RA if one or more MSIVs are inoperable in MODE 1 and not restored at the end of the RICT should be to exit MODE 1. The existing MODE 2 shutdown Condition B is proposed to be applied when either one MSIV (TSTF-505 Condition A) or two or more MSIVs (TSTF-505 Condition C) are inoperable in MODE 1. The order of Conditions B and C in TSTF-505 is swapped to make the DCPP TS structure logically correct.
3.7.2.B	3.7.2.C	EDITORIAL: Reordering of conditions to accommodate MODE 2 shutdown for TSTF-505 Condition C.
3.7.2 D		EDITORIAL: Renumbering of condition is the only change.
3.7.2 E		EDITORIAL: This condition is not applicable to RA C as described above.
3.7.4 A.1		
3.7.4 B.1	3.7.4 B.1 AND C.1	VARIATION: DCPP TS have separate conditions for two ADV inoperable and three or more atmospheric dump valves (ADV) inoperable. TSTF-505 has a single condition and applies the RICT Program with two or more ADV inoperable.
3.7.5 A.1		
3.7.5 B.1		

Table 1		
TSTF-505 LCO / RA	**DCPP LCO / RA (if different)**	**NOTES**
	3.7.5 C.1 AND C.2	VARIATION: DCPP TS have a separate Condition C for two auxiliary feedwater (AFW) trains inoperable when the turbine driven train is inoperable due to an inoperable steam supply. TSTF-505 has a single condition for two inoperable AFW trains for any reason and applies the RICT Program.
3.7.5 C.1	3.7.5 D.1	
3.7.5 D.1	3.7.5 E.1	
3.7.5 E AND F		EDITORIAL: Renumbering of condition is the only change.
3.7.6 A.2		
3.7.7 A.1		
3.7.7 B.1		
3.7.7 C		
3.7.8 A.1		
3.7.8 B.1		
3.7.8 C		
3.7.9		VARIATION: PG&E does not propose to apply the RICT Program to LCO 3.7.9 since the ultimate heat sink is the Pacific Ocean, which can only be inoperable based on temperature.
3.7.11	N/A	VARIATION: DCPP TS do not have LCO 3.7.11.

Table 1

TSTF-505 LCO / RA	DCPP LCO / RA (if different)	NOTES
3.8.1 A.3	3.8.1 A.2	VARIATION: DCPP TS do not have Condition A.2 which affects numbering.
3.8.1 B.4		
3.8.1 C.2		
3.8.1. D.1		
3.8.1 E.1		EDITORIAL: DCPP TS condition is for two or more DGs. This is not considered a variation since the TSTF-505 condition applies when there is no OPERABLE DG for a two-DG plant, and the DCPP plant-specific design simply includes more than two DGs.
3.8.1 F.1	N/A	VARIATION: DCPP TS do not have a separate condition for sequencers.
	3.8.1 F AND G	VARIATION: DCPP TS have two plant-specific conditions for diesel fuel oil supply trains. PG&E proposes to apply the RICT Program to these conditions based on a plant-specific design to share fuel oil rather than be diesel-specific.
3.8.1 G.1	3.8.1 I.1 AND J.1	EDITORIAL: DCPP TS have existing Conditions I and J, which are equivalent to TSTF-505 3.8.1 Condition G. It is proposed to retain separate conditions rather than to combine the conditions. This is not considered a variation but an editorial difference only.
3.8.1 H	3.8.1 J	EDITORIAL: Renumbering of condition is the only change.

Table 1

TSTF-505 LCO / RA	DCPP LCO / RA (if different)	NOTES
	3.8.3 H	VARIATION: DCPP TS require declaring all DGs inoperable and shutting down to MODE 5. It is proposed to delete the shutdown requirement; since this is addressed by declaring the DGs inoperable under TS 3.8.1, which includes a RA for a MODE 5 shutdown.
3.8.4 A.1		
3.8.4 A.3		
3.8.4 B.1		EDITORIAL: DCPP TS have plant-specific one-time actions which have expired and no longer apply; these are editorially eliminated.
3.8.4 C.1		
3.8.4 D.1	3.8.4 E.1	EDITORIAL: DCPP TS have plant-specific Condition D which changes the numbering of applicable action for RICT Program.
3.8.4 E	3.8.4 F	EDITORIAL: DCPP TS have plant-specific Condition D which changes the numbering of applicable action for RICT Program.
3.8.7 A.1		
3.8.7 B.1		
3.8.7 C		EDITORIAL: Renumbering of condition is the only change.

Table 1

TSTF-505 LCO / RA	DCPP LCO / RA (if different)	NOTES
3.8.9 A.1	3.8.9 A.1 AND E.1	VARIATION: DCPP TS have a separate Condition E for more than one subsystem inoperable; consistent with TSTF-505, this is incorporated into Condition A.
3.8.9 B.1	3.8.9 B.1 AND E.1	VARIATION: DCPP TS have a separate Condition E for more than one subsystem inoperable; consistent with TSTF-505, this is incorporated into Condition B.
3.8.9 C.1	3.8.9 C.1 AND E.1	VARIATION: DCPP TS have a separate Condition E for more than one subsystem inoperable; consistent with TSTF-505, this is incorporated into Condition C.
3.8.9 D.1		EDITORIAL: This new condition in TSTF-505 specifies a loss of a safety function, for which it is not permitted to apply a RICT. Therefore, PG&E does not propose to adopt this change.
3.8.9 E.1	3.8.9.D.1	EDITORIAL: Renumbering of condition is the only change; not required for DCPP TS since PG&E is not proposing to adopt new Condition 3.8.9.D.

1 U.S. NRC, *Diablo Canyon Power Plant, Unit Nos. 1 and 2 - Issuance of Amendments re: Increase in the Completion Times for Required Actions Related to Technical Specifications 3.5.2, Regarding the Emergency Core Cooling System, and 3.6.6, regarding the Containment Spray and Cooling Systems (TAC Nos. MD7512 and MD7513)*, December 31, 2008.

3.0 REGULATORY SAFETY ANALYSIS

PG&E has evaluated the proposed change to the Technical Specification (TS) using the criteria in 10 CFR 50.92 and has determined that the proposed change does not involve a significant hazards consideration.

Diablo Canyon Units 1 and 2 request adoption of an approved change to the Standard TS and plant specific TS, to modify the TS requirements related to Completion Times (CTs) for RAs to provide the option to calculate a longer, risk informed CT. The allowance is described in a new program in Chapter 5, "Administrative Controls," entitled the "Risk Informed Completion Time Program."

As required by 10 CFR 50.91(a), an analysis of the issue of no significant hazards consideration is presented below:

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

Response: No.

The proposed change permits the extension of CTs provided the associated risk is assessed and managed in accordance with the NRC approved Risk Informed Completion Time (RICT) Program. The proposed change does not involve a significant increase in the probability of an accident previously evaluated because the change involves no change to the plant or its modes of operation. The proposed change does not increase the consequences of an accident because the design-basis mitigation function of the affected systems is not changed and the consequences of an accident during the extended CT are no different from those during the existing CT.

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

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

Response: No.

The proposed change does not change the design, configuration, or method of operation of the plant. The proposed change does not involve a physical alteration of the plant (no new or different kind of equipment will be installed).

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 change involve a significant reduction in a margin of safety?

Response: No.

The proposed change permit the extension of CTs provided risk is assessed and managed in accordance with the NRC approved RICT Program. The proposed change implements a risk-informed configuration management program to assure that adequate margins of safety are maintained. Application of these new specifications and the configuration management program considers cumulative effects of multiple systems or components being out of service and does so more effectively than the current TS.

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

Based on the above, PG&E 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.

4.0 ENVIRONMENTAL CONSIDERATION

PG&E has reviewed the environmental evaluation included in the model safety evaluation (77 FR 51), published on March 15, 2012, as part of the Notice of Availability. PG&E has concluded that the NRC staff findings presented in that evaluation are applicable to Diablo Canyon Units 1 and 2.

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. However, 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.

Proposed Technical Specification Change(s)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-7

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One subsystem inoperable.	A.1 Verify affected subsystem isolated. AND A.2 Restore subsystem to OPERABLE status.	1 hour AND Once per 8 hours thereafter 72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

Required Action A.1 has two Completion Times. The 1 hour Completion Time begins at the time the Condition is entered and each "Once per 8 hours thereafter" interval begins upon performance of Required Action A.1.

If after Condition A is entered, Required Action A.1 is not met within either the initial 1 hour or any subsequent 8 hour interval from the previous performance (plus the extension allowed by SR 3.0.2), Condition B is entered. The Completion Time clock for Condition A does not stop after Condition B is entered, but continues from the time Condition A was initially entered. If Required Action A.1 is met after Condition B is entered, Condition B is exited and operation may continue in accordance with Condition A, provided the Completion Time for Required Action A.2 has not expired.

INSERT 1

IMMEDIATE COMPLETION TIME

When "Immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

3.3 INSTRUMENTATION

3.3.1 Reactor Trip System (RTS) Instrumentation

LCO 3.3.1 The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

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

INSERT 2

INSERT 3

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one or more required channels or trains inoperable.	A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s) or trains.	Immediately
B. One Manual Reactor Trip channel inoperable.	B.1 Restore channel to OPERABLE status. ~~OR~~ ~~B.2 Be in MODE 3.~~	48 hours ~~54 hours~~
-----NOTE----- While this LCO is not met for function 19, 20 or 21, in MODE 5, making the Rod Control System capable of rod withdrawal is not permitted. ---------- ~~C~~D. One channel or train inoperable.	~~C~~D.1 Restore channel or train to OPERABLE status. ~~OR~~ ~~C.2.1 Initiate action to fully insert all rods.~~	48 hours ~~48 hours~~ ~~(continued)~~

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~C. (continued)~~	~~AND~~ ~~C.2.2 Place the Rod Control System in a condition incapable of rod withdrawal.~~	~~49 hours~~
~~D~~E. One Power Range Neutron Flux-High channel inoperable.	------------------NOTE------------------ The inoperable channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment of other channels. ---	
	~~D~~E.1.1 -----------NOTE--------------- Only required when the Power Range Neutron Flux input to QPTR is inoperable. ---------------------------------- Perform SR 3.2.4.2.	12 hours from discovery of THERMAL POWER > 75% RTP AND Once per 12 hours thereafter
	AND ~~D~~E.1.2 Place channel in trip	72 hours **INSERT 2**
INSERT 4	~~OR~~ ~~D.2 Be in MODE 3.~~	~~78 hours~~

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~E~~G. One channel inoperable. INSERT 5	------------------NOTE------------------ For functions 6, 7, and 8.b, the inoperable channel and/or one additional channel may be surveillance tested with one channel in bypass and one channel in trip for up to 12 hours, or both the inoperable and the additional channel may be surveillance tested in bypass for up to 12 hours. For functions 2.b and 3, only the inoperable channel may be bypassed for surveillance testing of other channels. For function 14.a, the inoperable channel and/or one additional channel may be surveillance tested with one channel in bypass and one channel in trip for up to 12 hours. This note is not intended to allow simultaneous testing of coincident channels on a routine basis -- ~~E~~G.1 Place channel in trip. ~~OR~~ ~~E.2 Be in MODE 3.~~	INSERT 2 72 hours ~~78 hours~~
~~F~~I. One Intermediate Range Neutron Flux channel inoperable.	~~F~~I.1 Reduce THERMAL POWER to < P-6. OR ~~F~~I.2 Increase THERMAL POWER to > P-10.	24 hours 24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~G~~J. Two Intermediate Range Neutron Flux channels inoperable.	~~G~~J.1 -----------NOTE------------- Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed. -------------------------------- Suspend operations involving positive reactivity additions.	Immediately
	<u>AND</u>	
	~~G~~J.2 Reduce THERMAL POWER to < P-6.	2 hours
~~H. Not used~~		
~~I~~K. One Source Range Neutron Flux channel inoperable.	~~I~~K.1 -----------NOTE------------- Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed. -------------------------------- Suspend operations involving positive reactivity additions.	Immediately
~~J~~L. Two Source Range Neutron Flux channels inoperable.	~~J~~L.1 Open reactor trip breakers (RTBs).	Immediately

(continued)

INSERT 2

ACTIONS (continued)

INSERT 6

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~K~~M. One Source Range Neutron Flux channel inoperable.	~~K~~M.1 Restore channel to OPERABLE status.	48 hours
	~~OR~~	
	~~K.2.1 Initiate action to fully insert all rods.~~	~~48 hours~~
	~~AND~~	
	~~K.2.2 Place the Control Rod System in a condition incapable of rod withdrawal.~~	~~49 hours~~
~~L~~O. Required Source Range Neutron Flux channel inoperable.	~~L~~O.1 -----------NOTE------------- Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM. -------------------------------	
	Suspend operations involving positive reactivity additions.	Immediately
	AND	
	~~L~~O.2 Perform SR 3.1.1.1.	1 hour AND Once per 12 hours thereafter

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
~~M~~$\boxed{P}$. One channel inoperable.	------------------NOTE------------------ For function 8.a, the inoperable channel and/or one additional channel may be surveillance tested with one channel in bypass and one channel in trip for up to 12 hours, or both the inoperable and the additional channel may be surveillance tested in bypass for up to 12 hours. For functions 9 and 10, the inoperable channel and/or one additional channel may be surveillance tested with one channel in bypass and one channel in trip for up to 12 hours. For functions 12 and 13, only the inoperable channel may be bypassed for surveillance testing of other channels. This note is not intended to allow simultaneous testing of coincident channels on a routine basis. ---		
	~~M~~$\boxed{P}$.1	Place channel in trip.	72 hours
	~~OR~~		
INSERT 7	~~M.2~~	~~Reduce THERMAL POWER to < P-7.~~	~~78 hours~~
~~N~~$\boxed{S}$. One channel inoperable	~~N~~$\boxed{S}$.1	Place channel in trip	6 hours
	~~OR~~		
INSERT 8	~~N.2~~	~~Reduce THERMAL POWER to < P-7~~	~~12 hours~~

INSERT 2

(continued)

ACTIONS (continued)

INSERT 2

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~O~~V. One Low Auto-Stop Oil Pressure Turbine Trip channel inoperable	------------------NOTE------------------ An inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. --- ~~O~~V.1 Place channel in trip. ~~OR~~ ~~O.2 Reduce THERMAL POWER TO < P-9~~	72 hours ~~76 hours~~

INSERT 9

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~P~~X. One or more Turbine Stop Valve Closure, Turbine Trip channel(s) inoperable.	~~P~~X.1 Place channel(s) in trip. ~~OR~~ ~~P.2 Reduce THERMAL POWER to < P-9.~~	72 hours ~~76 hours~~

INSERT 10

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~Q~~Z. One train inoperable.	------------------NOTE------------------ One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. --- ~~Q~~Z.1 Restore train to OPERABLE status. ~~OR~~ ~~Q.2 Be in MODE 3.~~	24 hours ~~30 hours~~

INSERT 11

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~R~~BB. One RTB train inoperable.	------------------NOTE---------------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. --- ~~R~~BB.1 Restore train to OPERABLE status. ~~OR~~ ~~R.2 Be in MODE 3.~~	24 hours ~~30 hours~~

INSERT 12

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~S~~DD. One or more channels or trains inoperable.	~~S~~DD.1 Verify interlock is in required state for existing unit conditions. ~~OR~~ ~~S.2 Be in MODE 3.~~	1 hour ~~7 hours~~
~~T~~EE. One or more channels or trains inoperable.	~~T~~EE.1 Verify interlock is in required state for existing unit conditions. ~~OR~~ ~~T.2 Be in MODE 2.~~	1 hour ~~7 hours~~
~~U~~GG. One trip mechanism inoperable for one RTB.	~~U~~GG.1 Restore ~~inoperable~~ trip mechanism to OPERABLE status. ~~OR~~ ~~U.2 Be in MODE 3~~.	48 hours ~~54 hours~~
~~V. Not used~~		
~~W~~II. One channel inoperable	------------------NOTE------------------ The inoperable channel may be bypassed for up to 72 hours for surveillance or maintenance. -- ~~W~~II.1 Place channel in trip OR ~~W~~II.2 Be in MODE 3	 6 hours 12 hours

INSERT 13

INSERT 14

INSERT 2

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~X~~JJ. One or more SG Water Level Low - Low Trip Time Delay channel(s) inoperable.	------------------NOTE------------------ For function 14.b, the inoperable TTD channel (processor) and/or one additional TTD channel (processor) may be surveillance tested with the affected steam generator low-low water level channels for one TTD channel (processor) in bypass and the affected SG low-low water level channels for the other TTD channel (processor) in trip for up to 12 hours. This note is not intended to allow simultaneous testing of multiple TTD channels (processors) on a routine basis. --	
	~~X~~JJ.1 Set the Trip Time Delay to zero seconds.	72 hours
	OR	INSERT 2
	~~X~~JJ.2 Place the affected SG Water Level Low - Low channel(s) in trip.	72 hours
INSERT 15	~~OR~~	
	~~X.3 Be in MODE 3.~~	~~78 hours~~

Table 3.3.1-1 (page 1 of 7)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL(a) TRIP SETPOINT
1. Manual Reactor Trip	1,2	2	B, C	SR 3.3.1.14	NA	NA
	3(b), 4(b), 5(b)	2	~~C~~D	SR 3.3.1.14	NA	NA
2. Power Range Neutron Flux						
a. High	1,2	4	~~D~~E, F	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7 SR 3.3.1.11 SR 3.3.1.16	≤ 110.2% RTP	109% RTP
b. Low	1(c),2	4	~~E~~G, H	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11 SR 3.3.1.16	≤ 26.2% RTP	25% RTP
3. Power Range Neutron Flux Rate						
High Positive Rate	1,2	4	~~E~~G, H	SR 3.3.1.7 SR 3.3.1.11 SR 3.3.1.16	≤ 5.6% RTP with time constant ≥ 2 sec	5% RTP 4 with time constant ≥ 2 sec 4
4. Intermediate Range Neutron Flux	1(c), 2(d)	2	~~F,G~~I, J	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	≤ 30.6% RTP	25% RTP

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.
(b) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.
(c) Below the P-10 (Power Range Neutron Flux) interlocks.
(d) Above the P-6 (Intermediate Range Neutron Flux) interlocks.

Table 3.3.1-1 (page 2 of 7)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[(a)] TRIP SETPOINT
5. Source Range Neutron Flux	2[(e)]	2	~~I,J~~ K, L	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11 SR 3.3.1.16	≤ 1.4 E5 cps	1.0 E5 cps
	3[(b)], 4[(b)], 5[(b)]	2	~~J,K~~ L, M	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11 SR 3.3.1.16	≤ 1.4 E5 cps	1.0 E5 cps
	3[(f)], 4[(f)], 5[(f)]	1	~~L~~ O	SR 3.3.1.1 SR 3.3.1.11	N/A	N/A
6. Overtemperature ΔT	1,2	4	~~E~~ G, H	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	Refer to Note 1 (Page 3.3-17)	Refer to Note 1 (Page 3.3-17)
7. Overpower ΔT	1,2	4	~~E~~ G, H	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	Refer to Note 2 (Page 3.3-18)	Refer to Note 2 (Page 3.3-18)
8. Pressurizer Pressure						
a. Low	1[(g)]	4	~~M~~ P, Q	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 1947.5 psig	1950 psig
b. High	1,2	4	~~E~~ G, H	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≤ 2387.5 psig	2385 psig
9. Pressurizer Water Level—High	1[(g)]	3	~~M~~ P, Q	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≤ 90.2%	90%

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.
(b) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.
(e) Below the P-6 (Intermediate Range Neutron Flux) interlocks.
(f) With the RTBs open or all rods fully inserted and incapable of withdrawal. In this condition, source range Function does not provide reactor trip but does provide indication.
(g) Above the P-7 (Low Power Reactor Trips Block) interlock.

Table 3.3.1-1 (page 3 of 7)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[(a)] TRIP SETPOINT
10. Reactor Coolant Flow—Low	1[(g)]	3 per loop	~~M~~P, Q	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 89.8% of measured loop flow	90% of measured loop flow
11. Reactor Coolant Pump (RCP) Breaker Position	1[(g)]	1 per RCP	~~N~~S, T	SR 3.3.1.14	NA	NA
12. Undervoltage RCPs	1[(g)]	2 per bus	~~M~~P, Q	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16	≥ 7877 V each bus	8050 V each bus
13. Underfrequency RCPs	1[(g)]	3 per bus	~~M~~P, Q	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16	≥ 53.9 Hz each bus	54.0 Hz each bus
14. a. Steam Generator (SG) Water Level—Low Low	1,2	3 per SG	~~E~~G, H	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 14.8%	15.0%
b. SG Water Level – Low Low Trip Time Delay (TTD)	1,2	4	~~X~~JJ	SR 3.3.1.7 SR 3.3.1.10	TTD ≤ 1.01 TD (Note 3) for RCS loop ΔT variable input ≤ 50.7% RTP and TTD=0 for RCS loop ΔT variable input > 50.7 % RTP	TTD ≤ TD (Note 3) for RCS loop ΔT variable input 50% RTP TTD=0 for RCS loop ΔT variable input 50% RTP
15. Not used						

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.
(g) Above the P-7 (Low Power Reactor Trips Block) interlock.

Table 3.3.1-1 (page 4 of 7)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL(a) TRIP SETPOINT
16. Turbine Trip						
a. Low Auto-Stop Oil Pressure	1(j)	3	~~O~~V, W	SR 3.3.1.10 SR 3.3.1.15	≥ 46.5 psig	50 psig
b. Turbine Stop Valve Closure	1(j)	4	~~P~~X	SR 3.3.1.15	≥ 1% open	2% open O4
17. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1,2	2 trains	~~Q~~Z, AA	SR 3.3.1.14	NA	NA
18. Reactor Trip System Interlocks						
a. Intermediate Range Neutron Flux, P-6	2(e)	2	~~S~~DD	SR 3.3.1.11 SR 3.3.1.13	≥ 8E-11 amp	1E-10 amp
b Low Power Reactor Trips Block, P-7	1	1 per train	~~T~~EE	SR 3.3.1.5	NA	NA
c. Power Range Neutron Flux, P-8	1	4	~~T~~EE	SR 3.3.1.11 SR 3.3.1.13	≤ 36.2% RTP	35% RTP

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.
(e) Below the P-6 (Intermediate Range Neutron Flux) interlocks.
(j) Above the P-9 (Power Range Neutron Flux) interlock.

Table 3.3.1-1 (page 5 of 7)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[(a)] TRIP SETPOINT
18. Reactor Trip System Interlocks (cont)						
d. Power Range Neutron Flux, P-9	1	4	~~T~~EE	SR 3.3.1.11 SR 3.3.1.13	≤ 51.2% RTP	50% RTP
e. Power Range Neutron Flux, P-10	1,2	4	~~S~~DD	SR 3.3.1.11 SR 3.3.1.13	≥ 8.8% RTP and ≤ 11.2% RTP	10% RTP
f. Turbine Impulse Chamber Pressure, P-13	1	2	~~T~~EE	SR 3.3.1.10 SR 3.3.1.13	≤ 10.2% turbine power	10% turbine power
19. Reactor Trip Breakers[(k)] (RTBs)	1,2	2 trains	~~R~~BB, CC	SR 3.3.1.4	NA	NA
	$3^{(b)}$, $4^{(b)}$, $5^{(b)}$	2 trains	~~C~~D	SR 3.3.1.4	NA	NA
20. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms[(k)]	1,2	1 each per RTB	~~U~~GG, HH	SR 3.3.1.4	NA	NA
	$3^{(b)}$, $4^{(b)}$, $5^{(b)}$	1 each per RTB	~~C~~D	SR 3.3.1.4	NA	NA
21. Automatic Trip Logic	1,2	2 trains	~~Q~~Z, AA	SR 3.3.1.5	NA	NA
	$3^{(b)}$, $4^{(b)}$, $5^{(b)}$	2 trains	~~C~~D	SR 3.3.1.5	NA	NA
22. Seismic Trip	1,2	3 directions (x,y,z) in 3 locations	~~W~~II	SR 3.3.1.5 SR 3.3.1.12 SR 3.3.1.14	≤ 0.43g	0.35g

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

(b) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.

(k) Including any reactor trip bypass breakers that are racked in and closed for bypassing an RTB.

3.3 INSTRUMENTATION

3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

LCO 3.3.2 The ESFAS instrumentation for each Function in Table 3.3.2-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.2-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one or more required channels or trains inoperable.	A.1 Enter the Condition referenced in Table 3.3.2-1 for the channel(s) or train(s).	Immediately
B. One channel or train inoperable.	B.1 Restore channel or train to OPERABLE status.	48 hours
	~~OR~~	
	~~B.2.1 Be in MODE 3.~~	~~54 hours~~
	~~AND~~	
	~~B.2.2 Be in MODE 5.~~	~~84 hours~~
~~C~~D. One train inoperable.	-----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. -----	
	~~C~~D.1 Restore train to OPERABLE status.	24 hours
	~~OR~~	
	~~C.2.1 Be in MODE 3.~~	~~30 hours~~
	~~AND~~	
	~~C.2.2 Be in MODE 5.~~	~~60 hours~~

INSERT 2

INSERT 16

INSERT 17

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~D~~ $\boxed{F}$. One channel inoperable.	------------------NOTE------------------ For function 1.d, the inoperable channel and/or one additional channel may be surveillance tested with one channel in bypass and one channel in trip for up to 12 hours, or both the inoperable and the additional channel may be surveillance tested in bypass for up to 12 hours. For functions 1.e(1), 4.d(1), 4.d(2), and 6.d(1), the inoperable channel and/or one additional channel may be surveillance tested with one channel in bypass and one channel in trip for up to 12 hours. This note is not intended to allow simultaneous testing of coincident channels on a routine basis. --	
	~~D~~ $\boxed{F}$.1 Place channel in trip.	72 hours
	~~OR~~	
	~~D.2.1 Be in MODE 3.~~	~~78 hours~~
	~~AND~~	
	~~D.2.2 Be in MODE 4.~~	~~84 hours~~

INSERT 2

INSERT 18

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~E~~$\boxed{H}$. One Containment Pressure channel inoperable.	------------------NOTE---------------- The inoperable channel and one additional channel may be surveillance tested in bypass for up to 12 hours only if any function 1.c channel associated with the inoperable channel is in trip. This note is not intended to allow simultaneous testing of coincident channels on a routine basis. --	
	~~E~~$\boxed{H}$.1 Place channel in bypass.	72 hours
	~~OR~~	
	~~E.2.1 Be in MODE 3.~~	~~78 hours~~
INSERT 19	~~AND~~	
	~~E.2.2 Be in MODE 4.~~	~~84 hours~~

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~F~~J. One channel or train inoperable.	~~F~~J.1 Restore channel or train to OPERABLE status.	48 hours
	OR	
	~~F~~J.2.1 Be in MODE 3.	54 hours
	AND	
	~~F~~J.2.2 Be in MODE 4.	60 hours
~~G~~K. One train inoperable.	-------------------NOTE----------------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. ---	
	~~G~~K.1 Restore train to OPERABLE status.	24 hours
	~~OR~~	
	~~G.2.1 Be in MODE 3.~~	~~30 hours~~
	~~AND~~	
	~~G.2.2 Be in MODE 4.~~	~~36 hours~~
~~H~~M. One train inoperable.	------------------NOTE--------------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. ---	
	~~H~~M.1 Restore train to OPERABLE status.	24 hours
	~~OR~~	
	~~H.2 Be in MODE 3.~~	~~30 hours~~

INSERT 2

INSERT 20

INSERT 21

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~I~~O. One channel inoperable.	------------------NOTE------------------ The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. --	INSERT 2
	~~I~~O.1 Place channel in trip.	72 hours
	~~OR~~	
INSERT 22	~~I.2. Be in MODE 2.~~	~~78 hours~~
~~J~~Q. One channel inoperable	------------------NOTE------------------ The inoperable channel and/or one additional channel may be surveillance tested with one channel in bypass and one channel in trip for up to 12 hours. This note is not intended to allow simultaneous testing of coincident channels on a routine basis. --	
	~~J~~Q.1 Place channel in trip.	72 hours
	~~OR~~	
INSERT 23	~~J.2. Be in MODE 3.~~	~~78 hours~~
~~K~~S. One channel inoperable	~~K~~S.~~1.~~1 Place the channel in cut-out.	6 hours
	AND	
	~~K~~S.~~1.~~2 Return the inoperable channel to an OPERABLE status	48 hours
	~~OR~~	
	~~K.2.1 Be in MODE 3.~~	~~54 hours~~
	~~AND~~	
INSERT 24	~~K.2.2 Be in MODE 5~~	~~84 hours~~

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~L~~U. One or more channels or trains inoperable.	~~L~~U.1 Verify interlock is in required state for existing unit condition.	1 hour
	~~OR~~	
	~~L.2.1 Be in MODE 3.~~	~~7 hours~~
	~~AND~~	
	~~L.2.2 Be in MODE 4.~~	~~13 hours~~
~~M~~V. One or more SG Water Level - Low Low Trip Time Delay channel(s) inoperable.	-----NOTE----- The inoperable TTD channel (processor) and/or one additional TTD channel (processor) may be surveillance tested with the affected steam generator low-low water level channels for one TTD channel (processor) in bypass and the affected SG low-low water level channels for the other TTD channel (processor) in trip for up to 12 hours. This note is not intended to allow simultaneous testing of multiple TTD channels (processors) on a routine basis. -----	INSERT 2
	~~M~~V.1 Set the Trip Time Delay to zero seconds.	72 hours
	OR	
	~~M~~V.2 Place the affected SG Water Level - Low Low channel(s) in trip.	72 hours
	~~OR~~	
	~~M.3.1 Be in MODE 3.~~	~~78 hours~~
	~~AND~~	
	~~M.3.2 Be in MODE 4.~~	~~84 hours~~

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~N~~W. One channel inoperable.	~~N~~W.1 Restore channel to OPERABLE status.	48 hours
	OR	
	~~N~~W.2 Declare the associated AFW pump or MSIV inoperable.	Immediately
~~O~~X. One channel inoperable	------------------NOTE------------------ The inoperable channel may be surveillance tested in bypass for up to 12 hours, or with the inoperable channel in trip, one additional channel may be surveillance tested in bypass for up to 12 hours. This note is not intended to allow simultaneous testing of coincident channels on a routine basis. --	INSERT 2
	~~O~~X.1 Place channel in trip.	72 hours
	~~OR~~	
	~~O.2.1 Be in MODE 3~~	~~78 hours~~
	~~AND~~	
INSERT 25	~~O.2.2 Be in MODE 5.~~	~~108 hours~~

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~P~~Z. One channel inoperable.	------------------NOTE------------------ The inoperable channel and one additional channel may be surveillance tested in bypass for up to 12 hours only if any function 1.c channel associated with the inoperable channel is in trip. This note is not intended to allow simultaneous testing of coincident channels on a routine basis. --	
	~~P~~Z.1 Place channel in bypass.	72 hours
	~~OR~~	
	~~P.2.1 Be in MODE 3~~	~~78 hours~~
	~~AND~~	
	~~P.2.2 Be in MODE 5.~~	~~108 hours~~

INSERT 26

Table 3.3.2-1 (page 1 of 7)
Engineered Safety feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[a*] TRIP SETPOINT
1. Safety Injection						
a. Manual Initiation	1,2,3,4	2	B, C	SR 3.3.2.8	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	~~C~~ D, E	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
c. Containment Pressure-High	1,2,3,4	3	~~C~~ X, Y	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 3.12 psig	3.0 psig
d. Pressurizer Pressure-Low	1,2,3[b]	4	~~D~~ F, G	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 1847.5 psig	1850 psig
e. Steam Line Pressure						
(1) Low	1,2,3[b]	3 per steam line	~~D~~ F, G	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 597.6[c] psig	600[c] psig
(2) Not used						
f. Not used						
g. Not used						

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.
(b) Above the P-11 (Pressurizer Pressure) interlock and below the P-11 interlock unless the Function is blocked.
(c) Time constants used in the lead/lag compensator are t_1 = 50 seconds and t_2 = 5 seconds.

Table 3.3.2-1 (page 2 of 7)
Engineered Safety feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[a] TRIP SETPOINT
2. Containment Spray						
a. Manual Initiation	1,2,3,4	2 per train	B, C	SR 3.3.2.8	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	~~C~~D, E	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
c. Containment Pressure						
(1) High-High	1,2,3,4	4	~~P~~Z, AA	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 22.12 psig	22 psig
(2) Not used						
3. Containment Isolation						
a. Phase A Isolation						
(1) Manual Initiation	1,2,3,4	2	B, C	SR 3.3.2.8	NA	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	~~C~~D, E	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
(3) Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

Table 3.3.2-1 (page 3 of 7)
Engineered Safety feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[(a)] TRIP SETPOINT
3. Containment Isolation (continued)						
b. Phase B Isolation						
(1) Manual Initiation	1,2,3,4	2 per train	B, C	SR 3.3.2.8	NA	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	~~C~~D, E	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
(3) Containment Pressure High-High	1,2,3,4	4	~~P~~Z, AA	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9	≤ 22.12 psig	22 psig
4. Steam Line Isolation						
a. Manual Initiation	1,2[(i)],3[(i)]	1/valve	~~N~~W	SR 3.3.2.8	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2[(i)],3[(i)]	2 trains	~~G~~K, L	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
c. Containment Pressure-High –High	1,2[(i)],3[(i)]	4	~~E~~H, I	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 22.12 psig	2.3 psig

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

(i) Except when all MSIVs are closed and de-activated.

Table 3.3.2-1 (page 4 of 7)
Engineered Safety feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL $^{(a)}$ TRIP SETPOINT
4. Steam Line Isolation (continued)						
d. Steam Line Pressure						
(1) Low	1,2$^{(i)}$, 3$^{(b)(i)}$	3 per steam line	~~D~~F, G	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 597.6^{l}psig	600^{l} psig
(2) Negative Rate-High	3$^{(g)(i)}$	3 per steam line	~~D~~F	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 102.4 $^{(h)}$ psi/sec	100 $^{(h)}$ psi/sec
e. Not used.						
f. Not used						
g. Not used						
h. Not used						
5. Feedwater Isolation						
a. Automatic Actuation Logic and Actuation Relays	1,2$^{(j)}$	2 trains	~~H~~M, N	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

(b) Above the P-11 (Pressurizer Pressure) interlock and below the P-11 interlock unless the Function is blocked.

l Time constants used in the lead/lag compensator are t_1 = 50 seconds and t_2 =5 seconds

(g) Below the P-11 (Pressurizer Pressure). However, may be blocked below P-11 when Safety Injection on Steam Line Pressure-Low is not blocked.

(h) Time constant utilized in the rate/lag compensator are t_3 = 50 sec and t_4 = 50 sec.

(i) Except when all MSIVs are closed and de-activated.

(j) Except when all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.

Table 3.3.2-1 (page 5 of 7)
Engineered Safety feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL [(a)] TRIP SETPOINT
5. Feedwater Isolation (continued)						
b. SG Water Level-High High (P-14)	1,2[(j)]	3 per SG	~~J~~ Q, R	SR 3.3.2.1 SR 3.3.2.5[(d)(e)] SR 3.3.2.9[(d)(e)] SR 3.3.2.10	≤ 90.2%	90.0%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
6. Auxiliary Feedwater						
a. Manual	1,2,3	1 sw/pp	~~N~~ W	SR 3.3.2.13	NA	NA
b. Automatic Actuation Logic and Actuation Relays (Solid State Protection System)	1,2,3	2 trains	~~G~~ K, L	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
c. Not used						
d.1 SG Water Level-Low Low	1,2,3	3 per SG	~~D~~ F, G	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 14.8%	15.0%

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

(j) Except when all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.

(d) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. Footnote (a) does not apply to this function.

(e) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures to confirm channel performance. The methodologies used to determine the as-found and the as-left tolerances are specified in the Equipment Control Guidelines. Footnote (a) does not apply to this function.

Table 3.3.2-1 (page 6 of 7)

Engineered Safety feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[(a)] TRIP SETPOINT
Auxiliary Feedwater (continued)						
d.2) SG Water Level - Low Low Trip Time Delay (TTD)	1,2,3	4	~~M~~V	SR 3.3.2.5 SR 3.3.2.9	TTD ≤ 1.01 TD[(l,k)] for RCS Loop ΔT variable input ≤ 50.7% RTP and TTD=0 for RCS Loop ΔT variable input > 50.7% RTP	TTD ≤ TD[(l,k)] for RCS Loop ΔT variable input 50% RTP and TTD=0 for RCS Loop ΔT variable input 50% RTP
e. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
f. Not used						
g. Undervoltage Reactor Coolant Pump	1	2 per bus	~~I~~O, P	SR 3.3.2.8 SR 3.3.2.9 SR 3.3.2.10	≥ 7877 volts	8050 volts

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

(k) For Mode 3, the Trip Time Delay associated with the Steam Generator Water Level-Low-Low channel must be less than or equal to 464.1 seconds.

(l) Steam Generator Water Level-Low Low Time Delay
The Steam Generator Water Level-Low Low time delay function power allowable value shall not exceed the following trip setpoint power by more than 0.7% RTP.

TD = $B1(P)^3 + B2(P)^2 + B3(P) + B4$.

Where: P = RCS Loop ΔT Equivalent to Power (%RTP), P ≤ 50% RTP

TD = Time delay for Steam Generator Water Level Low-Low (in seconds)

B1 = -0.007128 sec/(RTP)^3

B2 = $+0.8099$ sec/(RTP)^2

B3 = -31.40 sec/(RTP)

B4 = $+464.1$ sec

Table 3.3.2-1 (page 7 of 7)
Engineered Safety feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[a] TRIP SETPOINT
6. Auxiliary Feedwater (continued)						
h. Not used						
i. Not used						
7. Residual Heat Removal Pump Trip on Refueling Water Storage Tank Level-low	1,2,3,4	3	~~K~~S, T	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.12	≤ 33.68% ≥ 31.44%	32.56%
8. ESFAS Interlocks						
a. Reactor Trip, P-4	1,2,3	1 per train, 2 trains	~~F~~J	SR 3.3.2.11	NA	NA
b. Pressurizer Pressure, P-11	1,2,3	3	~~L~~U	SR 3.3.2.5 SR 3.3.2.9	≤ 1917.5 psig	1915 psig
c. Not used						

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

LCO 3.4.9 The pressurizer shall be OPERABLE with:

a. Pressurizer water level ≤ 90%; and

b. Two groups of pressurizer heaters OPERABLE with the capacity of each group ≥ 150 kW and capable of being powered from an emergency power supply.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Pressurizer water level not within limit.	A.1	Be in MODE 3.	6 hours
	AND		
	A.2	Fully insert all rods.	6 hours
	AND		
	A.3	Place Rod Control System in a condition incapable of rod withdrawal.	6 hours
	AND		
	A.4	Be in MODE 4.	12 hours
B. One required group of pressurizer heaters inoperable.	B.1	Restore required group of pressurizer heaters to OPERABLE status.	72 hours INSERT 2
INSERT 27			
~~C~~D. Required Action and associated Completion Time of Condition B **or C** not met.	~~C~~D.1	Be in MODE 3.	6 hours
	AND		
	~~C~~D.2	Be in MODE 4.	12 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.10 Pressurizer Safety Valves

LCO 3.4.10 Three pressurizer safety valves shall be OPERABLE with lift settings ≥ 2460 psig and ≤ 2510 psig.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 with all RCS cold leg temperatures > Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR.

---NOTE---
The lift settings are not required to be within the LCO limits during MODES 3 and 4 for the purpose of setting the pressurizer safety valves under ambient (hot) conditions. This exception is allowed for 54 hours following entry into MODE 3 provided a preliminary cold setting was made prior to heatup.

INSERT 2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pressurizer safety valve inoperable.	A.1 Restore valve to OPERABLE status.	15 minutes
B. Required Action and associated Completion Time not met. OR Two or more pressurizer safety valves inoperable.	B.1 Be in MODE 3. AND B.2 Be in MODE 4 with any RCS cold leg temperatures ≤ LTOP arming temperature specified in the PTLR.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.10.1	Verify each pressurizer safety valve is OPERABLE in accordance with the Inservice Testing Program. Following testing, lift settings shall be within ± 1%.	In accordance with the Inservice Testing Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.11 Pressurizer Power Operated Relief Valves (PORVs)

LCO 3.4.11 Each PORV and associated block valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more PORVs inoperable solely due to excessive seat leakage.	A.1 Close and maintain power to associated block valve.	1 hour
B. One PORV inoperable for reasons other than excessive seat leakage.	B.1 Close associated block valve. <u>AND</u> B.2 Remove power from associated block valve. <u>AND</u> B.3 Restore the Class I PORV to OPERABLE status.	1 hour 1 hour 72 hours **INSERT 2**
C. One block valve inoperable.	----------------NOTE---------------- Required Actions do not apply when block valve is inoperable solely as result of complying with Required Actions B.2 or E.3. -- C.1 Place associated PORV in manual control. <u>AND</u>	1 hour (continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. (continued)	C.2	If the block valve is associated with a Class I PORV: Restore block valve to OPERABLE status.	72 hours **INSERT 2**
		OR	
	C.3	If the block valve is associated with the non-Class I PORV: Close the block valve and remove its power.	72 hours
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1	Initiate action to restore Class I PORV and/or associated block valves(s) to OPERABLE status.	Immediately
	AND		
	D.2	Be in MODE 3.	6 hours
	AND		
	D.3	Be in MODE 4.	12 hours
E. Two Class I PORVs inoperable for reasons other than excessive seat leakage.	E.1	Initiate action to restore Class I PORVs to OPERABLE status.	Immediately
	AND		
	E.2	Close associated block valves.	1 hour
	AND		
	E.3	Remove power from associated block valves.	1 hour
	AND		
	E.4	Restore Class I PORVs to OPERABLE status. ~~Be in MODE 3.~~	~~6 hours~~ **1 hour**
	~~AND~~		
	~~E.5~~	~~Be in MODE 4.~~	~~12 hours~~

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. More than one block valve inoperable.	------------------NOTE------------------ Required Actions do not apply when block valve is inoperable solely as result of complying with Required Actions B.2 or E.3. --	
	F.1 Place associated PORVs in manual control.	1 hour
	AND	
	F.2 Restore one block valve for a Class I PORV to OPERABLE status.	2 hours **INSERT 2**
	AND	
	F.3 Restore remaining block valve for a Class I PORV to OPERABLE status.	72 hours
	OR	
	F.4 If the remaining block valve is associated with the non-Class I PORV, close the block valve and remove its power.	72 hours
G. Required Action and associated Completion Time of Condition **E or** F not met.	G.1 Initiate action to restore block valve(s) to OPERABLE status.	Immediately
	AND	
	G.2 Be in MODE 3.	6 hours
	AND	
	G.3 Be in MODE 4.	12 hours

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.1 Accumulators

LCO 3.5.1 Four ECCS accumulators shall be OPERABLE.

APPLICABILITY: MODES 1 and 2, MODE 3 with RCS pressure > 1000 psig.

INSERT 2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One accumulator inoperable due to boron concentration not within limits.	A.1 Restore boron concentration to within limits.	72 hours
B. One accumulator inoperable for reasons other than Condition A.	B.1 Restore accumulator to OPERABLE status.	24 hour
~~C~~D. Required Action and associated Completion Time ~~of Condition A or B~~ not met.	~~C~~D.1 Be in MODE 3. AND ~~C~~D.2 Reduce RCS pressure to ≤ 1000 psig.	6 hours 12 hours
~~D. Two or more accumulators inoperable.~~	~~D.1 Enter LCO 3.0.3.~~	~~Immediately~~

INSERT 28

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify each accumulator isolation valve is fully open.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.2	Verify borated water volume in each accumulator is ≥ 814 ft^3 and ≤ 886 ft^3.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.3	Verify nitrogen cover pressure in each accumulator is ≥ 579 psig and ≤ 664 psig.	In accordance with the Surveillance Frequency Control Program

(continued)

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS - Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

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

INSERT 2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more trains inoperable. ~~AND~~ ~~At least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.~~	A.1 Restore train(s) to OPERABLE status	72 hours ~~-------NOTE-------~~ ~~The Required Action A.1 Completion Time is to be used for planned maintenance or inspections. The Completion Times of Required Actions A.2.1, A.2.2, and A.2.3 are for unplanned corrective maintenance or inspections.~~ -------------------
	~~OR~~	
	~~A.2.1 Verify only one subsystem in one ECCS train is inoperable.~~	~~72 hours~~
	~~AND~~	
	~~A.2.2 Determine there is no common cause failure in the same subsystem in the OPERABLE ECCS train.~~	~~72 hours~~
	~~AND~~	
INSERT 29	~~A.2.3 Restore train to OPERABLE status.~~	~~14 days~~
~~B~~C. Required Action and associated Completion Time not met.	~~B~~C.1 Be in MODE 3. AND ~~B~~C.2 Be in MODE 4.	6 hours 12 hours

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.4 Refueling Water Storage Tank (RWST)

LCO 3.5.4 The RWST shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4

INSERT 2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RWST boron concentration not within limits. OR RWST borated water temperature not within limits.	A.1 Restore RWST to OPERABLE status.	8 hours
B. RWST inoperable for reasons other than Condition A.	B.1 Restore RWST to OPERABLE status.	1 hour
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.4.1	-----NOTE----- Only required to be performed when ambient air temperature is < 35°F. ---------- Verify RWST borated water temperature is ≥ 35°F.	In accordance with the Surveillance Frequency Control Program
SR 3.5.4.2	Verify RWST borated water volume is ≥ 455,300 gallons.	In accordance with the Surveillance Frequency Control Program
SR 3.5.4.3	Verify RWST boron concentration is ≥ 2300 ppm and ≤ 2500 ppm.	In accordance with the Surveillance Frequency Control Program

INSERT 2

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One or more containment air locks inoperable for reasons other than Condition A or B.	C.1	Initiate action to evaluate overall containment leakage rate per LCO 3.6.1.	Immediately
	AND		
	C.2	Verify a door is closed in the affected air lock.	1 hour
	AND		
	C.3	Restore air lock to OPERABLE status.	24 hours
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	6 hours
	AND		
	D.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.1	---NOTES--- 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1 ------ Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program.	In accordance with the Containment Leakage Rate Testing Program
SR 3.6.2.2	Verify only one door in the air lock can be opened at a time.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.3 Containment Isolation Valves

LCO 3.6.3 Each containment isolation valve shall be OPERABLE.

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

ACTIONS

---NOTES---

1. Penetration flow path(s) except no more than two of three flow paths for containment purge supply and exhaust and containment vacuum/pressure relief paths at one time 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 containment isolation valves.
4. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria.

-- **INSERT 2**

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. --------------NOTE-------------- Only applicable to penetration flow paths with two containment isolation valves. ------------------------------------ One or more penetration flow paths with one containment isolation valve inoperable except for a containment purge supply and exhaust valve or pressure/vacuum relief valve 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.	4 hours
	<u>AND</u>		

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2	-----------NOTES----------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by administrative means. -------------------------------- Verify the affected penetration flow path is isolated.	Once per 31 days $\boxed{\textbf{following isolation}}$ for isolation devices outside containment AND Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment
B. --------------NOTE-------------- Only applicable to penetration flow paths with two containment isolation valves. ----------------------------------- One or more penetration flow paths with two containment isolation valves inoperable except for a containment purge supply and exhaust valve or pressure/vacuum relief valve leakage not within limit.	B.1	Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour **INSERT 2**

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. --------------NOTE-------------- Only applicable to penetration flow paths with only one containment isolation valve and a closed system. ------------------------------------ One or more penetration flow paths with one containment isolation valve inoperable.	C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. AND C.2 ------------NOTES---------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by administrative means. -------------------------------- Verify the affected penetration flow path is isolated.	72 hours **INSERT 2** Once per 31 days **following isolation**
D. One or more penetration flow paths with one or more containment purge supply and exhaust and vacuum/pressure relief valves not within purge valve leakage limits.	D.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. AND	24 hours (continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. (continued)	D.2	------------NOTES---------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by administrative means. -------------------------------- Verify the affected penetration flow path is isolated.	Once per 31 days **following isolation** for isolation devices outside containment AND Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment
	AND		
	D.3	Perform SR 3.6.3.7 for the resilient seal purge or vacuum/pressure relief valves closed to comply with Required Action D.1.	Once per 92 days **following isolation**
E. Required Action and associated Completion Time not met.	E.1	Be in MODE 3.	6 hours
	AND		
	E.2	Be in MODE 5.	36 hours

3.6 CONTAINMENT SYSTEMS

3.6.6 Containment Spray and Cooling Systems

LCO 3.6.6 The containment fan cooling unit (CFCU) system and two containment spray trains shall be OPERABLE.

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

INSERT 2

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One containment spray train inoperable.	A.1	Restore containment spray train to OPERABLE status.	72 hours ~~NOTE~~ ~~For planned maintenance or inspections, the Completion Time is 72 hours. The Completion Times of Required Action A.2 are for unplanned corrective maintenance or inspections.~~
	~~OR~~ ~~A.2~~	~~Restore containment spray train to OPERABLE status~~	~~14 days~~
B. Required Action and associated Completion Time of Condition A not met.	B.1 AND B.2	Be in MODE 3. Be in MODE 5.	6 hours 84 hours
C. ~~One required~~ The CFCU system inoperable such that a minimum of two CFCUs remain OPERABLE.	C.1	Restore ~~required~~ the CFCU system to OPERABLE status.	7 days

(continued)

+2

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. One ~~required~~ containment spray train inoperable and ~~one required~~**the** CFCU system inoperable such that a minimum of two CFCUs remain OPERABLE.	D.1	Restore ~~one required~~ containment spray ~~system~~**train** to OPERABLE status,	72 hours
	OR		
	D.2	Restore ~~one~~**the** CFCU system to OPERABLE status such that four CFCUs or three CFCUs, each supplied by a different vital bus, are OPERABLE.	72 hours
INSERT 30			INSERT 2
~~E~~**F**. Required Action and associated Completion Time of Condition ~~C or D~~**C, D, or E** not met.	~~E~~**F**.1	Be in MODE 3.	6 hours
	AND		
	~~E~~**F**.2	Be in MODE 5.	36 hours
~~F. Two containment spray trains inoperable.~~ ~~OR~~ ~~One containment spray train inoperable and two CFCU systems inoperable such that one or less CFCUs remain OPERABLE.~~ ~~OR~~ ~~One or less CFCUs OPERABLE.~~	~~F.1~~	~~Enter LCO 3.0.3.~~	~~Immediately~~

3.7 PLANT SYSTEMS

3.7.2 Main Steam Isolation Valves (MSIVs)

LCO 3.7.2 Four MSIVs shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 except when all MSIVs are closed and de-activated.

INSERT 2

ACTIONS

INSERT 31

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MSIV inoperable in MODE 1.	A.1 Restore MSIV to OPERABLE status.	8 hours
~~B~~**C**. Required Action and associated Completion Time of Condition A **or B** not met.	~~B~~**C**.1 Be in MODE 2.	6 hours
~~C~~**D**. ------------NOTE--------------- Separate Condition entry is allowed for each MSIV. ------------------------------------ One or more MSIVs inoperable in MODE 2 or 3.	~~C~~**D**.1 Close MSIV. AND ~~C~~**D**.2 Verify MSIV is closed.	8 hours Once per 7 days
~~D~~**E**. Required Action and associated Completion Time of Condition ~~C~~**D** not met.	~~D~~**E**.1 Be in MODE 3. AND ~~D~~**E**.2 Be in MODE 4.	6 hours 12 hours

3.7 PLANT SYSTEMS

3.7.4 10% Atmospheric Dump Valves (ADVs)

LCO 3.7.4 Four ADV lines shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

INSERT 2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required ADV line inoperable.	A.1 Restore required ADV line to OPERABLE status	7 days
B. Two required ADV lines inoperable.	B.1 Restore at least one ADV line to OPERABLE status.	72 hours
C. Three or more required ADV lines inoperable.	C.1 Restore at least two ADV lines to OPERABLE status.	24 hours
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 4 without reliance upon steam generator for heat removal.	6 hours 18 hours

3.7 PLANT SYSTEMS

3.7.5 Auxiliary Feedwater (AFW) System

LCO 3.7.5 Three AFW trains shall be OPERABLE.

--NOTE--
Only one AFW train, which includes a motor driven pump, is required to be OPERABLE in MODE 4.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

--NOTE--
LCO 3.0.4b is not applicable.

INSERT 2

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Turbine driven AFW train inoperable due to one inoperable steam supply. OR ------------NOTE------------ Only applicable if MODE 2 has not been entered following refueling. ---------------------------------- Turbine driven AFW pump inoperable in MODE 3 following refueling.	A.1 Restore affected equipment to OPERABLE status.	7 days
B. One AFW train inoperable in MODE 1, 2 or 3 for reasons other than Condition A.	B.1 Restore AFW train to OPERABLE status.	72 hours

(continued)

INSERT 2

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. --------------NOTE-------------- Only applicable when the remaining OPERABLE motor driven AFW train provides feedwter to the steam generator with the inoperable steam supply. ---------------------------------- Turbine driven AFW train inoperable due to one inoperable steam supply. AND One motor driven AFW train inoperable.	C.1 Restore the steam supply to the turbine driven train to OPERABLE status. OR	48 hours
	C.2 Restore the motor driven AFW train to OPERABLE status.	48 hours
INSERT 32		
~~D~~**E**. Required Action and associated Completion Time for Condition **A, B, C, or D**~~A, B, or C~~ not met. ~~OR~~ ~~Two AFW trains inoperable in MODE 1, 2 or 3 for reasons other than Condition C.~~	~~C~~**E**.1 Be in MODE 3. AND	6 hours
	~~C~~**E**.2 Be in MODE 4.	18 hours
~~E~~**F**. Three AFW trains inoperable in MODE 1, 2, or 3.	~~E~~**F**.1 -----------NOTE--------------- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. --------------------------------- Initiate action to restore one AFW train to OPERABLE status	Immediately
~~F~~**G**. Required AFW train inoperable in MODE 4.	~~F~~**G**.1 Initiate action to restore AFW train to OPERABLE status.	Immediately

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

LCO 3.7.6 The CST shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

INSERT 2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CST inoperable.	A.1 Verify by administrative means OPERABILITY of backup water supply. AND A.2 Restore CST to OPERABLE status.	4 hours AND Once per 12 hours thereafter 7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4, without reliance on steam generator for heat removal.	6 hours 18 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.6.1	Verify the CST water volume is ≥ 200,000 gallons for Unit 1 and ≥ 166,000 gallons for Unit 2.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.7 Vital Component Cooling Water (CCW) System

LCO 3.7.7 Two vital CCW loops shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One vital CCW loop inoperable.	A.1	------------NOTE-------------- Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for residual heat removal loops made inoperable by CCW. -----------------------------------	
		Restore vital CCW loop to OPERABLE status.	72 hours **INSERT 2**
INSERT 33			
~~B~~C. Required Action and associated Completion Time ~~of Condition A~~ not met.	~~B~~C.1	Be in MODE 3.	6 hours
	AND		
	~~B~~C.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.7.1	---------------------------NOTE--------------------------- Isolation of CCW flow to individual components does not render the CCW System inoperable ---	
	Verify each CCW manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program

(continued)

3.7 PLANT SYSTEMS

3.7.8 Auxiliary Saltwater (ASW) System

LCO 3.7.8 Two ASW trains shall be OPERABLE.

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

ACTIONS

INSERT 34

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ASW train inoperable.	A.1 ------------NOTE-------------- Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for residual heat removal loops made inoperable by ASW. ---------------------------------- Restore ASW train to OPERABLE status	72 hours **INSERT 2**
~~B~~C. Required Action and associated Completion Time ~~of Condition A~~ not met.	~~B~~C.1 Be in MODE 3. AND ~~B~~C.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.8.1	Verify each ASW manual and power operated, valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.7.8.2	Verify each ASW power operated valve in the flow path that is not locked, sealed, or otherwise secured in position, can be moved to the correct position.	In accordance with the Inservice Test Program.
SR 3.7.8.3	Verify each ASW pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources - Operating

LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System; and

b. Three diesel generators (DGs) capable of supplying the onsite Class 1E power distribution subsystem(s); and

c. Two supply trains of the diesel fuel oil (DFO) transfer system.

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

ACTIONS

------------------------------------NOTE------------------------------------
LCO 3.0.4b is not applicable to DGs.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One required offsite circuit inoperable.	A.1	Perform SR 3.8.1.1 for required OPERABLE offsite circuit.	1 hour AND Once per 8 hours thereafter.
	AND		
	A.2	Restore required offsite circuit to OPERABLE status.	72 hours

INSERT 2

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One DG inoperable.	B.1	Perform SR 3.8.1.1 for the required offsite circuit(s).	1 hour AND Once per 8 hours thereafter.
	AND		
		------------NOTE------------ In MODE 1, 2, and 3, TDAFW pump is considered a required redundant feature. --------------------------------	
	B.2	Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s).
	AND		
	B.3.1	Determine OPERABLE DG(s) is not inoperable due to common cause failure. OR	24 hours
	B.3.2	Perform SR 3.8.1.2 for OPERABLE DG(s).	24 hours
	AND		
	B.4	Restore DG to OPERABLE status.	14 days

INSERT 2

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Two required offsite circuits inoperable.	C.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable. AND C.2 Restore one required offsite circuit to OPERABLE status.	12 hours from discovery of Condition C concurrent with inoperability of redundant required features. 24 hours
D. One required offsite circuit inoperable. AND One DG inoperable.	D.1 Restore required offsite circuit to OPERABLE status. OR D.2 Restore DG to OPERABLE status.	12 hours 12 hours
E. Two or more DGs inoperable.	E.1 Ensure at least two DGs are OPERABLE.	2 hours
F. One supply train of the DFO transfer system inoperable.	F.1 Restore the DFO transfer system to OPERABLE status.	72 hours
G. Two supply trains of the DFO transfer system inoperable.	G.1 Restore one train of the DFO transfer system to OPERABLE status.	1 hour
~~H~~J. Required Action and associated Completion Time ~~of Condition A, B, C, D, E, F or G~~ not met.	~~H~~J.1 Be in MODE 3. AND ~~H~~J.2 Be in MODE 5.	6 hours 36 hours
~~I. Two or more DGs inoperable.~~ ~~AND~~ ~~One or more required offsite circuits inoperable.~~	~~I.1 Enter LCO 3.0.3.~~	~~Immediately~~
~~J. One or more DGs inoperable.~~ ~~AND~~ ~~Two required offsite circuits inoperable.~~	~~J.1 Enter LCO 3.0.3.~~	~~Immediately~~

INSERT 2

INSERT 35

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. One or more DGs with turbocharger air assist air receiver pressure < 180 psig and ≥ 150 psig.	F.1 Restore turbocharger air assist air receiver pressure to ≥ 180 psig.	48 hours
G. Required Action and associated Completion Time or Conditions E or F not met. OR One or more DG's turbocharger air assist, or starting air subsystem not within limits for reasons other than Condition E or F.	G.1 Declare associated DG inoperable.	Immediately
H. Required Action and associated Completion Time of Condition A, B, C, or D not met. OR Fuel oil storage tanks or lube oil not within limits for reasons other than Conditions A, B, C, or D.	H.1 Declare all DGs on associated unit(s) inoperable. ~~AND, if associated unit is in MODES 1, 2, 3, or 4,~~ ~~H.2 Be in MODE 3.~~ ~~AND~~ ~~H.3 Be in MODE 5.~~	Immediately ~~6 hours~~ ~~36 hours~~

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

LCO 3.8.4 Three Class 1E DC electrical power subsystems shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One battery charger inoperable.	A.1 Restore battery terminal voltage to greater than or equal to the minimum established float voltage. AND A.2 Verify battery float current ≤ 2 amps. AND A.3 Restore battery charger to OPERABLE status.	2 hours 12 hours 14 days

INSERT 2

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One battery inoperable.	B.1	Restore battery to OPERABLE status.	2 hours INSERT 2
	~~OR~~		
	~~B.2.1.1~~	~~NOTE~~ ~~Required Actions B.2.1.1, B.2.1.2, and B.2.2 are applicable, on a one time basis, for Unit 1 cycle 14.~~	
		~~Determine OPERABLE batteries are not inoperable due to common cause failure.~~	~~2 hours~~
		~~OR~~	
	~~B.2.1.2~~	~~Perform SR 3.8.4.1 and SR 3.8.6.1 for OPERABLE batteries.~~	~~2 hours~~
	~~AND~~		
	~~B.2.2~~	~~Restore battery to OPERABLE status.~~	~~4 hours~~
C. One DC electrical power subsystem inoperable for reasons other than Condition A or B.	C.1	Restore DC electrical power subsystem to OPERABLE status.	2 hours
D. More than one full capacity charger receiving power simultaneously from a single 480 V vital bus.	D.1	Restore the DC electrical power subsystem to a configuration wherein each charger is powered from its associated 480 volt vital bus.	14 days
INSERT 36 ~~E~~F. Required Action and Associated Completion Time not met.	~~E~~F.1	Be in MODE 3.	6 hours
	AND		
	~~E~~F.2	Be in MODE 5.	36 hours

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters-Operating

LCO 3.8.7 Four Class 1E Vital 120 V UPS inverters shall be OPERABLE.

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

ACTIONS

INSERT 2

INSERT 37

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required inverter inoperable.	A.1 -----------NOTE--------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating" with any vital 120 V AC bus de-energized. ---------------------------------- Restore inverter to OPERABLE status.	24 hours
~~B~~**C**. Required Action and associated Completion Time not met.	~~B~~**C**.1 Be in MODE 3.	6 hours
	AND	
	~~B~~**C**.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct inverter voltage and alignment to required AC vital buses.	In accordance with the Surveillance Frequency Control Program

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems-Operating

LCO 3.8.9 The required Class 1E AC, DC, and 120 VAC vital bus electrical power distribution subsystems shall be OPERABLE.

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

INSERT 2

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One **or more** AC electrical power distribution subsystem inoperable.	A.1	Restore AC electrical power distribution subsystem to OPERABLE status.	8 hours
B. One **or more** 120 VAC vital bus subsystem inoperable.	B.1	Restore 120 VAC vital bus subsystem to OPERABLE status.	2 hours
C. One **or more** DC electrical power distribution subsystem inoperable.	C.1	Restore DC electrical power distribution subsystem to OPERABLE status.	2 hours
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	D.2	Be in MODE 5.	36 hours
~~E. Two required Class 1E AC, DC, or 120 VAC vital buses with inoperable distribution subsystems that result in a loss of safety function.~~	~~E.1~~	~~Enter LCO 3.0.3.~~	~~Immediately~~

5.5 Programs and Manuals (continued)

5.5.19 Control Room Envelope Habitability Program

A Control Room Envelope (CRE) Habitability Program shall be established and implemented to ensure that CRE habitability is maintained such that, with an OPERABLE Control Room Ventilation System (CRVS), CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem whole body or its equivalent to any part of the body for the duration of the accident. The program shall include the following elements:

a. The definition of the CRE and the CRE boundary.

b. Requirements for maintaining the CRE boundary in its design condition, including configuration control and preventive maintenance.

c. Requirements for (i) determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003, and (ii) assessing CRE habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one train of the CRVS, operating at the flow rate required by the VFTP, at a Frequency of 24 months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the 24 month assessment of the CRE boundary.

e. The quantitative limits on unfiltered air inleakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph c. The unfiltered air inleakage limit for radiological challenges is the inleakage flow rate assumed in the licensing basis analyses of DBA consequences. Unfiltered air inleakage limits for hazardous chemicals must ensure that exposure of CRE occupants to these hazards will be within the assumptions in the licensing basis.

f. The provisions of SR 3.0.2 are applicable to the Frequencies required by paragraphs c and d for determining CRE unfiltered inleakage and assessing CRE habitability, and measuring CRE pressure and assessing the CRE boundary.

INSERT 38

(continued)

INSERT 1

EXAMPLE 1.3-8

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One subsystem inoperable.	A.1 Restore subsystem to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. ---- NOTE ------ Not applicable when second Subsystem intentionally made inoperable. ---------------------- Two subsystems inoperable.	B.1 Restore subsystems to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

When a subsystem is declared inoperable, Condition A is entered. The 7 day Completion Time may be applied as discussed in Example 1.3-2. However, the licensee may elect to apply the Risk Informed Completion Time Program which permits calculation of a Risk Informed Completion Time (RICT) that may be used to complete the Required Action beyond the 7 day Completion Time. The RICT cannot exceed 30 days. After the 7 day Completion Time has expired, the subsystem must be restored to OPERABLE status within the RICT or Condition C must also be entered.

INSERT 1 (continued)

If a second subsystem is declared inoperable, Condition B may also be entered. The Condition is modified by a Note stating it is not applicable if the second subsystem is intentionally made inoperable. The Required Actions of Condition B are not intended for voluntary removal of redundant subsystems from service. The Required Action is only applicable if one subsystem is inoperable for any reason and the second subsystem is found to be inoperable, or if both subsystems are found to be inoperable at the same time. If Condition B is applicable, at least one subsystem must be restored to OPERABLE status within 1 hour or Condition C must also be entered. The licensee may be able to apply a RICT to extend the Completion Time beyond 1 hour if the requirements of the Risk Informed Completion Time Program are met. If two subsystems are inoperable and Condition B is not applicable (i.e., the second subsystem was intentionally made inoperable), LCO 3.0.3 is entered as there is no applicable Condition.

The Risk Informed Completion Time Program requires recalculation of the RICT to reflect changing plant conditions. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.

If the 7 day Completion Time clock of Condition A or the 1 hour Completion Time clock of Condition B have expired and subsequent changes in plant condition result in exiting the applicability of the Risk Informed Completion Time Program without restoring the inoperable subsystem to OPERABLE status, Condition C is also entered and the Completion Time clocks for Required Actions C.1 and C.2 start.

If the RICT expires or is recalculated to be less than the elapsed time since the Condition was entered and the inoperable subsystem has not been restored to OPERABLE status, Condition C is also entered and the Completion Time clocks for Required Actions C.1 and C.2 start. If the inoperable subsystems are restored to OPERABLE status after Condition C is entered, Conditions A, B, and C are exited, and therefore, the Required Actions of Condition C may be terminated.

INSERT 2

OR

In accordance with
the Risk Informed
Completion Time
Program

INSERT 3

C. ------------ NOTE ----------- Not applicable when second Manual Reactor Trip channel intentionally made inoperable. -------------------------------- Two Manual Reactor Trip channels inoperable.	C.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

(continued)

INSERT 4

F. ------------ NOTE ----------- Not applicable when two or more Power Range Neutron Flux – High channels intentionally made inoperable. -------------------------------- Two or more Power Range Neutron Flux – High channels inoperable.	F.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 5

H. ------------ NOTE ------------ Not applicable when two or more channels intentionally made inoperable. -------------------------------- Two or more channels inoperable.	H.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 6

N. Required Action and associated Completion Time of Condition D or M not met.	N.1 Initiate action to fully insert all rods. <u>AND</u> N.2 Place the Rod Control System in a condition incapable of rod withdrawal.	Immediately 1 hour

INSERT 7

Q. ------------ NOTE ------------ Not applicable when two or more channels intentionally made inoperable. -------------------------------- Two or more channels inoperable.	Q.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program
R. Required Action and associated Completion Time of Condition P or Q not met.	R.1 Reduce THERMAL POWER to < P-7.	6 hours

INSERT 8

T. ------------ NOTE ------------ Not applicable when second channel intentionally made inoperable. -------------------------------- Two or more channels inoperable.	T.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program
U. Required Action and associated Completion Time of Condition S or T not met.	U.1 Reduce THERMAL POWER to < P-7.	6 hours

INSERT 9

W. ------------ NOTE ------------ Not applicable when two or more Low Auto-Stop Oil Pressure Turbine Trip channels intentionally made inoperable. -------------------------------- Two or more Low Auto-Stop Oil Pressure Turbine Trip channels inoperable.	W.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 10

Y. Required Action and associated Completion Time of Condition V, W, or X not met.	Y.1 Reduce THERMAL POWER to < P-9.	4 hours

INSERT 11

AA.------------ NOTE ----------- Not applicable when second train intentionally made inoperable. -------------------------------- Two trains inoperable.	AA.1 Restore trains to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 12

CC.------------ NOTE ----------- Not applicable when second RTB train intentionally made inoperable. -------------------------------- Two RTB trains inoperable.	CC.1 Restore trains to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 13

FF. Required Action and associated Completion Time of Condition EE not met.	FF.1 Be in MODE 2.	6 hours

INSERT 14

HH. ------------- NOTE --------- Not applicable when one trip mechanism for two or more RTBs intentionally made inoperable. --------------------------------- One trip mechanism inoperable for two or more RTBs.	HH.1 Restore trip mechanisms to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 15

KK. Required Action and associated Completion Time of Condition B, C, E, F, G, H, Z, AA, BB, CC, DD, GG, HH, II, or JJ not met.	KK.1 Be in MODE 3.	6 hours

INSERT 16

C. ------------ NOTE ----------- Not applicable when second channel or train intentionally made inoperable. -------------------------------- Two channels or trains inoperable.	C.1 Restore at least one channel or train to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 17

E. ------------ NOTE ----------- Not applicable when second train intentionally made inoperable. -------------------------------- Two trains inoperable.	E.1 Restore at least one train to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 18

G. ------------ NOTE ----------- Not applicable when two or more required channels or one channel in more than one loop, steam line, or steam generator intentionally made inoperable. -------------------------------- Two or more required channels inoperable or one channel inoperable in more than one loop, steam line, or steam generator.	E.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 19

I. ----------- NOTE ----------- Not applicable when second Containment Pressure channel intentionally made inoperable. ------------------------------- Two or more Containment Pressure channels inoperable.	I.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 20

L. ----------- NOTE ----------- Not applicable when second train intentionally made inoperable. ------------------------------- Two trains inoperable.	L.1 Restore at least one train to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 21

N. ----------- NOTE ----------- Not applicable when second train intentionally made inoperable. ------------------------------- Two trains inoperable.	N.1 Restore at least one train to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 22

P. ------------ NOTE ----------- Not applicable when two or more channels intentionally made inoperable. -------------------------------- Two or more channels inoperable.	P.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 23

R. ------------ NOTE ----------- Not applicable when two or more channels intentionally made inoperable. -------------------------------- Two or more channels inoperable.	R.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 24

T. ------------ NOTE ----------- Not applicable when two or more channels intentionally made inoperable. -------------------------------- Two or more channels inoperable.	T.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 25

Y. ------------ NOTE ----------- Not applicable when two or more channels intentionally made inoperable. -------------------------------- Two or more channels inoperable.	Y.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 26

AA. ------------ NOTE ----------- Not applicable when two or more channels intentionally made inoperable. -------------------------------- Two or more channels inoperable.	AA.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program
BB. Required Action and associated Completion Time of Conditions B, C, D, E, S, T, X, Y, Z, or AA not met.	BB.1 Be in MODE 3. <u>AND</u> BB.2 Be in MODE 5.	6 hours 36 hours
CC. Required Action and associated Completion Time of Conditions F, G, H, I, J, K, L, U, or V not met.	CC.1 Be in MODE 3. <u>AND</u> CC.2 Be in MODE 4.	6 hours 12 hours
DD. Required Action and associated Completion Time of Conditions M, N, Q, or R not met.	DD.1 Be in MODE 3.	6 hours
EE. Required Action and associated Completion Time of Conditions O or P not met.	EE.1 Be in MODE 2.	6 hours

INSERT 27

C. ------------ NOTE ----------- Not applicable when second group of pressurizer heaters intentionally made inoperable. -------------------------------- Two groups of pressurizer heaters inoperable.	C.1 Restore pressurizer heaters to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 28

C. ------------ NOTE ----------- Not applicable when two or more accumulators intentionally made inoperable. -------------------------------- Two or more accumulators inoperable.	C.1 Restore accumulators to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 29

B. ------------ NOTE ----------- Not applicable when second ECCS train intentionally made inoperable. -------------------------------- Less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.	B.1 Restore ECCS flow equivalent to 100% of a single OPERABLE ECCS train.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 30

E. ------------ NOTE ----------- Not applicable when second containment spray train or fourth CFCU intentionally made inoperable. -------------------------------- Two containment spray trains inoperable. <u>OR</u> One containment spray train inoperable and the CFCU system inoperable such that one or less CFCUs remain OPERABLE. <u>OR</u> The CFCU system inoperable such that one or less CFCUs remain OPERABLE.	E.1 Restore containment spray trains and the CFCU system to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 31

B. ------------ NOTE ----------- Not applicable when two or more MSIVs intentionally made inoperable. -------------------------------- Two or more MSIVs inoperable in MODE 1.	B.1 Restore MSIVs to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 32

D. ------------ NOTE ----------- Not applicable when second AFW train intentionally made inoperable. -------------------------------- Two AFW trains inoperable in MODE 1, 2, or 3 for reasons other than Condition C.	D.1 Restore AFW trains to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 33

B. ------------ NOTE ----------- Not applicable when second vital CCW loop intentionally made inoperable. -------------------------------- Two vital CCW loops inoperable.	B.1 Restore vital CCW loops to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 34

B. ------------ NOTE ----------- Not applicable when second ASW train intentionally made inoperable. -------------------------------- Two ASW trains inoperable.	B.1 Restore ASW trains to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 35

H. ------------ NOTE ----------- Not applicable when offsite circuit or second DG intentionally made inoperable. -------------------------------- Two or more DGs inoperable. <u>AND</u> One or more required offsite circuits inoperable.	H.1 Restore required AC sources to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program
I. ----------- NOTE ----------- Not applicable when DG or second offsite circuit intentionally made inoperable. -------------------------------- One or more DGs inoperable. <u>AND</u> Two required offsite circuits inoperable.	I.1 Restore required AC sources to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 36

E. ------------ NOTE ------------ Not applicable when second DC electrical power subsystem intentionally made inoperable. -------------------------------- Two DC electrical power subsystems inoperable.	H.1	Restore at least one DC electrical power subsystem to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 37

B. ------------ NOTE ------------ Not applicable when two or more required inverters intentionally made inoperable. -------------------------------- Two or more required inverters inoperable.	B.1	Restore inverters to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

INSERT 38

5.5.20 Risk Informed Completion Time Program

This program provides controls to calculate a Risk Informed Completion Time (RICT) and must be implemented in accordance with NEI 06-09, Revision 0, "Risk-Managed Technical Specifications (RMTS) Guidelines." The program shall include the following:

a. The RICT may not exceed 30 days;

b. A RICT may only be utilized in MODE 1 and 2;

c. When a RICT is being used, any plant configuration change within the scope of the Risk Informed Completion Time Program must be considered for the effect on the RICT.

    1. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration.

    2. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.

    3. Revising the RICT is not required If the plant configuration change would lower plant risk and would result in a longer RICT.

d. Use of a RICT is not permitted for voluntary entry into a configuration which represents a loss of a specified safety function or inoperability of all required trains of a system required to be OPERABLE.

e. Use of a RICT is permitted for emergent conditions which represent a loss of a specified safety function or inoperability of all required trains of a system required to be OPERABLE if one or more of the trains are considered "PRA functional" as defined in Section 2.3.1 of NEI 06-09.

Revised Technical Specification Page(s)

Enclosure
Attachment 2
PG&E Letter DCL-13-106

Revised Technical Specification Page(s)

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3.6-14	3.6-14
3.7-4	3.7-4
3.7-8	3.7-8
3.7-10	3.7-10
3.7-11	3.7-11
3.7-13	3.7-13
3.7-14	3.7-14
3.7-15	3.7-15
3.7-16	3.7-16
	3.7-16a
3.8-1	3.8-1
3.8-2	3.8-2
3.8-3	3.8-3
	3.8-3a
3.8-16	3.8-16
3.8-18	3.8-18
3.8-18a	3.8-18a
3.8-26	3.8-26
	3.8-26a
3.8-29	3.8-29
5.0-17a	5.0-17a
	5.0-17b

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-7

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One subsystem inoperable.	A.1 Verify affected subsystem isolated.	1 hour AND Once per 8 hours thereafter
	AND	
	A.2 Restore subsystem to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	AND	
	B.2 Be in MODE 5.	36 hours

Required Action A.1 has two Completion Times. The 1 hour Completion Time begins at the time the Condition is entered and each "Once per 8 hours thereafter" interval begins upon performance of Required Action A.1.

If after Condition A is entered, Required Action A.1 is not met within either the initial 1 hour or any subsequent 8 hour interval from the previous performance (plus the extension allowed by SR 3.0.2), Condition B is entered. The Completion Time clock for Condition A does not stop after Condition B is entered, but continues from the time Condition A was initially entered. If Required Action A.1 is met after Condition B is entered, Condition B is exited and operation may continue in accordance with Condition A, provided the Completion Time for Required Action A.2 has not expired.

(continued)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-8

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One subsystem inoperable.	A.1 Restore subsystem to OPERABLE status.	7 days <u>OR</u> In accordance with the Risk Informed Completion Time Program
B. ---- NOTE ------ Not applicable when second Subsystem intentionally made inoperable. -------------------- Two subsystems inoperable.	B.1 Restore subsystems to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 5.	6 hours 36 hours

When a subsystem is declared inoperable, Condition A is entered. The 7 day Completion Time may be applied as discussed in Example 1.3-2. However, the licensee may elect to apply the Risk Informed Completion Time Program which permits calculation of a Risk Informed Completion Time (RICT) that may be used to complete the Required Action beyond the 7 day Completion Time. The RICT cannot exceed 30 days. After the 7 day Completion Time has expired, the subsystem must be restored to OPERABLE status within the RICT or Condition C must also be entered.

(continued)

1.3 Completion Times

EXAMPLES (continued)	EXAMPLE 1.3-8 (continued) If a second subsystem is declared inoperable, Condition B may also be entered. The Condition is modified by a Note stating it is not applicable if the second subsystem is intentionally made inoperable. The Required Actions of Condition B are not intended for voluntary removal of redundant subsystems from service. The Required Action is only applicable if one subsystem is inoperable for any reason and the second subsystem is found to be inoperable, or if both subsystems are found to be inoperable at the same time. If Condition B is applicable, at least one subsystem must be restored to OPERABLE status within 1 hour or Condition C must also be entered. The licensee may be able to apply a RICT to extend the Completion Time beyond 1 hour if the requirements of the Risk Informed Completion Time Program are met. If two subsystems are inoperable and Condition B is not applicable (i.e., the second subsystem was intentionally made inoperable), LCO 3.0.3 is entered as there is no applicable Condition. The Risk Informed Completion Time Program requires recalculation of the RICT to reflect changing plant conditions. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less. If the 7 day Completion Time clock of Condition A or the 1 hour Completion Time clock of Condition B have expired and subsequent changes in plant condition result in exiting the applicability of the Risk Informed Completion Time Program without restoring the inoperable subsystem to OPERABLE status, Condition C is also entered and the Completion Time clocks for Required Actions C.1 and C.2 start. If the RICT expires or is recalculated to be less than the elapsed time since the Condition was entered and the inoperable subsystem has not been restored to OPERABLE status, Condition C is also entered and the Completion Time clocks for Required Actions C.1 and C.2 start. If the inoperable subsystems are restored to OPERABLE status after Condition C is entered, Conditions A, B, and C are exited, and therefore, the Required Actions of Condition C may be terminated.
IMMEDIATE COMPLETION TIME	When "Immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

3.3 INSTRUMENTATION

3.3.1 Reactor Trip System (RTS) Instrumentation

LCO 3.3.1 The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

---NOTE---

Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one or more required channels or trains inoperable.	A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s) or trains.	Immediately
B. One Manual Reactor Trip channel inoperable.	B.1 Restore channel to OPERABLE status.	48 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. ------------ NOTE ----------- Not applicable when second Manual Reactor Trip channel intentionally made inoperable. -------------------------------- Two Manual Reactor Trip channels inoperable.	C.1	Restore channels to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program
----------------NOTE----------------- While this LCO is not met for function 19, 20 or 21, in MODE 5, making the Rod Control System capable of rod withdrawal is not permitted. -- D. One channel or train inoperable.	D.1	Restore channel or train to OPERABLE status.	48 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One Power Range Neutron Flux-High channel inoperable.	------------------NOTE------------------ The inoperable channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment of other channels. ---	
	E.1.1 -----------NOTE--------------- Only required when the Power Range Neutron Flux input to QPTR is inoperable. ---------------------------------- Perform SR 3.2.4.2.	12 hours from discovery of THERMAL POWER > 75% RTP AND Once per 12 hours thereafter
	AND E.1.2 Place channel in trip	72 hours OR In accordance with the Risk Informed Completion Time Program
F. ------------ NOTE ----------- Not applicable when two or more Power Range Neutron Flux – High channels intentionally made inoperable. -------------------------------- Two or more Power Range Neutron Flux – High channels inoperable.	F.1 Restore channels to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. One channel inoperable.	------------------NOTE------------------ For functions 6, 7, and 8.b, the inoperable channel and/or one additional channel may be surveillance tested with one channel in bypass and one channel in trip for up to 12 hours, or both the inoperable and the additional channel may be surveillance tested in bypass for up to 12 hours. For functions 2.b and 3, only the inoperable channel may be bypassed for surveillance testing of other channels. For function 14.a, the inoperable channel and/or one additional channel may be surveillance tested with one channel in bypass and one channel in trip for up to 12 hours. This note is not intended to allow simultaneous testing of coincident channels on a routine basis --	
	G.1 Place channel in trip.	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
H. ------------ NOTE ----------- Not applicable when two or more channels intentionally made inoperable. -------------------------------- Two or more channels inoperable.	H.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
I. One Intermediate Range Neutron Flux channel inoperable.	I.1	Reduce THERMAL POWER to < P-6.	24 hours
	OR		
	I.2	Increase THERMAL POWER to > P-10.	24 hours
J. Two Intermediate Range Neutron Flux channels inoperable.	J.1	-----------NOTE------------- Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed. -------------------------------	
		Suspend operations involving positive reactivity additions.	Immediately
	AND		
	J.2	Reduce THERMAL POWER to < P-6.	2 hours
K. One Source Range Neutron Flux channel inoperable.	K.1	-----------NOTE------------- Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed. -------------------------------	
		Suspend operations involving positive reactivity additions.	Immediately
L. Two Source Range Neutron Flux channels inoperable.	L.1	Open reactor trip breakers (RTBs).	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
M. One Source Range Neutron Flux channel inoperable.	M.1	Restore channel to OPERABLE status.	48 hours OR In accordance with the Risk Informed Completion Time Program
N. Required Action and associated Completion Time of Condition D or M not met.	N.1	Initiate action to fully insert all rods.	Immediately
	AND		
	N.2	Place the Rod Control System in a condition incapable of rod withdrawal.	1 hour
O. Required Source Range Neutron Flux channel inoperable.	O.1	-----------NOTE------------- Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM. -------------------------------- Suspend operations involving positive reactivity additions.	Immediately
	AND		
	O.2	Perform SR 3.1.1.1.	1 hour AND Once per 12 hours thereafter

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
P. One channel inoperable.	------------------NOTE------------------ For function 8.a, the inoperable channel and/or one additional channel may be surveillance tested with one channel in bypass and one channel in trip for up to 12 hours, or both the inoperable and the additional channel may be surveillance tested in bypass for up to 12 hours. For functions 9 and 10, the inoperable channel and/or one additional channel may be surveillance tested with one channel in bypass and one channel in trip for up to 12 hours. For functions 12 and 13, only the inoperable channel may be bypassed for surveillance testing of other channels. This note is not intended to allow simultaneous testing of coincident channels on a routine basis. ---	
	P.1 Place channel in trip.	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
Q. ------------ NOTE ----------- Not applicable when two or more channels intentionally made inoperable. -------------------------------- Two or more channels inoperable.	Q.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program
R. Required Action and associated Completion Time of Condition P or Q not met.	R.1 Reduce THERMAL POWER to < P-7.	6 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
S. One channel inoperable	S.1	Place channel in trip	6 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
T. ------------ NOTE ----------- Not applicable when second channel intentionally made inoperable. -------------------------------- Two or more channels inoperable.	T.1	Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program
U. Required Action and associated Completion Time of Condition S or T not met.	U.1	Reduce THERMAL POWER to < P-7.	6 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
V. One Low Auto-Stop Oil Pressure Turbine Trip channel inoperable	------------------NOTE------------------ An inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. -- V.1 Place channel in trip.	72 hours OR In accordance with the Risk Informed Completion Time Program
W. ------------ NOTE ----------- Not applicable when two or more Low Auto-Stop Oil Pressure Turbine Trip channels intentionally made inoperable. -------------------------------- Two or more Low Auto-Stop Oil Pressure Turbine Trip channels inoperable.	W.1 Restore channels to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program
X. One or more Turbine Stop Valve Closure, Turbine Trip channel(s) inoperable.	X.1 Place channel(s) in trip.	72 hours OR In accordance with the Risk Informed Completion Time Program
Y. Required Action and associated Completion Time of Condition V, W, or X not met.	Y.1 Reduce THERMAL POWER to < P-9.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
Z. One train inoperable.	------------------NOTE------------------ One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. -- Z.1 Restore train to OPERABLE status.	24 hours OR In accordance with the Risk Informed Completion Time Program
AA.------------ NOTE ----------- Not applicable when second train intentionally made inoperable. -------------------------------- Two trains inoperable.	AA.1 Restore trains to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program
BB. One RTB train inoperable.	------------------NOTE---------------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. -- BB.1 Restore train to OPERABLE status.	24 hours OR In accordance with the Risk Informed Completion Time Program
CC.------------ NOTE ----------- Not applicable when second RTB train intentionally made inoperable. -------------------------------- Two RTB trains inoperable.	CC.1 Restore trains to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
DD. One or more channels or trains inoperable.	DD.1	Verify interlock is in required state for existing unit conditions.	1 hour
EE. One or more channels or trains inoperable.	EE.1	Verify interlock is in required state for existing unit conditions.	1 hour
FF. Required Action and associated Completion Time of Condition EE not met.	FF.1	Be in MODE 2.	6 hours
GG. One trip mechanism inoperable for one RTB.	GG.1	Restore trip mechanism to OPERABLE status.	48 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
HH. ------------- NOTE --------- Not applicable when one trip mechanism for two or more RTBs intentionally made inoperable. -------------------------------- One trip mechanism inoperable for two or more RTBs.	HH.1	Restore trip mechanisms to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program
II. One channel inoperable	-----------------NOTE----------------- The inoperable channel may be bypassed for up to 72 hours for surveillance or maintenance. --		
	II.1	Place channel in trip	6 hours
	<u>OR</u>		
	II.2	Be in MODE 3	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
JJ. One or more SG Water Level Low - Low Trip Time Delay channel(s) inoperable.	------------------NOTE------------------ For function 14.b, the inoperable TTD channel (processor) and/or one additional TTD channel (processor) may be surveillance tested with the affected steam generator low-low water level channels for one TTD channel (processor) in bypass and the affected SG low-low water level channels for the other TTD channel (processor) in trip for up to 12 hours. This note is not intended to allow simultaneous testing of multiple TTD channels (processors) on a routine basis. ---	
	JJ.1 Set the Trip Time Delay to zero seconds.	72 hours
	<u>OR</u>	
	JJ.2 Place the affected SG Water Level Low - Low channel(s) in trip.	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
KK. Required Action and associated Completion Time of Condition B, C, E, F, G, H, Z, AA, BB, CC, DD, GG, HH, II, or JJ not met.	KK.1 Be in MODE 3.	6 hours

Table 3.3.1-1 (page 1 of 7)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[a] TRIP SETPOINT
1. Manual Reactor Trip	1,2	2	B, C	SR 3.3.1.14	NA	NA
	3[b], 4[b], 5[b]	2	D	SR 3.3.1.14	NA	NA
2. Power Range Neutron Flux						
a. High	1,2	4	E, F	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7 SR 3.3.1.11 SR 3.3.1.16	≤ 110.2% RTP	109% RTP
b. Low	1[c],2	4	G, H	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11 SR 3.3.1.16	≤ 26.2% RTP	25% RTP
3. Power Range Neutron Flux Rate						
High Positive Rate	1,2	4	G, H	SR 3.3.1.7 SR 3.3.1.11 SR 3.3.1.16	≤ 5.6% RTP with time constant ≥ 2 sec	5% RTP with time constant ≥ 2 sec
4. Intermediate Range Neutron Flux	1[c], 2[d]	2	I, J	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	≤ 30.6% RTP	25% RTP

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.
(b) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.
(c) Below the P-10 (Power Range Neutron Flux) interlocks.
(d) Above the P-6 (Intermediate Range Neutron Flux) interlocks.

Table 3.3.1-1 (page 2 of 7)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[(a)] TRIP SETPOINT
5. Source Range Neutron Flux	2[(e)]	2	K, L	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11 SR 3.3.1.16	≤ 1.4 E5 cps	1.0 E5 cps
	3[(b)], 4[(b)], 5[(b)]	2	L, M	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11 SR 3.3.1.16	≤ 1.4 E5 cps	1.0 E5 cps
	3[(f)], 4[(f)], 5[(f)]	1	O	SR 3.3.1.1 SR 3.3.1.11	N/A	N/A
6. Overtemperature ΔT	1,2	4	G, H	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	Refer to Note 1 (Page 3.3-17)	Refer to Note 1 (Page 3.3-17)
7. Overpower ΔT	1,2	4	G, H	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	Refer to Note 2 (Page 3.3-18)	Refer to Note 2 (Page 3.3-18)
8. Pressurizer Pressure						
a. Low	1[(g)]	4	P, Q	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 1947.5 psig	1950 psig
b. High	1,2	4	G, H	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≤ 2387.5 psig	2385 psig
9. Pressurizer Water Level—High	1[(g)]	3	P, Q	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≤ 90.2%	90%

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.
(b) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.
(e) Below the P-6 (Intermediate Range Neutron Flux) interlocks.
(f) With the RTBs open or all rods fully inserted and incapable of withdrawal. In this condition, source range Function does not provide reactor trip but does provide indication.
(g) Above the P-7 (Low Power Reactor Trips Block) interlock.

Table 3.3.1-1 (page 3 of 7)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[(a)] TRIP SETPOINT
10. Reactor Coolant Flow—Low	1[(g)]	3 per loop	P, Q	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 89.8% of measured loop flow	90% of measured loop flow
11. Reactor Coolant Pump (RCP) Breaker Position	1[(g)]	1 per RCP	S, T	SR 3.3.1.14	NA	NA
12. Undervoltage RCPs	1[(g)]	2 per bus	P, Q	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16	≥ 7877 V each bus	8050 V each bus
13. Underfrequency RCPs	1[(g)]	3 per bus	P, Q	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16	≥ 53.9 Hz each bus	54.0 Hz each bus
14. a. Steam Generator (SG) Water Level—Low Low	1,2	3 per SG	G, H	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 14.8%	15.0%
b. SG Water Level – Low Low Trip Time Delay (TTD)	1,2	4	JJ	SR 3.3.1.7 SR 3.3.1.10	TTD ≤ 1.01 TD (Note 3) for RCS loop ΔT variable input ≤ 50.7% RTP and TTD=0 for RCS loop ΔT variable input > 50.7 % RTP	TTD ≤ TD (Note 3) for RCS loop ΔT variable input 50% RTP TTD=0 for RCS loop ΔT variable input 50% RTP
15. Not used						

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

(g) Above the P-7 (Low Power Reactor Trips Block) interlock.

Table 3.3.1-1 (page 4 of 7)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[(a)] TRIP SETPOINT
16. Turbine Trip						
a. Low Auto-Stop Oil Pressure	1[(j)]	3	V, W	SR 3.3.1.10 SR 3.3.1.15	≥ 46.5 psig	50 psig
b. Turbine Stop Valve Closure	1[(j)]	4	X	SR 3.3.1.15	≥ 1% open	2% open
17. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1,2	2 trains	Z, AA	SR 3.3.1.14	NA	NA
18. Reactor Trip System Interlocks						
a. Intermediate Range Neutron Flux, P-6	2[(e)]	2	DD	SR 3.3.1.11 SR 3.3.1.13	≥ 8E-11 amp	1E-10 amp
b Low Power Reactor Trips Block, P-7	1	1 per train	EE	SR 3.3.1.5	NA	NA
c. Power Range Neutron Flux, P-8	1	4	EE	SR 3.3.1.11 SR 3.3.1.13	≤ 36.2% RTP	35% RTP

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.
(e) Below the P-6 (Intermediate Range Neutron Flux) interlocks.
(j) Above the P-9 (Power Range Neutron Flux) interlock.

Table 3.3.1-1 (page 5 of 7)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[a] TRIP SETPOINT
18. Reactor Trip System Interlocks (cont)						
d. Power Range Neutron Flux, P-9	1	4	EE	SR 3.3.1.11 SR 3.3.1.13	≤ 51.2% RTP	50% RTP
e. Power Range Neutron Flux, P-10	1,2	4	DD	SR 3.3.1.11 SR 3.3.1.13	≥ 8.8% RTP and ≤ 11.2% RTP	10% RTP
f. Turbine Impulse Chamber Pressure, P-13	1	2	EE	SR 3.3.1.10 SR 3.3.1.13	≤ 10.2% turbine power	10% turbine power
19. Reactor Trip Breakers[k] (RTBs)	1,2	2 trains	BB,CC	SR 3.3.1.4	NA	NA
	3[b], 4[b], 5[b]	2 trains	D	SR 3.3.1.4	NA	NA
20. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms[k]	1,2	1 each per RTB	GG, HH	SR 3.3.1.4	NA	NA
	3[b], 4[b], 5[b]	1 each per RTB	D	SR 3.3.1.4	NA	NA
21. Automatic Trip Logic	1,2	2 trains	Z, AA	SR 3.3.1.5	NA	NA
	3[b], 4[b], 5[b]	2 trains	D	SR 3.3.1.5	NA	NA
22. Seismic Trip	1,2	3 directions (x,y,z) in 3 locations	II	SR 3.3.1.5 SR 3.3.1.12 SR 3.3.1.14	≤ 0.43g	0.35g

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

(b) With Rod Control System capable of rod withdrawal or one or more rods not fully inserted.

(k) Including any reactor trip bypass breakers that are racked in and closed for bypassing an RTB.

3.3 INSTRUMENTATION

3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

LCO 3.3.2 The ESFAS instrumentation for each Function in Table 3.3.2-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.2-1.

ACTIONS

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

Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more Functions with one or more required channels or trains inoperable.	A.1	Enter the Condition referenced in Table 3.3.2-1 for the channel(s) or train(s).	Immediately
B. One channel or train inoperable.	B.1	Restore channel or train to OPERABLE status.	48 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
C. ------------ NOTE ----------- Not applicable when second channel or train intentionally made inoperable. ------------------------------- Two channels or trains inoperable.	C.1	Restore at least one channel or train to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One train inoperable.	----------------NOTE----------------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. --	
	D.1 Restore train to OPERABLE status.	24 hours OR In accordance with the Risk Informed Completion Time Program
E. ------------ NOTE ----------- Not applicable when second train intentionally made inoperable. -------------------------------- Two trains inoperable.	E.1 Restore at least one train to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. One channel inoperable.	------------------NOTE------------------ For function 1.d, the inoperable channel and/or one additional channel may be surveillance tested with one channel in bypass and one channel in trip for up to 12 hours, or both the inoperable and the additional channel may be surveillance tested in bypass for up to 12 hours. For functions 1.e(1), 4.d(1), 4.d(2), and 6.d(1), the inoperable channel and/or one additional channel may be surveillance tested with one channel in bypass and one channel in trip for up to 12 hours. This note is not intended to allow simultaneous testing of coincident channels on a routine basis. --	
	F.1 Place channel in trip.	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
G. ------------ NOTE ----------- Not applicable when two or more required channels or one channel in more than one loop, steam line, or steam generator intentionally made inoperable. -------------------------------- Two or more required channels inoperable or one channel inoperable in more than one loop, steam line, or steam generator.	G.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. One Containment Pressure channel inoperable.	------------------NOTE---------------- The inoperable channel and one additional channel may be surveillance tested in bypass for up to 12 hours only if any function 1.c channel associated with the inoperable channel is in trip. This note is not intended to allow simultaneous testing of coincident channels on a routine basis. --	
	H.1 Place channel in bypass.	72 hours
I. ------------ NOTE ----------- Not applicable when second Containment Pressure channel intentionally made inoperable. ------------------------------- Two or more Containment Pressure channels inoperable.	I.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
J. One channel or train inoperable.	J.1 Restore channel or train to OPERABLE status. OR J.2.1 Be in MODE 3. AND J.2.2 Be in MODE 4.	48 hours 54 hours 60 hours
K. One train inoperable.	-------------------NOTE----------------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. -- K.1 Restore train to OPERABLE status.	24 hours OR In accordance with the Risk Informed Completion Time Program
L. ------------ NOTE ----------- Not applicable when second train intentionally made inoperable. -------------------------------- Two trains inoperable.	L.1 Restore at least one train to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program
M. One train inoperable.	------------------NOTE--------------- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. --- M.1 Restore train to OPERABLE status.	24 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
N. ------------ NOTE ----------- Not applicable when second train intentionally made inoperable. ------------------------------- Two trains inoperable.	N.1 Restore at least one train to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program
O. One channel inoperable.	-----------------NOTE----------------- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. ---	
	O.1 Place channel in trip.	72 hours OR In accordance with the Risk Informed Completion Time Program
P. ------------ NOTE ----------- Not applicable when two or more channels intentionally made inoperable. ------------------------------- Two or more channels inoperable.	P.1 Restore channels to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
Q. One channel inoperable	-----------------NOTE----------------- The inoperable channel and/or one additional channel may be surveillance tested with one channel in bypass and one channel in trip for up to 12 hours. This note is not intended to allow simultaneous testing of coincident channels on a routine basis. --	
	Q.1 Place channel in trip.	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
R. ------------ NOTE ----------- Not applicable when two or more channels intentionally made inoperable. -------------------------------- Two or more channels inoperable.	R.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program
S. One channel inoperable	S.1 Place the channel in cut-out.	6 hours
	<u>AND</u>	
	S.2 Return the inoperable channel to an OPERABLE status	48 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
T. ------------ NOTE ----------- Not applicable when two or more channels intentionally made inoperable. -------------------------------- Two or more channels inoperable.	T.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program
U. One or more channels or trains inoperable.	U.1 Verify interlock is in required state for existing unit condition.	1 hour
V. One or more SG Water Level - Low Low Trip Time Delay channel(s) inoperable.	-----------------NOTE----------------- The inoperable TTD channel (processor) and/or one additional TTD channel (processor) may be surveillance tested with the affected steam generator low-low water level channels for one TTD channel (processor) in bypass and the affected SG low-low water level channels for the other TTD channel (processor) in trip for up to 12 hours. This note is not intended to allow simultaneous testing of multiple TTD channels (processors) on a routine basis. --	
	V.1 Set the Trip Time Delay to zero seconds.	72 hours
	<u>OR</u>	
	V.2 Place the affected SG Water Level - Low Low channel(s) in trip.	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
W. One channel inoperable.	W.1 Restore channel to OPERABLE status. <u>OR</u> W.2 Declare the associated AFW pump or MSIV inoperable.	48 hours Immediately
X. One channel inoperable	------------------NOTE------------------ The inoperable channel may be surveillance tested in bypass for up to 12 hours, or with the inoperable channel in trip, one additional channel may be surveillance tested in bypass for up to 12 hours. This note is not intended to allow simultaneous testing of coincident channels on a routine basis. -- X.1 Place channel in trip.	 72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
Y. ------------ NOTE ------------ Not applicable when two or more channels intentionally made inoperable. -------------------------------- Two or more channels inoperable.	Y.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
Z. One channel inoperable.	------------------NOTE------------------ The inoperable channel and one additional channel may be surveillance tested in bypass for up to 12 hours only if any function 1.c channel associated with the inoperable channel is in trip. This note is not intended to allow simultaneous testing of coincident channels on a routine basis. -- Z.1 Place channel in bypass.	72 hours
AA. ------------ NOTE ----------- Not applicable when two or more channels intentionally made inoperable. -------------------------------- Two or more channels inoperable.	AA.1 Restore channels to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program
BB. Required Action and associated Completion Time of Conditions B, C, D, E, S, T, X, Y, Z, or AA not met.	BB.1 Be in MODE 3. <u>AND</u> BB.2 Be in MODE 5.	6 hours 36 hours
CC. Required Action and associated Completion Time of Conditions F, G, H, I, J, K, L, U, or V not met.	CC.1 Be in MODE 3. <u>AND</u> CC.2 Be in MODE 4.	6 hours 12 hours
DD. Required Action and associated Completion Time of Conditions M, N, Q, or R not met.	DD.1 Be in MODE 3.	6 hours
EE. Required Action and associated Completion Time of Conditions O or P not met.	EE.1 Be in MODE 2.	6 hours

Table 3.3.2-1 (page 1 of 7)
Engineered Safety feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[(a*)] TRIP SETPOINT
1. Safety Injection						
a. Manual Initiation	1,2,3,4	2	B, C	SR 3.3.2.8	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	D, E	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
c. Containment Pressure-High	1,2,3,4	3	X, Y	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 3.12 psig	3.0 psig
d. Pressurizer Pressure-Low	1,2,3[(b)]	4	F, G	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 1847.5 psig	1850 psig
e. Steam Line Pressure						
(1) Low	1,2,3[(b)]	3 per steam line	F, G	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 597.6[(c)] psig	600[(c)] psig
(2) Not used						
f. Not used						
g. Not used						

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

(b) Above the P-11 (Pressurizer Pressure) interlock and below the P-11 interlock unless the Function is blocked.

(c) Time constants used in the lead/lag compensator are t_1 = 50 seconds and t_2 = 5 seconds.

Table 3.3.2-1 (page 2 of 7)
Engineered Safety feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[(a)] TRIP SETPOINT
2. Containment Spray						
a. Manual Initiation	1,2,3,4	2 per train	B, C	SR 3.3.2.8	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	D, E	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
c. Containment Pressure						
(1) High-High	1,2,3,4	4	Z, AA	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 22.12 psig	22 psig
(2) Not used						
3. Containment Isolation						
a. Phase A Isolation						
(1) Manual Initiation	1,2,3,4	2	B, C	SR 3.3.2.8	NA	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	D, E	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
(3) Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

Table 3.3.2-1 (page 3 of 7)
Engineered Safety feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[(a)] TRIP SETPOINT
3. Containment Isolation (continued)						
b. Phase B Isolation						
(1) Manual Initiation	1,2,3,4	2 per train	B, C	SR 3.3.2.8	NA	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	D, E	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
(3) Contain-ment Pressure High-High	1,2,3,4	4	Z, AA	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9	≤ 22.12 psig	22 psig
4. Steam Line Isolation						
a. Manual Initiation	1,2[(i)],3[(i)]	1/valve	W	SR 3.3.2.8	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2[(i)],3[(i)]	2 trains	K, L	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
c. Containment Pressure-High –High	1,2[(i)],3[(i)]	4	H, I	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 22.12 psig	2.3 psig

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.
(i) Except when all MSIVs are closed and de-activated.

Table 3.3.2-1 (page 4 of 7)
Engineered Safety feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[a] TRIP SETPOINT
4. Steam Line Isolation (continued)						
d. Steam Line Pressure						
(1) Low	1,2[i], 3[b][i]	3 per steam line	F, G	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 597.6[l] psig	600[l] psig
(2) Negative Rate-High	3[g][i]	3 per steam line	F	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 102.4[h] psi/sec	100[h] psi/sec
e. Not used.						
f. Not used						
g. Not used						
h. Not used						
5. Feedwater Isolation						
a. Automatic Actuation Logic and Actuation Relays	1,2[j]	2 trains	M, N	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

(b) Above the P-11 (Pressurizer Pressure) interlock and below the P-11 interlock unless the Function is blocked.

l Time constants used in the lead/lag compensator are t_1 = 50 seconds and t_2 =5 seconds

(g) Below the P-11 (Pressurizer Pressure). However, may be blocked below P-11 when Safety Injection on Steam Line Pressure-Low is not blocked.

(h) Time constant utilized in the rate/lag compensator are t_3 = 50 sec and t_4 = 50 sec.

(i) Except when all MSIVs are closed and de-activated.

(j) Except when all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.

Table 3.3.2-1 (page 5 of 7)
Engineered Safety feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL [(a)] TRIP SETPOINT
5. Feedwater Isolation (continued)						
b. SG Water Level-High High (P-14)	1,2[(j)]	3 per SG	Q, R	SR 3.3.2.1 SR 3.3.2.5[(d)(e)] SR 3.3.2.9[(d)(e)] SR 3.3.2.10	≤ 90.2%	90.0%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
6. Auxiliary Feedwater						
a. Manual	1,2,3	1 sw/pp	W	SR 3.3.2.13	NA	NA
b. Automatic Actuation Logic and Actuation Relays (Solid State Protection System)	1,2,3	2 trains	K, L	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
c. Not used						
d.1 SG Water Level-Low Low	1,2,3	3 per SG	F, G	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 14.8%	15.0%

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

(j) Except when all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.

(d) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. Footnote (a) does not apply to this function.

(e) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures to confirm channel performance. The methodologies used to determine the as-found and the as-left tolerances are specified in the Equipment Control Guidelines. Footnote (a) does not apply to this function.

Table 3.3.2-1 (page 6 of 7)

Engineered Safety feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[a] TRIP SETPOINT
Auxiliary Feedwater (continued)						
d.2) SG Water Level - Low Low Trip Time Delay (TTD)	1,2,3	4	V	SR 3.3.2.5 SR 3.3.2.9	TTD ≤ 1.01 TD[l,k] for RCS Loop ΔT variable input ≤ 50.7% RTP and TTD=0 for RCS Loop ΔT variable input > 50.7% RTP	TTD ≤ TD[l,k] for RCS Loop ΔT variable input 50% RTP and TTD=0 for RCS Loop ΔT variable input 50% RTP
e. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
f. Not used						
g. Under-voltage Reactor Coolant Pump	1	2 per bus	O, P	SR 3.3.2.8 SR 3.3.2.9 SR 3.3.2.10	≥ 7877 volts	8050 volts

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

(k) For Mode 3, the Trip Time Delay associated with the Steam Generator Water Level-Low-Low channel must be less than or equal to 464.1 seconds.

(l) Steam Generator Water Level-Low Low Time Delay
The Steam Generator Water Level-Low Low time delay function power allowable value shall not exceed the following trip setpoint power by more than 0.7% RTP.

TD = $B1(P)^3 + B2(P)^2 + B3(P) + B4$.

Where: P = RCS Loop ΔT Equivalent to Power (%RTP), P ≤ 50% RTP

TD = Time delay for Steam Generator Water Level Low-Low (in seconds)

B1 = -0.007128 sec/$(RTP)^3$

B2 = $+0.8099$ sec/$(RTP)^2$

B3 = -31.40 sec/(RTP)

B4 = +464.1 sec

Table 3.3.2-1 (page 7 of 7)
Engineered Safety feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL[(a)] TRIP SETPOINT
6. Auxiliary Feedwater (continued)						
h. Not used						
i. Not used						
7. Residual Heat Removal Pump Trip on Refueling Water Storage Tank Level-low	1,2,3,4	3	S, T	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.12	≤ 33.68% ≥ 31.44%	32.56%
8. ESFAS Interlocks						
a. Reactor Trip, P-4	1,2,3	1 per train, 2 trains	J	SR 3.3.2.11	NA	NA
b. Pressurizer Pressure, P-11	1,2,3	3	U	SR 3.3.2.5 SR 3.3.2.9	≤ 1917.5 psig	1915 psig
c. Not used						

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

LCO 3.4.9 The pressurizer shall be OPERABLE with:

a. Pressurizer water level ≤ 90%; and

b. Two groups of pressurizer heaters OPERABLE with the capacity of each group ≥ 150 kW and capable of being powered from an emergency power supply.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressurizer water level not within limit.	A.1 Be in MODE 3.	6 hours
	AND	
	A.2 Fully insert all rods.	6 hours
	AND	
	A.3 Place Rod Control System in a condition incapable of rod withdrawal.	6 hours
	AND	
	A.4 Be in MODE 4.	12 hours
B. One required group of pressurizer heaters inoperable.	B.1 Restore required group of pressurizer heaters to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program
C. ------------ NOTE ----------- Not applicable when second group of pressurizer heaters intentionally made inoperable. -------------------------------- Two groups of pressurizer heaters inoperable.	C.1 Restore pressurizer heaters to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time of Condition B or C not met.	D.1	Be in MODE 3.	6 hours
	AND		
	D.2	Be in MODE 4.	12 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.10 Pressurizer Safety Valves

LCO 3.4.10 Three pressurizer safety valves shall be OPERABLE with lift settings ≥ 2460 psig and ≤ 2510 psig.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 with all RCS cold leg temperatures > Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR.

--NOTE--
The lift settings are not required to be within the LCO limits during MODES 3 and 4 for the purpose of setting the pressurizer safety valves under ambient (hot) conditions. This exception is allowed for 54 hours following entry into MODE 3 provided a preliminary cold setting was made prior to heatup.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pressurizer safety valve inoperable.	A.1 Restore valve to OPERABLE status.	15 minutes <u>OR</u> In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time not met. <u>OR</u> Two or more pressurizer safety valves inoperable.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 4 with any RCS cold leg temperatures ≤ LTOP arming temperature specified in the PTLR.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.10.1	Verify each pressurizer safety valve is OPERABLE in accordance with the Inservice Testing Program. Following testing, lift settings shall be within ± 1%.	In accordance with the Inservice Testing Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.11 Pressurizer Power Operated Relief Valves (PORVs)

LCO 3.4.11 Each PORV and associated block valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more PORVs inoperable solely due to excessive seat leakage.	A.1 Close and maintain power to associated block valve.	1 hour
B. One PORV inoperable for reasons other than excessive seat leakage.	B.1 Close associated block valve. AND	1 hour
	B.2 Remove power from associated block valve. AND	1 hour
	B.3 Restore the Class I PORV to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program
C. One block valve inoperable.	----------------NOTE---------------- Required Actions do not apply when block valve is inoperable solely as result of complying with Required Actions B.2 or E.3. --- C.1 Place associated PORV in manual control. AND	1 hour

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. (continued)	C.2	If the block valve is associated with a Class I PORV: Restore block valve to OPERABLE status. <u>OR</u>	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
	C.3	If the block valve is associated with the non-Class I PORV: Close the block valve and remove its power.	72 hours
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1	Initiate action to restore Class I PORV and/or associated block valves(s) to OPERABLE status.	Immediately
	<u>AND</u>		
	D.2	Be in MODE 3.	6 hours
	<u>AND</u>		
	D.3	Be in MODE 4.	12 hours
E. Two Class I PORVs inoperable for reasons other than excessive seat leakage.	E.1	Initiate action to restore Class I PORVs to OPERABLE status.	Immediately
	<u>AND</u>		
	E.2	Close associated block valves.	1 hour
	<u>AND</u>		
	E.3	Remove power from associated block valves.	1 hour
	<u>AND</u>		
	E.4	Restore Class I PORVs to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
F. More than one block valve inoperable.	------------------NOTE------------------ Required Actions do not apply when block valve is inoperable solely as result of complying with Required Actions B.2 or E.3. --		
	F.1	Place associated PORVs in manual control.	1 hour
	AND		
	F.2	Restore one block valve for a Class I PORV to OPERABLE status.	2 hours OR In accordance with the Risk Informed Completion Time Program
	AND		
	F.3	Restore remaining block valve for a Class I PORV to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program
	OR		
	F.4	If the remaining block valve is associated with the non-Class I PORV, close the block valve and remove its power.	72 hours
G. Required Action and associated Completion Time of Condition E or F not met.	G.1	Initiate action to restore block valve(s) to OPERABLE status.	Immediately
	AND		
	G.2	Be in MODE 3.	6 hours
	AND		
	G.3	Be in MODE 4.	12 hours

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.1 Accumulators

LCO 3.5.1 Four ECCS accumulators shall be OPERABLE.

APPLICABILITY: MODES 1 and 2, MODE 3 with RCS pressure > 1000 psig.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One accumulator inoperable due to boron concentration not within limits.	A.1 Restore boron concentration to within limits.	72 hours OR In accordance with the Risk Informed Completion Time Program
B. One accumulator inoperable for reasons other than Condition A.	B.1 Restore accumulator to OPERABLE status.	24 hour OR In accordance with the Risk Informed Completion Time Program
C. ------------ NOTE ----------- Not applicable when two or more accumulators intentionally made inoperable. ------------------------------- Two or more accumulators inoperable.	C.1 Restore accumulators to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	6 hours
	AND	
	D.2 Reduce RCS pressure to $\leq$ 1000 psig.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify each accumulator isolation valve is fully open.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.2	Verify borated water volume in each accumulator is $\geq$ 814 ft^3 and $\leq$ 886 ft^3.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.3	Verify nitrogen cover pressure in each accumulator is $\geq$ 579 psig and $\leq$ 664 psig.	In accordance with the Surveillance Frequency Control Program

(continued)

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS - Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more trains inoperable.	A.1 Restore train(s) to OPERABLE status	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
B. ------------ NOTE ----------- Not applicable when second ECCS train intentionally made inoperable. ------------------------------- Less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.	B.1 Restore ECCS flow equivalent to 100% of a single OPERABLE ECCS train.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 4.	6 hours 12 hours

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.4 Refueling Water Storage Tank (RWST)

LCO 3.5.4 The RWST shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. RWST boron concentration not within limits. OR RWST borated water temperature not within limits.	A.1	Restore RWST to OPERABLE status.	8 hours OR In accordance with the Risk Informed Completion Time Program
B. RWST inoperable for reasons other than Condition A.	B.1	Restore RWST to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program
C. Required Action and associated Completion Time not met.	C.1 AND	Be in MODE 3.	6 hours
	C.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.4.1	----------------------------NOTE--------------------------- Only required to be performed when ambient air temperature is < 35°F. --- Verify RWST borated water temperature is ≥ 35°F.	In accordance with the Surveillance Frequency Control Program
SR 3.5.4.2	Verify RWST borated water volume is ≥ 455,300 gallons.	In accordance with the Surveillance Frequency Control Program
SR 3.5.4.3	Verify RWST boron concentration is ≥ 2300 ppm and ≤ 2500 ppm.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One or more containment air locks inoperable for reasons other than Condition A or B.	C.1	Initiate action to evaluate overall containment leakage rate per LCO 3.6.1.	Immediately
	AND		
	C.2	Verify a door is closed in the affected air lock.	1 hour
	AND		
	C.3	Restore air lock to OPERABLE status.	24 hours OR In accordance with the Risk Informed Completion Time Program
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	6 hours
	AND		
	D.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.2.1	-----NOTES----- 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1 ---------- Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program.	In accordance with the Containment Leakage Rate Testing Program
SR 3.6.2.2	Verify only one door in the air lock can be opened at a time.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.3 Containment Isolation Valves

LCO 3.6.3 Each containment isolation valve shall be OPERABLE.

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

ACTIONS

---NOTES---

1. Penetration flow path(s) except no more than two of three flow paths for containment purge supply and exhaust and containment vacuum/pressure relief paths at one time 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 containment isolation valves.
4. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. --------------NOTE-------------- Only applicable to penetration flow paths with two containment isolation valves. ------------------------------------ One or more penetration flow paths with one containment isolation valve inoperable except for a containment purge supply and exhaust valve or pressure/vacuum relief valve 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 OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 -----------NOTES----------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by administrative means. ------------------------------- Verify the affected penetration flow path is isolated.	Once per 31 days following isolation for isolation devices outside containment <u>AND</u> Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment
B. --------------NOTE-------------- Only applicable to penetration flow paths with two containment isolation valves. ----------------------------------- One or more penetration flow paths with two containment isolation valves inoperable except for a containment purge supply and exhaust valve or pressure/vacuum relief valve leakage not within limit.	B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. --------------NOTE-------------- Only applicable to penetration flow paths with only one containment isolation valve and a closed system. ------------------------------------ One or more penetration flow paths with one containment isolation valve inoperable.	C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. AND C.2 ------------NOTES---------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by administrative means. -------------------------------- Verify the affected penetration flow path is isolated.	72 hours OR In accordance with the Risk Informed Completion Time Program Once per 31 days following isolation
D. One or more penetration flow paths with one or more containment purge supply and exhaust and vacuum/pressure relief valves not within purge valve leakage limits.	D.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. AND	24 hours OR In accordance with the Risk Informed Completion Time Program (continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. (continued)	D.2	------------NOTES---------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by administrative means. -------------------------------- Verify the affected penetration flow path is isolated.	Once per 31 days following isolation for isolation devices outside containment <u>AND</u> Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment
	<u>AND</u> D.3	Perform SR 3.6.3.7 for the resilient seal purge or vacuum/pressure relief valves closed to comply with Required Action D.1.	Once per 92 days following isolation
E. Required Action and associated Completion Time not met.	E.1 <u>AND</u> E.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours

3.6 CONTAINMENT SYSTEMS

3.6.6 Containment Spray and Cooling Systems

LCO 3.6.6 The containment fan cooling unit (CFCU) system and two containment spray trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One containment spray train inoperable.	A.1 Restore containment spray train to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 84 hours
C. The CFCU system inoperable such that a minimum of two CFCUs remain OPERABLE.	C.1 Restore the CFCU system to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One containment spray train inoperable and the CFCU system inoperable such that a minimum of two CFCUs remain OPERABLE.	D.1 Restore containment spray train to OPERABLE status, OR	72 hours OR In accordance with the Risk Informed Completion Time Program
	D.2 Restore the CFCU system to OPERABLE status such that four CFCUs or three CFCUs, each supplied by a different vital bus, are OPERABLE.	72 hours OR In accordance with the Risk Informed Completion Time Program
E. ------------ NOTE ----------- Not applicable when second containment spray train or fourth CFCU intentionally made inoperable. ------------------------------- Two containment spray trains inoperable. OR One containment spray train inoperable and the CFCU system inoperable such that one or less CFCUs remain OPERABLE. OR The CFCU system inoperable such that one or less CFCUs remain OPERABLE.	E.1 Restore containment spray trains and the CFCU system to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program
F. Required Action and associated Completion Time of Condition C, D, or E not met.	F.1 Be in MODE 3. AND	6 hours
	F.2 Be in MODE 5.	36 hours

3.7 PLANT SYSTEMS

3.7.2 Main Steam Isolation Valves (MSIVs)

LCO 3.7.2 Four MSIVs shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 except when all MSIVs are closed and de-activated.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MSIV inoperable in MODE 1.	A.1 Restore MSIV to OPERABLE status.	8 hours OR In accordance with the Risk Informed Completion Time Program
B. ------------ NOTE ----------- Not applicable when two or more MSIVs intentionally made inoperable. -------------------------------- Two or more MSIVs inoperable in MODE 1.	B.1 Restore MSIVs to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 2.	6 hours
D. ------------NOTE--------------- Separate Condition entry is allowed for each MSIV. ------------------------------------- One or more MSIVs inoperable in MODE 2 or 3.	D.1 Close MSIV. AND D.2 Verify MSIV is closed.	8 hours Once per 7 days
E. Required Action and associated Completion Time of Condition D not met.	E.1 Be in MODE 3. AND E.2 Be in MODE 4.	6 hours 12 hours

3.7 PLANT SYSTEMS

3.7.4 10% Atmospheric Dump Valves (ADVs)

LCO 3.7.4 Four ADV lines shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required ADV line inoperable.	A.1 Restore required ADV line to OPERABLE status	7 days OR In accordance with the Risk Informed Completion Time Program
B. Two required ADV lines inoperable.	B.1 Restore at least one ADV line to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program
C. Three or more required ADV lines inoperable.	C.1 Restore at least two ADV lines to OPERABLE status.	24 hours OR In accordance with the Risk Informed Completion Time Program
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	6 hours
	AND	
	D.2 Be in MODE 4 without reliance upon steam generator for heat removal.	18 hours

3.7 PLANT SYSTEMS

3.7.5 Auxiliary Feedwater (AFW) System

LCO 3.7.5 Three AFW trains shall be OPERABLE.

-----NOTE-----
Only one AFW train, which includes a motor driven pump, is required to be OPERABLE in MODE 4.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

-----NOTE-----
LCO 3.0.4b is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Turbine driven AFW train inoperable due to one inoperable steam supply. OR -----NOTE----- Only applicable if MODE 2 has not been entered following refueling. --- Turbine driven AFW pump inoperable in MODE 3 following refueling.	A.1 Restore affected equipment to OPERABLE status.	7 days <u>OR</u> In accordance with the Risk Informed Completion Time Program
B. One AFW train inoperable in MODE 1, 2 or 3 for reasons other than Condition A.	B.1 Restore AFW train to OPERABLE status.	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. --------------NOTE-------------- Only applicable when the remaining OPERABLE motor driven AFW train provides feedwter to the steam generator with the inoperable steam supply. ------------------------------------ Turbine driven AFW train inoperable due to one inoperable steam supply. AND One motor driven AFW train inoperable.	C.1 Restore the steam supply to the turbine driven train to OPERABLE status. OR C.2 Restore the motor driven AFW train to OPERABLE status.	48 hours OR In accordance with the Risk Informed Completion Time Program 48 hours OR In accordance with the Risk Informed Completion Time Program
D. ------------ NOTE ----------- Not applicable when second AFW train intentionally made inoperable. -------------------------------- Two AFW trains inoperable in MODE 1, 2, or 3 for reasons other than Condition C.	D.1 Restore AFW trains to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program
E. Required Action and associated Completion Time for Condition A, B, C, or D not met.	E.1 Be in MODE 3. AND E.2 Be in MODE 4.	6 hours 18 hours
F. Three AFW trains inoperable in MODE 1, 2, or 3.	F.1 -----------NOTE--------------- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. --------------------------------- Initiate action to restore one AFW train to OPERABLE status	Immediately
G. Required AFW train inoperable in MODE 4.	G.1 Initiate action to restore AFW train to OPERABLE status.	Immediately

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

LCO 3.7.6 The CST shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CST inoperable.	A.1 Verify by administrative means OPERABILITY of backup water supply.	4 hours AND Once per 12 hours thereafter
	AND	
	A.2 Restore CST to OPERABLE status.	7 days OR In accordance with the Risk Informed Completion Time Program
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	AND	
	B.2 Be in MODE 4, without reliance on steam generator for heat removal.	18 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.6.1	Verify the CST water volume is ≥ 200,000 gallons for Unit 1 and ≥ 166,000 gallons for Unit 2.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.7 Vital Component Cooling Water (CCW) System

LCO 3.7.7 Two vital CCW loops shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One vital CCW loop inoperable.	A.1 ------------NOTE-------------- Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for residual heat removal loops made inoperable by CCW. ----------------------------------- Restore vital CCW loop to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program
B. ------------ NOTE ----------- Not applicable when second vital CCW loop intentionally made inoperable. -------------------------------- Two vital CCW loops inoperable.	B.1 Restore vital CCW loops to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.7.1	-----------------------------NOTE--------------------------- Isolation of CCW flow to individual components does not render the CCW System inoperable --- Verify each CCW manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.7.7.2	Verify each CCW automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.7.3	Verify each CCW pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.8 Auxiliary Saltwater (ASW) System

LCO 3.7.8 Two ASW trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ASW train inoperable.	A.1 ------------NOTE-------------- Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for residual heat removal loops made inoperable by ASW. ----------------------------------- Restore ASW train to OPERABLE status	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
B. ------------ NOTE ----------- Not applicable when second ASW train intentionally made inoperable. -------------------------------- Two ASW trains inoperable.	B.1 Restore ASW trains to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.8.1	Verify each ASW manual and power operated, valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.7.8.2	Verify each ASW power operated valve in the flow path that is not locked, sealed, or otherwise secured in position, can be moved to the correct position.	In accordance with the Inservice Test Program.
SR 3.7.8.3	Verify each ASW pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources - Operating

LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System; and

b. Three diesel generators (DGs) capable of supplying the onsite Class 1E power distribution subsystem(s); and

c. Two supply trains of the diesel fuel oil (DFO) transfer system.

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

ACTIONS

------------------------------------NOTE------------------------------------
LCO 3.0.4b is not applicable to DGs.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required offsite circuit inoperable.	A.1 Perform SR 3.8.1.1 for required OPERABLE offsite circuit.	1 hour AND Once per 8 hours thereafter.
	AND	
	A.2 Restore required offsite circuit to OPERABLE status.	72 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One DG inoperable.	B.1	Perform SR 3.8.1.1 for the required offsite circuit(s).	1 hour AND Once per 8 hours thereafter.
	AND		
		------------NOTE------------- In MODE 1, 2, and 3, TDAFW pump is considered a required redundant feature. ---------------------------------	
	B.2	Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s).
	AND		
	B.3.1	Determine OPERABLE DG(s) is not inoperable due to common cause failure. OR	24 hours
	B.3.2	Perform SR 3.8.1.2 for OPERABLE DG(s).	24 hours
	AND		
	B.4	Restore DG to OPERABLE status.	14 days OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Two required offsite circuits inoperable.	C.1	Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.	12 hours from discovery of Condition C concurrent with inoperability of redundant required features.
	AND		
	C.2	Restore one required offsite circuit to OPERABLE status.	24 hours OR In accordance with the Risk Informed Completion Time Program
D. One required offsite circuit inoperable.	D.1	Restore required offsite circuit to OPERABLE status.	12 hours OR In accordance with the Risk Informed Completion Time Program
AND	OR		
One DG inoperable.	D.2	Restore DG to OPERABLE status.	12 hours OR In accordance with the Risk Informed Completion Time Program
E. Two or more DGs inoperable.	E.1	Ensure at least two DGs are OPERABLE.	2 hours OR In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. One supply train of the DFO transfer system inoperable.	F.1 Restore the DFO transfer system to OPERABLE status.	72 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
G. Two supply trains of the DFO transfer system inoperable.	G.1 Restore one train of the DFO transfer system to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program
H. ------------ NOTE ----------- Not applicable when offsite circuit or second DG intentionally made inoperable. -------------------------------- Two or more DGs inoperable. <u>AND</u> One or more required offsite circuits inoperable.	H.1 Restore required AC sources to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program
I. ------------ NOTE ----------- Not applicable when DG or second offsite circuit intentionally made inoperable. -------------------------------- One or more DGs inoperable. <u>AND</u> Two required offsite circuits inoperable.	I.1 Restore required AC sources to OPERABLE status.	1 hour <u>OR</u> In accordance with the Risk Informed Completion Time Program
J. Required Action and associated Completion Time not met.	J.1 Be in MODE 3. <u>AND</u> J.2 Be in MODE 5.	6 hours 36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
F. One or more DGs with turbocharger air assist air receiver pressure < 180 psig and ≥ 150 psig.	F.1	Restore turbocharger air assist air receiver pressure to ≥ 180 psig.	48 hours
G. Required Action and associated Completion Time or Conditions E or F not met. OR One or more DG's turbocharger air assist, or starting air subsystem not within limits for reasons other than Condition E or F.	G.1	Declare associated DG inoperable.	Immediately
H. Required Action and associated Completion Time of Condition A, B, C, or D not met. OR Fuel oil storage tanks or lube oil not within limits for reasons other than Conditions A, B, C, or D.	H.1	Declare all DGs on associated unit(s) inoperable.	Immediately

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

LCO 3.8.4 Three Class 1E DC electrical power subsystems shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One battery charger inoperable.	A.1	Restore battery terminal voltage to greater than or equal to the minimum established float voltage.	2 hours <u>OR</u> In accordance with the Risk Informed Completion Time Program
	<u>AND</u>		
	A.2	Verify battery float current ≤ 2 amps.	12 hours
	<u>AND</u>		
	A.3	Restore battery charger to OPERABLE status.	14 days <u>OR</u> In accordance with the Risk Informed Completion Time Program

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One battery inoperable.	B.1 Restore battery to OPERABLE status.	2 hours OR In accordance with the Risk Informed Completion Time Program
C. One DC electrical power subsystem inoperable for reasons other than Condition A or B.	C.1 Restore DC electrical power subsystem to OPERABLE status.	2 hours OR In accordance with the Risk Informed Completion Time Program
D. More than one full capacity charger receiving power simultaneously from a single 480 V vital bus.	D.1 Restore the DC electrical power subsystem to a configuration wherein each charger is powered from its associated 480 volt vital bus.	14 days
E. ------------ NOTE ----------- Not applicable when second DC electrical power subsystem intentionally made inoperable. -------------------------------- Two DC electrical power subsystems inoperable.	E.1 Restore at least one DC electrical power subsystem to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program
F. Required Action and Associated Completion Time not met.	F.1 Be in MODE 3. AND F.2 Be in MODE 5.	6 hours 36 hours

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters-Operating

LCO 3.8.7 Four Class 1E Vital 120 V UPS inverters shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required inverter inoperable.	A.1 -----------NOTE--------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating" with any vital 120 V AC bus de-energized. ---------------------------------- Restore inverter to OPERABLE status.	24 hours OR In accordance with the Risk Informed Completion Time Program
B. ------------ NOTE ----------- Not applicable when two or more required inverters intentionally made inoperable. -------------------------------- Two or more required inverters inoperable.	B.1 Restore inverters to OPERABLE status.	1 hour OR In accordance with the Risk Informed Completion Time Program
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct inverter voltage and alignment to required AC vital buses.	In accordance with the Surveillance Frequency Control Program

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems-Operating

LCO 3.8.9 The required Class 1E AC, DC, and 120 VAC vital bus electrical power distribution subsystems shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more AC electrical power distribution subsystem inoperable.	A.1 Restore AC electrical power distribution subsystem to OPERABLE status.	8 hours OR In accordance with the Risk Informed Completion Time Program
B. One or more 120 VAC vital bus subsystem inoperable.	B.1 Restore 120 VAC vital bus subsystem to OPERABLE status.	2 hours OR In accordance with the Risk Informed Completion Time Program
C. One or more DC electrical power distribution subsystem inoperable.	C.1 Restore DC electrical power distribution subsystem to OPERABLE status.	2 hours OR In accordance with the Risk Informed Completion Time Program
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 5.	6 hours 36 hours

5.5 Programs and Manuals (continued)

5.5.19 Control Room Envelope Habitability Program

A Control Room Envelope (CRE) Habitability Program shall be established and implemented to ensure that CRE habitability is maintained such that, with an OPERABLE Control Room Ventilation System (CRVS), CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem whole body or its equivalent to any part of the body for the duration of the accident. The program shall include the following elements:

a. The definition of the CRE and the CRE boundary.

b. Requirements for maintaining the CRE boundary in its design condition, including configuration control and preventive maintenance.

c. Requirements for (i) determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003, and (ii) assessing CRE habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one train of the CRVS, operating at the flow rate required by the VFTP, at a Frequency of 24 months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the 24 month assessment of the CRE boundary.

e. The quantitative limits on unfiltered air inleakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph c. The unfiltered air inleakage limit for radiological challenges is the inleakage flow rate assumed in the licensing basis analyses of DBA consequences. Unfiltered air inleakage limits for hazardous chemicals must ensure that exposure of CRE occupants to these hazards will be within the assumptions in the licensing basis.

f. The provisions of SR 3.0.2 are applicable to the Frequencies required by paragraphs c and d for determining CRE unfiltered inleakage and assessing CRE habitability, and measuring CRE pressure and assessing the CRE boundary.

(continued)

5.5 Programs and Manuals (continued)

5.5.20 Risk Informed Completion Time Program

This program provides controls to calculate a Risk Informed Completion Time (RICT) and must be implemented in accordance with NEI 06-09, Revision 0, "Risk-Managed Technical Specifications (RMTS) Guidelines." The program shall include the following:

a. The RICT may not exceed 30 days;

b. A RICT may only be utilized in MODE 1 and 2;

c. When a RICT is being used, any plant configuration change within the scope of the Risk Informed Completion Time Program must be considered for the effect on the RICT.

    1. For planned changes, the revised RICT must be determined prior to implementation of the change in configuration.

    2. For emergent conditions, the revised RICT must be determined within the time limits of the Required Action Completion Time (i.e., not the RICT) or 12 hours after the plant configuration change, whichever is less.

    3. Revising the RICT is not required If the plant configuration change would lower plant risk and would result in a longer RICT.

d. Use of a RICT is not permitted for voluntary entry into a configuration which represents a loss of a specified safety function or inoperability of all required trains of a system required to be OPERABLE.

e. Use of a RICT is permitted for emergent conditions which represent a loss of a specified safety function or inoperability of all required trains of a system required to be OPERABLE if one or more of the trains are considered "PRA functional" as defined in Section 2.3.1 of NEI 06-09.

Technical Specification Bases Change(s)
(For information only)

INSERT B-1

BASES

ACTIONS (continued)

B.1~~, and B.2~~

Condition B applies to the Manual Reactor Trip in MODE 1 or 2. This action addresses the train orientation of the SSPS for this Function. With one channel inoperable, the inoperable channel must be restored to OPERABLE status within 48 hours. In this Condition, the remaining OPERABLE channel is adequate to perform the safety function.

The Completion Time of 48 hours is reasonable considering that there are two automatic actuation trains and another manual initiation channel OPERABLE, and the low probability of an event occurring during this interval.

INSERT B-3

~~If the Manual Reactor Trip Function cannot be restored to OPERABLE status within the allowed 48 hour Completion Time, the unit must be brought to a MODE in which the requirement does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 additional hours (54 hours total time). The 6 additional hours to reach MODE 3 is reasonable, based on operating experience, to exit the applicability from full power operation in an orderly manner and without challenging unit systems. With the unit in MODE 3, Condition C is entered if the Manual Reactor Trip Function has not been restored and the Rod Control System is capable of rod withdrawal or one more rods are not fully inserted.~~

~~C.1, C.2.1, and C.2.2~~

D.1

Condition ~~C~~D applies to the following reactor trip Functions in MODE 3, 4, or 5 with the Rod Control System capable of rod withdrawal or one or more rods not fully inserted:

- Manual Reactor Trip;
- RTBs;
- RTB Undervoltage and Shunt Trip Mechanisms; and
- Automatic Trip Logic.

This action addresses the train orientation of the SSPS for these Functions. With one channel or train inoperable, the inoperable channel or train must be restored to OPERABLE status within 48 hours. ~~If the affected Function(s) cannot be restored to OPERABLE status within the allowed 48 hour Completion Time, the unit must be placed in a MODE in which the requirement does not apply. To achieve this status action must be initiated within the same 48 hours to fully insert all rods, and the Rod Control System must be rendered~~

(continued)

BASES

ACTIONS

~~C.1, C.2.1, and C.2.2 (continued)~~

~~incapable of rod withdrawal within the next hour (e.g., by de-energizing all CRDMs, by opening the RTBs, or by de-energizing the motor generator (MG) sets). The additional hour for the latter provides sufficient time to accomplish the action in an orderly manner. With the rods fully inserted and the Rod Control System rendered incapable of rod withdrawal, these Functions are no longer required.~~

The Completion Time is reasonable considering that in this Condition, the remaining OPERABLE train is adequate to perform the safety function, and given the low probability of an event occurring during this interval.

INSERT B-2

~~Cond~~ition ~~C~~**D** is modified by a Note stating that while this LCO is not met for Functions 19, 20, or 21 in MODE 5 making the Rod Control System capable of rod withdrawal is not permitted. This note is in addition to the requirements of LCO 3.0.4 which preclude the transition from either MODE 3 or MODE 4 to MODE 3 or MODE 4 with the Rod control System capable of rod withdrawal or all rods not fully inserted for Functions 19, 20, or 21 with one channel or train inoperable.

~~D~~**E**.1.1~~,~~ **and** ~~D~~**E**.1.2~~, and D.2~~

Condition ~~D~~**E** applies to the Power Range Neutron Flux—High Function.

With one of the NIS power range detectors inoperable, 1/4 of the radial power distribution monitoring capability is lost. Therefore, SR 3.2.4.2 must be performed (Required Action ~~D~~**E**.1.1) within 12 hours after THERMAL POWER exceeds 75% RTP and every 12 hours thereafter. If reactor power decreases to $\leq$ 75% RTP, the measurement of both intervals stops, and SR 3.2.4.2 is no longer required. New intervals start upon reactor power exceeding 75% RTP. Calculating QPTR every 12 hours compensates for the lost monitoring capability due to the inoperable NIS power range channel and allows continued unit operation at power levels > 75% RTP. When THERMAL POWER is $\leq$ 75%, core radial power distributions are prevented from exceeding design limits where DNB conditions may exist. The 12-hour Completion Time is consistent with the Surveillance Requirement Frequency in LCO 3.2.4, "QUADRANT POWER TILT RATIO (QPTR)."

The NIS power range detectors provide input to the Rod Control System and, therefore, have a two-out-of-four trip logic. A known inoperable channel must be placed in the tripped condition. This results in a partial trip condition requiring only one-out-of-three logic for actuation. The 72 hours allowed to place the inoperable channel in the tripped condition is justified in ~~Reference 28.~~

INSERT B-2

(continued)

BASES

ACTIONS

~~D~~E.1.1~~,~~ **and** ~~D~~E.1.2~~, and D.2~~ (continued)

~~As an alternative to the above Actions, the plant must be placed in a MODE where this Function is no longer required OPERABLE. Seventy-eight hours are allowed to place the plant in MODE 3. The 78-hour completion time includes 72 hours for channel corrective maintenance, and an additional 6 hours for the MODE reduction as required by Action D.2. This is a reasonable time, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging plant systems. If Required Actions cannot be completed within their allowed Completion Times, LCO 3.0.3 must be entered.~~

The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypass condition for up to 12 hours while performing routine surveillance testing of other channels. The Note also allows placing the inoperable channel in the bypass condition to allow setpoint adjustments of other channels when required to reduce the setpoint in accordance with other Technical Specifications. In accordance with WCAP 10271-P-A (Reference 7), very specific circumstances are related to the use of this bypass condition. Since the NIS channels are not designed with Bypass-capable logic that meets the requirements of IEEE 279, the provisions for bypass only apply to a specific type of channel failure. To apply, the channel must fail in such a way that it does not trip the bistables. With this type of failure, the channel may be returned to service and considered "bypassed" under this Note. Specifically, the bypass condition is the state when a failed channel is taken out of the forced "tripped" state and placed in operation. Due to the failed nature of the channel, the channel cannot be assumed to be OPERABLE, and is therefore considered to be in a state of bypass when the channel failure is such that its bistables are not tripped. The provisions of WCAP 10271 specifically prohibit the use of jumpers or lifted leads to bypass these channels. In this configuration, a second channel can be tested or setpoints adjusted with the channel in the tripped mode without completing reactor trip logic. The 12 hour time limit is justified in Reference 28.

Required Action ~~D~~E.1.1 has been modified by a Note which only requires SR 3.2.4.2 to be performed if the Power Range Neutron Flux input to QPTR becomes inoperable. The performance of SR 3.2.4.2 per ACTION ~~D~~E.1.1 is subject to the SR 3.2.4.2 note. Failure of a component in the Power Range Neutron Flux Channel which renders the High Flux Trip Function inoperable may not affect the capability to monitor QPTR. As such, determining QPTR using core power distribution measurement information once per 12 hours may not be necessary.

INSERT B-4 →

(continued)

BASES

ACTIONS (continued)

~~E~~G.1 ~~and E.2~~

Condition ~~E~~G applies to the following reactor trip Functions:

- Power Range Neutron Flux—Low;
- Overtemperature ΔT;
- Overpower ΔT;
- Power Range Neutron Flux—High Positive Rate;
- Pressurizer Pressure—High; and
- SG Water Level—Low Low.

INSERT B-1

A known inoperable channel must be placed in the tripped condition within 72 hours. Placing the channel in the tripped condition results in a partial trip condition requiring only one-out-of-two logic for actuation of the two-out-of-three trips and one-out-of-three logic for actuation of the two-out-of-four trips. The 72 hours allowed to place the inoperable channel in the tripped condition is justified in Reference 28.

~~If the operable channel cannot be placed in the trip condition within the specified Completion Time, the unit must be placed in a MODE where these Functions are not required OPERABLE. An additional 6 hours is allowed to place the unit in MODE 3. Six hours is a reasonable time, based on operating experience, to place the unit in MODE 3 from full power in an orderly manner and without challenging unit systems.~~

The Required Actions have been modified by a Note for Functions 6, 7 and 8.b, that allows an inoperable channel and/or one additional channel to be tested with one channel in bypass and the other channel in trip for up to 12 hours for performing surveillance testing. Additionally, for Function 6, 7 and 8b, both the inoperable and the additional channel maybe placed in bypass for up to 12 hours for surveillance testing. The Note allows only the inoperable channel for Functions 2.b and 3, to be bypassed for up to 12 hours for surveillance testing of other channels. This note is not intended to allow simultaneous testing of coincident channels on a routine basis. In accordance with WCAP 10271, very specific circumstances are related to the use of this bypass condition for RTS Functions 2.b and 3. Since these channels are not designed with Bypass-capable logic that meets the requirements of IEEE 279, the provisions for bypass only apply to a specific type of channel failure. To apply, the channel must fail in such a way that it does not trip the bistables. With this type of failure, the channel may be returned to service and considered "bypassed" under this Note. Specifically, the bypass condition is the state when a failed channel is taken out of the forced "tripped" state and placed in operation.

(continued)

BASES

ACTIONS

~~E~~$\boxed{G}$.1 ~~and E.2~~ (continued)

Due to the failed nature of the channel, the channel cannot be assumed to be OPERABLE, and is therefore considered to be in a state of bypass when the channel failure is such that its bistables are not tripped. The provisions of WCAP 10271 specifically prohibit the use of jumpers or lifted leads to bypass these channels. In this configuration, a second channel can be tested with the channel in the tripped mode without completing reactor trip logic. The Note for Function 14.a, allows the inoperable channel and/or one additional channel to be tested with one channel in bypass and the other in trip for up to 12 hours for surveillance testing. Functions 6,7, and 8.b are two-out-of-four trip logic, and 14.a is two-out-of-three trip logic and the allowed testing configurations provide flexibility for testing, while assuring that during testing no configuration will cause an inadvertent trip of the reactor or keep a valid signal from tripping the reactor as it was designed. This note is not intended to allow simultaneous testing of coincident channels on a routine basis. The 12 hour time limit is justified in Reference 28.

INSERT B-5

~~F~~$\boxed{I}$.1 and ~~F~~$\boxed{I}$.2

Condition ~~F~~$\boxed{I}$ applies to the Intermediate Range Neutron Flux trip when THERMAL POWER is above the P-6 setpoint and below the P-10 setpoint and one channel is inoperable. Above the P-6 setpoint and below the P-10 setpoint, the NIS intermediate range detector performs the monitoring Functions. If THERMAL POWER is greater than the P-6 setpoint but less than the P-10 setpoint, 24 hours is allowed to reduce THERMAL POWER below the P-6 setpoint or increase to THERMAL POWER above the P-10 setpoint. The NIS Intermediate Range Neutron Flux channels must be OPERABLE when the power level is above the capability of the source range, P-6, and below the capability of the power range, P-10. If THERMAL POWER is greater than the P-10 setpoint, the NIS power range detectors perform the monitoring and protection functions and the intermediate range is not required. The Completion Times allow for a slow and controlled power adjustment above P-10 or below P-6 and take into account the redundant capability afforded by the redundant OPERABLE channel, the overlap of the power range detectors, and the low probability of its failure during this period. This action does not require the inoperable channel to be tripped because the Function uses one-out-of-two logic. Tripping one channel would trip the reactor. Thus, the Required Actions specified in this Condition are only applicable when channel failure does not result in reactor trip.

(continued)

BASES

ACTIONS (continued)

~~G~~J.1 and ~~G~~J.2

Condition ~~G~~J applies to two inoperable Intermediate Range Neutron Flux trip channels in MODE 2 when THERMAL POWER is above the P-6 setpoint and below the P-10 setpoint. Required Actions specified in this Condition are only applicable when channel failures do not result in reactor trip. Above the P-6 setpoint and below the P-10 setpoint, the NIS intermediate range detector performs the monitoring Functions. With no intermediate range channels OPERABLE, the Required Actions are to suspend operations involving positive reactivity additions immediately. This will preclude any power level increase since there are no OPERABLE Intermediate Range Neutron Flux channels. The operator must also reduce THERMAL POWER below the P-6 setpoint within two hours. Below P-6, the Source Range Neutron Flux channels will be able to monitor the core power level. The Completion Time of 2 hours will allow a slow and controlled power reduction to less than the P-6 setpoint and takes into account the low probability of occurrence of an event during this period that may require the protection afforded by the NIS Intermediate Range Neutron Flux trip.

Required Action ~~G~~J.1 is modified by a Note to indicate that normal plant control operations that individually add limited positive reactivity (i.e., temperature or boron concentration fluctuations associated with RCS inventory management or temperature control) are not precluded by this Action, provided the SDM limits specified in the COLR are met and the requirements of LCOs 3.1.5, 3.1.6, and 3.4.2 are met.

~~H.1 - Not used~~

(continued)

BASES

ACTIONS (continued)

~~I~~K.1

Condition ~~I~~K I applies to one inoperable Source Range Neutron Flux trip channel when in MODE 2, below the P-6 setpoint, and performing a reactor startup. With the unit in this Condition, below P-6, the NIS source range performs the monitoring and protection functions. With one of the two channels inoperable, operations involving positive reactivity additions shall be suspended immediately.

This will preclude any power escalation. With only one source range channel OPERABLE, core protection is severely reduced and any actions that add positive reactivity to the core must be suspended immediately.

Required Action ~~I~~K.1 is modified by a Note to indicate that normal plant control operations that individually add limited positive reactivity (i.e., temperature or boron concentration fluctuations associated with RCS inventory management or temperature control) are not precluded by this Action, provided the SDM limits specified in the COLR are met and the requirements of LCOs 3.1.5, 3.1.6, and 3.4.2 are met.

~~J~~L.1

Condition ~~J~~L applies to two inoperable Source Range Neutron Flux trip channels when in MODE 2, below the P-6 setpoint, and performing a reactor startup, or in MODE 3, 4, or 5 with the Rod Control System capable of rod withdrawal or one or more rods not fully inserted. With the unit in this Condition, below P-6, the NIS source range performs the monitoring and protection functions. With both source range channels inoperable, the RTBs must be opened immediately. With the RTBs open, the core is in a more stable condition and the unit enters Condition ~~L~~O.

(continued)

BASES

ACTIONS (continued)

~~K~~**M**.1~~, K.2.1, and K.2.2~~

Condition ~~K~~**M** applies to one inoperable source range channel in MODE 3, 4, or 5 with the Rod Control System capable of rod withdrawal or one or more rods not fully inserted. With the unit in this Condition, below P-6, the NIS source range performs the protection functions. With one of the source range channels inoperable, 48 hours is allowed to restore it to an OPERABLE status. ~~If the channel cannot be returned to an OPERABLE status, action must be initiated within the same 48 hours to fully insert all rods. 1 additional hour is allowed to place the Rod Control System in a condition incapable of rod withdrawal (e.g., by de-energizing all CRDMs, by opening the RTBs, or by de-energizing the motor generator (MG) sets). Once these ACTIONS are completed the core is in a more stable condition.~~ The allowance of 48 hours to restore the channel to OPERABLE status~~, and the additional hour to place the Rod Control System in a condition incapable of rod withdrawal, are~~ **is** justified in Reference 7.

INSERT B-6

~~L~~**O**.1 and ~~L~~**O**.2

Condition ~~L~~**O** applies when the required number of OPERABLE Source Range Neutron Flux channels is not met in MODE 3, 4, or 5 with the RTBs open or with the Rod Control System incapable of rod withdrawal and all rods fully inserted. With the unit in this Condition, the NIS source range performs a monitoring function. With less than the required number of source range channels OPERABLE, operations involving positive reactivity additions shall be suspended immediately. This will preclude any power escalation.

Also, the SDM must be verified within 1 hour and once every 12 hours thereafter as per SR 3.1.1.1, SDM verification. With no source range channels OPERABLE, core protection is severely reduced. Verifying the SDM within 1 hour allows sufficient time to perform the calculations and determine that the SDM requirements are met. The SDM must also be verified once per 12 hours thereafter to ensure that the core reactivity has not changed. Required Action ~~L~~**O**.1 precludes any positive reactivity additions; therefore, core reactivity should not be increasing, and a 12 hour Frequency is adequate. The Completion Times of within 1 hour and once per 12 hours are based on operating experience in performing the Required Actions and the knowledge that unit conditions will change slowly.

Required Action ~~L~~**O**.1 is modified by a Note which permits plant temperature changes provided the temperature change is accounted for in the calculated SDM. Introduction of temperature changes, including temperature increases when operating with a positive MTC, must be evaluated to ensure they do not result in a loss of required SDM.

(continued)

BASES

ACTIONS (continued)

~~M~~P.1 ~~and M.2~~

Condition ~~M~~P applies to the following reactor trip Functions:

- Pressurizer Pressure — Low;
- Pressurizer Water Level — High;
- Reactor Coolant Flow — Low;
- RCP Breaker Position ;
- Undervoltage RCPs; and
- Underfrequency RCPs.

INSERT B-1

With one channel inoperable, the inoperable channel must be placed in the tripped condition within 72 hours. For the Pressurizer Pressure - Low, Pressurizer Water Level - High, Undervoltage RCPs, and Underfrequency RCPs trip Functions, placing the channel in the tripped condition when above the P-7 setpoint results in a partial trip condition requiring only one additional channel to initiate a reactor trip. For the Reactor Coolant Flow - Low trip Function, placing the channel in the tripped condition results in a partial trip condition requiring only one additional channel to initiate a reactor trip above the P-7 and P-8 setpoints. These Functions do not have to be OPERABLE below the P-7 setpoint because there are no loss of flow trips below the P-7 setpoint. The 72 hours allowed to place the channel in the tripped condition is justified in Reference 28. ~~An additional 6 hours is allowed to reduce THERMAL POWER to below P-7 if the inoperable channel cannot be restored to OPERABLE status or placed in trip within the specified Completion Time.~~ The Reactor Coolant Flow - Low reactor trip function goes from 1 of 4 logic to 2 of 4 logic below the P-8 setpoint; however, the Required Action must take the plant below the P-7 setpoint, if an inoperable channel is not tripped within 72 hours, due to the shared components between this function and the Reactor Coolant Flow - Low trip function.

Allowance of this time interval takes into consideration the redundant capability provided by the remaining redundant OPERABLE channel, and the low probability of occurrence of an event during this period that may require the protection afforded by the Functions associated with Condition ~~M~~P.

(continued)

BASES

ACTIONS

~~M~~$\boxed{P}$.1 and ~~M~~$\boxed{P}$.2 (continued)

The Required Actions have been modified by a Note for Function 8.a, that allows the inoperable channel and/or one additional channel to be tested with one channel in bypass and the other in trip, or with both the inoperable channel and the additional channel in bypass for up to 12 hours while performing surveillance testing of those channels. The Note for Function 9 and 10 allows the inoperable channel and/or one additional channel to be tested with one channel in bypass and the other channel in trip for up to 12 hours for surveillance testing. The Note allows only the inoperable channel for Functions 12 and 13 to be bypassed for surveillance testing of other channels. This note is not intended to allow simultaneous testing of coincident channels on a routine basis. In accordance with WCAP 10271, very specific circumstances are related to the use of this bypass condition for RTS Functions 12 and 13. Since these channels are not designed with Bypass-capable logic that meets the requirements of IEEE 279, the provisions for bypass only apply to a specific type of channel failure. To apply, the channel must fail in such a way that it does not trip the bistables. With this type of failure, the channel may be returned to service and considered "bypassed" under this Note. Specifically, the bypass condition is the state when a failed channel is taken out of the forced "tripped" state and placed in operation. Due to the failed nature of the channel, the channel cannot be assumed to be OPERABLE, and is therefore considered to be in a state of bypass when the channel failure is such that its bistables are not tripped. The provisions of WCAP 10271 specifically prohibit the use of jumpers or lifted leads to bypass these channels. In this configuration, a second channel can be tested with the channel in the tripped mode without completing reactor trip logic. Function 11 may not be bypassed since its logic is not 2 of 4 or 2 of 3, therefore, single failure would not be maintained. Function 8.a is a two-out-of-four trip logic and Functions 9 and 10 are two-out-of-three logic trip logics. The allowed testing configurations provide flexibility for testing, while assuring that during testing no configuration will cause an inadvertent trip of the reactor or keep a valid signal from tripping the reactor as it was designed. This note is not intended to allow simultaneous testing of coincident channels on a routine basis. The 12 hour time limit is justified in Reference 28.

INSERT B-7 →

(continued)

INSERT B-1

BASES

ACTIONS (continued)

~~N~~S.1 ~~and N.2~~

Condition ~~N~~S applies to the RCP Breaker Position reactor trip function.

With one channel inoperable, the inoperable channel must be placed in the tripped condition within 6 hours. The 6 hours allowed to place the channel in the tripped condition is justified in Reference 7. ~~An additional 6 hours is allowed to reduce THERMAL POWER to below P-7 if the inoperable channel cannot be restored to OPERABLE status or placed in trip within the specified Completion Time.~~

~~Allowance of this time interval takes into consideration the low probability of occurrence of an event during this period that may require the protection afforded by the Functions associated with Condition N.~~

Function 11 may not be bypassed since its logic is not 2 of 4 or 2 of 3, therefore, single failure would not be maintained.

INSERT B-8

(continued)

INSERT B-1

BASES

ACTIONS (continued)

~~O~~V.1~~-and O.2~~

Condition ~~O~~**V** applies to Turbine Trip on Low Auto-Stop Oil Pressure. With one channel inoperable, the inoperable channel must be placed in the trip condition within 12 hours. If placed in the tripped condition, this results in a partial trip condition requiring only one additional channel to initiate a reactor trip. ~~If the channel cannot be restored to OPERABLE status or placed in the trip condition, then power must be reduced below the P-9 setpoint within the next 4 hours.~~ The 72 hours allowed to place the inoperable channel in the tripped condition ~~and the 4 hours allowed for reducing power are~~ **is** justified in Reference 28.

The Required Actions have been modified by a Note that allows placing an inoperable channel in the bypassed condition for up to 12 hours while performing routine surveillance testing of the other channels. In accordance with WCAP 10271, very specific circumstances are related to the use of this bypass condition for RTS Function 16. Since this channel is not designed with Bypass-capable logic that meets the requirements of IEEE 279, the provisions for bypass only apply to a specific type of channel failure. To apply, the channel must fail in such a way that it does not trip the bistables. With this type of failure, the channel may be returned to service and considered "bypassed" under this Note. Specifically, the bypass condition is the state when a failed channel is taken out of the forced "tripped" state and placed in operation. Due to the failed nature of the channel, the channel cannot be assumed to be OPERABLE, and is therefore considered to be in a state of bypass when the channel failure is such that its bistables are not tripped. The provisions of WCAP 10271 specifically prohibit the use of jumpers or lifted leads to bypass this channel. In this configuration, a second channel can be tested with the channel in the tripped mode without completing reactor trip logic. The 12 hour time limit is justified in Reference 28.

INSERT B-9

INSERT B-1

~~P~~X.1~~-and P.2~~

Condition ~~P~~X applies to Turbine Trip on Turbine Stop Valve Closure. With one or more channels inoperable, the inoperable channel must be placed in the trip condition within 72 hours. For the Turbine Trip on Turbine Stop Valve Closure function, where four-of-four channels are required to initiate a reactor trip; hence more than one channel may be placed in trip. ~~If the channel(s) cannot be restored to OPERABLE status or placed in the trip condition, then power must be reduced below the P-9 setpoint within the next 4 hours.~~ The 72 hours allowed to place the inoperable channel(s) in the tripped condition ~~and the 4 hours allowed for reducing power are~~ is justified in Reference 28.

INSERT B-10

(continued)

BASES

ACTIONS (continued)

~~Q~~Z.1 ~~and Q.2~~

INSERT B-2

Condition ~~Q~~Z applies to the SI Input from ESFAS reactor trip and the RTS Automatic Trip Logic in MODES 1 and 2. These actions address the train orientation of the RTS for these Functions. With one train inoperable, 24 hours are allowed to restore the train to OPERABLE status ~~(Required Action Q.1) or the unit must be placed in MODE 3 within the next 6 hours~~. The 24 hours allowed to restore the inoperable train to OPERABLE status is justified in Reference 29. ~~An additional 6 hours is allowed to place the unit in MODE 3. Six hours (Required Action Q.2) is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging unit systems.~~

Consistent with the requirement in Reference 28 to include Tier 2 insights into the decision-making process before taking equipment out of service, restrictions on concurrent removal of certain equipment when a logic train is inoperable for maintenance are included. These restrictions do not apply when a logic train is being tested under the 4-hour bypass Note of Condition ~~Q~~Z. When a logic train is inoperable for maintenance, the following should not be scheduled:

- Activities that degrade the availability of the auxiliary feedwater system, RCS pressure relief system (pressurizer PORVs and safety valves), AMSAC, or turbine trip (to preserve ATWS mitigation capability).
- Activities that cause master relays or slave relays in the available train to be unavailable and activities that cause analog channels to be unavailable (to preserve reactor trip and safeguards actuation capability).
- Activities that prevent maintaining one complete emergency core cooling system train that can be actuated automatically (to preserve LOCA mitigation capability).
- Activities on electrical systems (e.g., AC and DC power) and cooling systems (ASW and CCW) that support the systems or functions listed above.

Since Condition ~~Q~~Z is typically entered due to equipment failure, it follows that some of the above restrictions may not be met at the time of Condition ~~Q~~Z entry. If this situation were to occur during the 24-hour Completion Time of Required Action ~~Q~~Z.1, the configuration risk management program will assess the emergent condition and direct activities to restore the inoperable logic train and exit Condition ~~Q~~Z or fully implement the restrictions.

The Required Actions have been modified by a Note that allows bypassing one train up to 4 hours for surveillance testing, provided the other train is OPERABLE.

INSERT B-11

(continued)

BASES

ACTIONS (continued)

INSERT B-2

~~R~~$\boxed{BB}$.1 ~~and R.2~~

Condition ~~R~~$\boxed{BB}$ applies to the RTBs in MODES 1 and 2. These actions address the train orientation of the RTS for the RTBs. With one train ~~inoperable,~~ 24 hours is allowed for train corrective maintenance to restore the train ~~to OPERABLE~~ status ~~or the unit must be placed in MODE 3 within the next 6 hours.~~ The 24-hour Completion Time is justified in Reference 29. ~~The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging unit systems. Placing the unit in MODE 3 results in Condition C entry if one RTB train is inoperable.~~

Consistent with the requirement in Reference 29 to include Tier 2 insights into the decision-making process before taking equipment out of service, restrictions on concurrent removal of certain equipment when a RTB train is inoperable for maintenance are included. These restrictions do not apply when a RTB train is being tested under the 4-hour bypass Note of Condition ~~R~~$\boxed{BB}$. When a RTB train is inoperable for maintenance, the following should not be scheduled:

- Activities that degrade the availability of the auxiliary feedwater system, RCS pressure relief system (pressurizer PORVs and safety valves), AMSAC, or turbine trip (to preserve ATWS mitigation capability).
- Activities that cause master relays or slave relays in the available train to be unavailable and activities that cause analog channels to be unavailable (to preserve reactor trip and safeguards actuation capability).
- Activities on electrical systems (e.g., AC and DC power) and cooling systems (ASW) that support the systems or functions listed above.

Since Condition ~~R~~$\boxed{BB}$ is typically entered due to equipment failure, it follows that some of the above restrictions may not be met at the time of Condition R entry. If this situation were to occur during the 24-hour Completion Time of Required Action ~~R~~$\boxed{BB}$.1, the configuration risk management program will assess the emergent condition and direct activities to restore the inoperable logic train and exit Condition R or fully implement the above restrictions.

The Required Actions have been modified by a Note. The Note allows one train to be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE. The 4-hour time limit is justified in Reference 29.

INSERT B-12

(continued)

BASES

ACTIONS (continued)

~~S~~$\boxed{DD}$.1 ~~and S.2~~

Condition ~~S~~$\boxed{DD}$ applies to the P-6 and P-10 interlocks. With one or more channels inoperable, the associated interlock must be verified by observation of the associated permissive annunciator window to be in its required state for the existing unit condition within 1 hour ~~or the unit must be placed in MODE 3 within the next 6 hours~~. Verifying the interlock status manually accomplishes the interlock's Function. The Completion Time of 1 hour is based on operating experience and the minimum amount of time allowed for manual operator actions. ~~The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging unit systems. The 1 hour and 6 hour Completion Times are equal to the time allowed by LCO 3.0.3 for shutdown actions in the event of a complete loss of RTS Function.~~

~~T~~$\boxed{EE}$.1 ~~and T.2~~

Condition ~~T~~$\boxed{EE}$ applies to the P-7, P-8, P-9, and P-13 interlocks. With one or more channel~~(s)~~ inoperable, the associated interlock must be verified by observation of the associated permissive annunciator window to be in its required state for the existing unit condition within 1 hour ~~or the unit must be placed in MODE 2 within the next 6 hours.~~ These actions are conservative for the case where power level is being raised. Verifying the interlock status manually accomplishes the interlock's Function. The Completion Time of 1 hour is based on operating experience and the minimum amount of time allowed for manual operator actions. ~~The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 2 from full power in an orderly manner and without challenging unit systems.~~

INSERT B-13 →

(continued)

BASES

ACTIONS (continued)

INSERT B-1

~~U~~ $\boxed{GG}$.1 ~~and U.2~~

Condition ~~U~~ $\boxed{GG}$ applies to the RTB Undervoltage and Shunt Trip Mechanisms, or diverse trip features, in MODES 1 and 2. With one of the diverse ~~trip features~~ inoperable, it must be restored to an OPERABLE status within 48 hours ~~or the unit must be placed in a MODE where the requirement does not apply. This is accomplished by placing the unit in MODE 3 within the next 6 hours (54 hours total time). The Completion Time of 6 hours is a reasonable time, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging unit systems~~.

~~With the unit in MODE 3, Condition C is entered if the inoperable trip mechanism has not been restored and the Rod Control System is capable of rod withdrawal or one or more rods are not fully inserted.~~ The affected RTB shall not be bypassed while one of the diverse features is inoperable except for the time required to perform maintenance to restore the inoperable trip mechanism to OPERABLE status, consistent with Ref. 13.

The Completion Time of 48 hours for Required Action ~~U~~ $\boxed{GG}$.1 is reasonable considering that in this Condition there is one remaining diverse feature for the affected RTB, and one OPERABLE RTB capable of performing the safety function and given the low probability of an event occurring during this interval.

INSERT B-14

~~V.1 Not used~~

~~W~~ $\boxed{II}$.1 and ~~W~~ $\boxed{II}$.2

Condition ~~W~~ $\boxed{II}$ applies to the Seismic Trip, in MODES 1 and 2. With one of the channels inoperable, START UP and/or POWER OPERATION may proceed provided the inoperable channel is placed in trip within the next 6 hours. If a direction is inoperable, then the channel must be considered inoperable. Placing the channel in the tripped condition creates a partial trip condition requiring only one out of two logic from the remaining locations for reactor trip actuation.

The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 72 hours while performing surveillance testing or maintenance. The allowed 72 hour bypass time is reasonable based on the low probability of an event occurring while the channel is bypassed and on the time required to perform the required surveillance testing.

(continued)

BASES

ACTIONS (continued)

~~X~~**JJ**.1~~, X.2~~ and ~~W~~**JJ**.**2**~~3~~

Condition ~~X~~**JJ** applies to the Trip Time Delay (TTD) channels (processors) for the SG Water Level-Low Low trip function in MODES 1 and 2. With one or more TTD channels (processors) inoperable or the RCS delta-T equivalent power input inoperable, 72 hours are allowed to adjust the threshold power level for no time delay to 0% RTP. This sets the TTD processor timer to zero seconds and effectively removes its time delay input from the affected SG water level circuits. If the TTD processor timer cannot be set to zero seconds then the affected SG water level low-low output channels must be placed in trip **within 72 hours**. Only one SG water level low-low output channel per generator can be placed in the trip position without tripping the plant. The Completion Time of 72 hours is justified in Reference 28.

INSERT B-1

~~If the TTD threshold power for no time delay cannot be adjusted to 0% RTP (zero seconds time delay) or the single SG water level output channel cannot be placed in the trip condition within the specified Completion Time, the unit must be placed in a MODE where these Functions are not required OPERABLE. An additional 6 hours is allowed to place the unit in MODE 3. Six hours is a reasonable time, based on operating experience, to place the unit in MODE 3 from full power in an orderly manner and without challenging unit systems.~~

The Required Actions have been modified by a note that allows the inoperable TTD channel (processor) and/or one additional TTD channel (processor) to be surveillance tested with the affected SG low-low water level channels for one TTD channel (processor) in bypass and the affected SG low-low water level channels for the other TTD channel (processor) in trip for up to 12 hours. This note is not intended to allow simultaneous testing of multiple TTD channels (processors) on a routine basis.

If Required Action ~~X~~**JJ**.1 is completed for an inoperable TTD processor, the affected SG low-low water level channels would still be operable in that a valid SG low-low water level trip function would not be delayed. With the inoperable TTD processor meeting this required action, the above note will still apply for the inoperable TTD processor and/or one additional TTD processor.

INSERT B-15

(continued)

BASES

ACTIONS (continued)

B.1

Condition B applies to manual initiation of:

- SI;
- Containment Spray;
- Phase A Isolation; and
- Phase B Isolation.

INSERT B-2

This action addresses the train orientation of the SSPS for the functions listed above. If a channel or train is inoperable, 48 hours is allowed to return it to an OPERABLE status. Note that for containment spray and Phase B isolation, failure of one or both channels in one train renders the train inoperable. Condition B, therefore, encompasses both situations. The specified Completion Time is reasonable considering that there are two automatic actuation trains and another manual initiation train OPERABLE for each Function, and the low probability of an event occurring during this interval. ~~If the train cannot be restored to OPERABLE status, the unit must be placed in a MODE in which the LCO does not apply. This is done by placing the unit in at least MODE 3 within an additional 6 hours (54 hours total time) and in MODE 5 within an additional 30 hours (84 hours total time). The allowable Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.~~

INSERT B-16

~~C~~**D**.1~~, C.2.1 and C.2.2~~

Condition ~~C~~**D** applies to the automatic actuation logic and actuation relays for the following functions:

- SI;
- Containment Spray;
- Phase A Isolation; and
- Phase B Isolation

This action addresses the train orientation of the SSPS and the master and slave relays. If one train is inoperable, 24 hours are allowed to restore the train to OPERABLE status. The 24 hours allowed for restoring the inoperable train to OPERABLE status is justified in Reference 17. The specified Completion Time is reasonable considering that there is another train OPERABLE, and the low probability of an event occurring during this interval. ~~If the train cannot be restored to OPERABLE status, the unit must be placed in a MODE in which the LCO does not apply. This is done by placing the~~

(continued)

BASES

ACTIONS

~~C~~**D**.1~~, C.2.1 and C.2.2~~ (continued)

~~unit in at least MODE 3 within an additional 6 hours (30 hours total time) and in MODE 5 within an additional 30 hours (60 hours total time). The Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.~~

Consistent with the requirement in Reference 17 to include Tier 2 insights into the decision-making process before taking equipment out of service, restrictions on concurrent removal of certain equipment when a logic train is inoperable for maintenance are included. These restrictions do not apply when a logic train is being tested under the 4-hour bypass Note of Condition ~~C~~**D**. When a logic train is inoperable for maintenance, the following should not be scheduled:

- Activities that degrade the availability of the auxiliary feedwater system, RCS pressure relief system (pressurizer PORVs and safety valves), AMSAC, or turbine trip (to preserve ATWS mitigation capability).
- Activities that cause master relays or slave relays in the available train to be unavailable and activities that cause analog channels to be unavailable (to preserve reactor trip and safeguards actuation capability).
- Activities that prevent maintaining one complete emergency core cooling system train that can be actuated automatically (to preserve LOCA mitigation capability).
- Activities on electrical systems (e.g., AC and DC power) and cooling systems (ASW and CCW) that support the systems or functions listed above.

Since Condition ~~C~~**D** is typically entered due to equipment failure, it follows that some of the above restrictions may not be met at the time of Condition ~~C~~**D** entry. If this situation were to occur during the 24-hour Completion Time of Required Action ~~C~~**D**.1, the configuration risk management program will assess the emergent condition and direct activities to restore the inoperable logic train and exit Condition C or fully implement the restrictions.

The Required Actions are modified by a Note that allows one train to be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE. This allowance is based on the reliability analysis assumption of WCAP-10271-P-A (Ref. 8) that 4 hours is the average time required to perform train surveillance.

INSERT B-17

(continued)

BASES

ACTIONS (continued)

~~D~~$\boxed{F}$.1~~, D.2.1, and D.2.2~~

Condition ~~D~~$\boxed{F}$ applies to:

INSERT B-2

- SI - Pressurizer Pressure — Low;
- SI - Steam Line Pressure — Low;
- Steam Line Isolation - Steam Line Pressure — Negative Rate — High;
- Steam Line Isolation - Steam Line Pressure — Low; and
- Auxiliary Feedwater - SG Water level — Low Low;

If one channel is inoperable, 72 hours are allowed to restore the channel to OPERABLE status or to place it in the tripped condition. Generally this Condition applies to functions that operate on two-out-of-three logic (excluding pressurizer pressure - low which is two-out-of-four due to its control input function). Therefore, failure of one channel places the Function in a two-out-of-two configuration. The inoperable channel must be tripped to place the Function in a one-out-of-two configuration that satisfies redundancy requirements. Since pressurizer pressure is used for control and SSPS input, its coincidence is two-out-of-four to provide to required reliability and redundancy. Failure of one channel places the function in a two-out-of-three configuration. The inoperable channel must be placed in the tripped condition to place the Function in a one-out-of-three configuration that satisfies the reliability and redundancy requirements.

(continued)

BASES

ACTIONS

~~D~~ $\boxed{F}$.1~~, D.2.1, and D.2.2~~ (continued)

~~Failure to restore the inoperable channel to OPERABLE status or place it in the tripped condition within 72 hours requires the unit be placed in MODE 3 within the following 6 hours and MODE 4 within the next 6 hours.~~

~~The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 4, these Functions are no longer required OPERABLE.~~

The Required Actions are modified by a Note for Function 1.d that allows the inoperable channel and/or one additional channel to be tested with one channel in bypass and one channel in trip, or with both the inoperable and the additional channel in bypass for up to 12 hours for surveillance testing. For Functions 1.e, 4.d(1), 4.d(2) and 6.d(1), the Note allows the inoperable channel and/or one additional channel to be tested with one channel in bypass and one channel in trip for up to 12 hours for surveillance testing. Function 1.d is a two-out-of-four trip logic and Functions 1.e, 4.d(1), 4.d(2) and 6.d(1) are two-out-of-three logic actuation logics. The allowed testing configurations provide flexibility for testing, while assuring that during testing no configuration will cause an inadvertent actuation of the function or keep a valid signal from actuating the function as it was designed. The 72 hours allowed to restore the channel to OPERABLE status or to place the inoperable channel in the tripped condition, and the 12 hours allowed for testing, are justified in Reference 17. This note is not intended to allow simultaneous testing of coincident channels on a routine basis.

INSERT B-18

~~E~~ $\boxed{H}$.1~~, E.2.1, and E.2.2~~

Condition ~~E~~ $\boxed{H}$ applies to:

- Steam Line Isolation - Containment Pressure - High-high

This signal does not input to a control function. Thus, two-out-of-three logic is necessary to meet acceptable protective requirements. However, a two-out-of-three design would require tripping a failed channel. This is undesirable because a single failure of the Containment Pressure input would then cause spurious containment spray initiation. Spurious spray actuation is undesirable because of the cleanup problems presented. Therefore, these channels are designed with two-out-of-four logic so that a failed channel may be bypassed rather than tripped. Note that one channel may be bypassed and still satisfy the single failure criterion. Furthermore, with one channel bypassed, a single instrumentation channel failure will not spuriously initiate containment spray.

(continued)

BASES

ACTIONS

~~E~~$\boxed{H}$.1~~, E.2.1, and E.2.2~~ (continued)

To avoid the inadvertent actuation of containment spray and Phase B containment isolation, the inoperable channel should not be placed in the tripped condition. Instead it is bypassed. Restoring the channel to OPERABLE status, or placing the inoperable channel in the bypass condition within 72 hours, is sufficient to assure that the Function remains OPERABLE and minimizes the time that the Function may be in a partial trip condition (assuming the inoperable channel has failed high). The 72 hours allowed to restore the channel to OPERABLE status or to place it in the bypass condition is justified in Reference 17. ~~Failure to restore the inoperable channel to OPERABLE status, or place it in the bypassed condition within 72 hours, requires the unit be placed in MODE 3 within the following 6 hours and MODE 4 within the next 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 4, these Functions are no longer required OPERABLE.~~

The Required Actions are modified by a Note that allows the inoperable channel to be tested in bypass for up to 12 hours for surveillance testing. In addition, the Note allows the inoperable channel and one additional channel to be tested in bypass for up to 12 hours for surveillance testing **only** if the Function 1.c channel associated with the inoperable channel is in trip during the testing. The 12 hour time limit is justified in reference 17.

This function is a two-out-of-four actuation logic and three of its channels are contained on common control channels with three other functions and the fourth channel is on a common control channel with two other functions. As a result, if a common control channel is inoperable then one channel from each of its contained functions is inoperable. Three of the common control channels each contain a channel from the Safety Injection Containment Pressure – High (Function. 1.c). Function 1.c, is a two-out-of-three logic, which requires an inoperable channel to be placed in trip to continue operability and only one channel at a time is allowed to be bypassed for testing.

(continued)

BASES

ACTIONS

~~E~~H.1~~, E.2.1, and E.2.2~~ (continued)

As a result, for the three common control channels that include a Function 1.c channel the testing of a second common control channel in bypass requires verification that the Function 1.c channel on the inoperable common control channel is in trip. Otherwise no second common control channel can be tested in bypass. However, if the fourth common control channel is the inoperable channel, then with that common control channel in bypass, any one of the other three common control channels may be tested in bypass without placing the associated Function 1.c, channel in trip. Placing a second channel in the bypass condition for up to 12 hours for testing purposes is acceptable based on Reference 17. The allowed testing configurations provide flexibility for testing, while assuring that during testing no configuration will cause an inadvertent actuation of the function or keep a valid signal from actuating the function or an associated function as designed. This note is not intended to allow simultaneous testing of coincident channels on a routine basis.

INSERT B-19

~~F~~J.1, ~~F~~J.2.1, and ~~F~~J.2.2

Condition ~~F~~J applies to the P-4 Interlock.

For the P-4 Interlock Function, this action addresses the train orientation of the SSPS. If a train is inoperable, 48 hours is allowed to return it to OPERABLE status. The specified Completion Time is reasonable considering the nature of this Function, the available redundancy, and the low probability of an event occurring during this interval. If the Function cannot be returned to OPERABLE status, the unit must be placed in MODE 3 within the next 6 hours and MODE 4 within the following 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power in an orderly manner and without challenging unit systems. In MODE 4, the unit does not have any analyzed transients or conditions that require the explicit use of the protection function noted above.

(continued)

INSERT B-2

BASES

ACTIONS (continued)

~~G~~K.1~~, G.2.1 and G.2.2~~

Condition ~~G~~K applies to the automatic actuation logic and actuation relays for the Steam Line Isolation and AFW actuation Functions.

The action addresses the train orientation of the SSPS and the master and slave relays for these functions. If one train is inoperable, 24 hours are allowed to restore the train to OPERABLE status. The 24 hours allowed for restoring the inoperable train to OPERABLE status is justified in Reference 17. The Completion Time for restoring a train to OPERABLE status is reasonable considering that there is another train OPERABLE, and the low probability of an event occurring during this interval. ~~If the train cannot be returned to OPERABLE status, the unit must be brought to MODE 3 within the next 6 hours and MODE 4 within the following 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. Placing the unit in MODE 4 removes all requirements for OPERABILITY of the protection channels and actuation functions. In this MODE, the unit does not have analyzed transients or conditions that require the explicit use of the protection functions noted above.~~

Consistent with the requirement in Reference 17 to include Tier 2 insights into the decision-making process before taking equipment out of service, restrictions on concurrent removal of certain equipment when a logic train is inoperable for maintenance are included. These restrictions do not apply when a logic train is being tested under the 4-hour bypass Note of Condition ~~G~~K. When a logic train is inoperable for maintenance, the following should not be scheduled:

- Activities that degrade the availability of the auxiliary feedwater system, RCS pressure relief system (pressurizer PORVs and safety valves), AMSAC, or turbine trip (to preserve ATWS mitigation capability).
- Activities that cause master relays or slave relays in the available train to be unavailable and activities that cause analog channels to be unavailable (to preserve reactor trip and safeguards actuation capability).
- Activities that prevent maintaining one complete emergency core cooling system train that can be actuated automatically (to preserve LOCA mitigation capability).
- Activities on electrical systems (e.g., AC and DC power) and cooling systems (ASW and CCW) that support the systems or functions listed above.

(continued)

BASES

ACTIONS

~~G~~$\boxed{K}$.1~~, G.2.1 and G.2.2~~ (continued)

Since Condition ~~G~~$\boxed{K}$ is typically entered due to equipment failure, it follows that some of the above restrictions may not be met at the time of Condition G entry. If this situation were to occur during the 24-hour Completion Time of Required Action ~~G~~$\boxed{K}$.1, the configuration risk management program will assess the emergent condition and direct activities to restore the inoperable logic train and exit Condition ~~G~~$\boxed{K}$ or fully implement the restrictions.

The Required Actions are modified by a Note that allows one train to be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. This allowance is based on the reliability analysis (Ref. 8) assumption that 4 hours is the average time required to perform channel surveillance.

INSERT B-20

INSERT B-2

~~H~~$\boxed{M}$.1~~ and H.2~~

Condition ~~H~~$\boxed{M}$ applies to the Automatic Actuation Logic and Actuation Relays for the Feedwater Isolation Function.

This action addresses the train orientation of the SSPS and the master and slave relays for this Function. If one train is inoperable, 24 hours are allowed to restore the train to OPERABLE status ~~or the unit must be placed in MODE 3 within the following 6 hours~~. The 24 hours allowed for restoring the inoperable train to OPERABLE status is justified in Reference 17. The Completion Time for restoring a train to OPERABLE status is reasonable considering that there is another train OPERABLE, and the low probability of an event occurring during this interval. ~~The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. These Functions are no longer required in MODE 3. Placing the unit in MODE 3 removes all requirements for OPERABILITY of the protection channels and actuation functions. In this MODE, the unit does not have analyzed transients or conditions that require the explicit use of the protection functions noted above.~~

(continued)

BASES

ACTIONS

~~H~~M.1 ~~and H.2~~ (continued)

The Required Actions are modified by a Note that allows one train to be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. This allowance is based on the reliability analysis (Ref. 8) assumption that 4 hours is the average time required to perform train surveillance.

INSERT B-21

~~I~~O.1 ~~and I.2~~

Condition ~~I~~O applies to Auxiliary Feedwater - Undervoltage Reactor Coolant Pump

If one channel is inoperable, 72 hours are allowed to restore one channel to OPERABLE status or to place it in the tripped condition. **INSERT B-2** If placed in the tripped condition, the function is then in a partial trip condition where one additional tripped channel will result in actuation. The 72 hour Completion Time is justified in Ref. 17. ~~Failure to restore the inoperable channel to OPERABLE status or place it in the tripped condition within 72 hours, requires the Unit to be placed in MODE 2 with in the following 6 hours. Six hours is reasonable, based on operating experience, to reach MODE 2 from full power conditions in an orderly manner without challenging unit systems. In MODE 2, this Function is no longer required OPERABLE.~~

The Required Actions are modified by a Note that allows the inoperable channel to be bypassed for up to 12 hours for surveillance testing of other channels. In accordance with WCAP 10271, very specific circumstances are related to the use of this bypass condition for ESFAS Functions 6.g. Since this channel is not designed with Bypass-capable logic that meets the requirements of IEEE 279, the provisions for bypass only apply to a specific type of channel failure. To apply, the channel must fail in such a way that it does not trip the bistables. With this type of failure, the channel may be returned to service and considered "bypassed" under this Note. Specifically, the bypass condition is the state when a failed channel is taken out of the forced "tripped" state and placed in operation. Due to the failed nature of the channel, the channel cannot be assumed to be OPERABLE, and is therefore considered to be in a state of bypass when the channel failure is such that its bistables are not tripped. The provisions of WCAP 10271 specifically prohibit the use of jumpers or lifted leads to bypass this channel. In this configuration, a second channel can be tested with the channel in the tripped mode without completing ESFAS logic. The 72 hours allowed to place the inoperable channel in the tripped condition, and the 12 hours allowed for a second channel to be in the bypassed condition for testing, are justified in Reference 17.

INSERT B-22

(continued)

INSERT B-2

BASES

ACTIONS (continued)

~~J~~$\boxed{Q}$.1 ~~and J.2~~

Condition ~~J~~$\boxed{Q}$ applies to the Feedwater Isolation Actuation signal resulting from Steam Generator Level - High-High (P-14).

If one channel is inoperable, 72 hours are allowed to restore one channel to OPERABLE status or to place it in the tripped condition. If placed in the tripped condition, the Function is then in a partial trip condition where one-out-of-two logic will result in actuation. The 72-hour Completion Time is justified in Reference 17. ~~Failure to restore the inoperable channel to OPERABLE status or place in the tripped condition within 72 hours requires the unit to be placed in MODE 3 within the following 6 hours. Six hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. In MODE 3, this Function is no longer required OPERABLE.~~

The Required Actions are modified by a Note that allows the inoperable channel and/or one additional channel to be tested with one channel in bypass and one channel in trip for up to 12 hours for surveillance testing. This Function is a two-out-of-three actuation logic and the allowed testing configurations provide flexibility for testing, while assuring that during testing no configuration will cause an inadvertent actuation of the function or keep a valid signal from actuating the function as it was designed. The 72 hours allowed to place the inoperable channel in the tripped condition, and the 12 hours allowed for a second channel to be in the bypassed condition for testing, are justified in Reference 17. This note is not intended to allow simultaneous testing of coincident channels on a routine basis.

INSERT B-23

~~K~~$\boxed{S}$.1~~.1, K.1.2, K.2.1~~ and ~~K~~$\boxed{S}$.2~~.2~~

Condition ~~K~~$\boxed{S}$ applies to the Residual Heat Removal Pump Trip on RWST Level - Low. Restoring the channel to OPERABLE status or placing the inoperable channel in the bypass (cut-out) condition within 6 hours is sufficient to ensure that the Function remains OPERABLE and minimizes the time that the Function may be in a partial trip condition (assuming the inoperable channel has failed low). Placing the out-of-service channel in cut-out removes that channel from the trip logic, similar to a bypass function. This provides a two-out-of-two trip logic from the remaining channels. The 6 hour Completion Time is justified in Reference 8. ~~If the channel cannot be placed in the cut-out condition within 6 hours, and returned to an OPERABLE status within 48 hours, the unit must be brought to MODE 3 within 54 hours and MODE 5 within 84 hours. The allowed Completion Times for shutdown are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 5, the unit does not have any analyzed transients or conditions that require the explicit use of the pump trip function noted above.~~

INSERT B-24

(continued)

BASES

ACTIONS (continued)

~~L~~ $\boxed{U}$.1~~, L.2.1 and L.2.2~~

Condition ~~L~~ $\boxed{U}$ applies to the P-11 interlock.

With one or more channels inoperable, the operator must verify that the interlock is in the required state for the existing unit condition. This action manually accomplishes the function of the interlock. Determination must be made within 1 hour. The verification determination can be made by observation of the associated annunciator window(s). The 1 hour Completion Time is equal to the time allowed by LCO 3.0.3 to initiate shutdown actions in the event of a complete loss of ESFAS function. ~~If the interlock is not in the required state (or placed in the required state) for the existing unit condition, the unit must be placed in MODE 3 within the next 6 hours and MODE 4 within the following 6 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. Placing the unit in MODE 4 removes all requirements for OPERABILITY of these interlocks.~~

~~M~~ $\boxed{V}$.1~~,~~ and ~~M~~ $\boxed{V}$.2~~, M.3.1 and M.3.2~~

INSERT B-2

Condition ~~M~~ $\boxed{V}$ applies to the Trip Time Delay (TTD) channels (processors) for the SG Water Level-Low Low actuation of the turbine-driven AFW pump and is required to be OPERABLE in MODES 1, 2 and 3. With one or more TTD channels (processors) inoperable or the RSC ΔT equivalent power input inoperable, 72 hours are allowed to adjust the threshold power level for no time delay to 0% RTP. This sets the TTD processor timer to zero seconds and effectively removes its input for the SG water level circuit. If the TTD timer processor cannot be set to zero seconds for a single SG water level control, then the affected SG water level low-low channel must be placed in trip. Only one SG water level low-low channel per generator can be placed in trip position without tripping the plant. The Completion Time of 72 hours is justified in Reference 17.

~~If the TTD threshold power for no time delay cannot be adjusted to 0% RTP (zero seconds time delay) or the single SG water level output channel cannot be placed in the trip condition within the specified Completion Time, the unit must be placed in MODE 4 where these Functions are not required OPERABLE. A completion time of 78 hours is allowed to place the unit in MODE 3 and 84 hours for MODE 4. These completion times are reasonable, based on operating experience, to place the unit in MODE 4 from full power in an orderly manner and without challenging unit systems. In MODE 4 there are no analyzed transients requiring the use of the turbine-driven AFW pump.~~

(continued)

BASES

ACTIONS

~~M~~$\boxed{V}$.1~~,~~ and ~~M~~$\boxed{V}$.2~~, M.3.1 and M.3.2~~ (continued)

The Required Actions have been modified by a note that allows the inoperable TTD channel (processor) and/or one additional TTD channel (processor) to be surveillance tested with the affected SG low-low water level channels for one TTD channel (processor) in bypass and the affected SG low-low water level channels for the other TTD channel (processor) in trip for up to 12 hours. The 12 hour time limit is justified in reference 17. This note is not intended to allow simultaneous testing of multiple TTD channels (processors) on a routine basis.

If Required Action ~~M~~$\boxed{V}$.1 is completed for an inoperable TTD processor, the affected SG low-low water level channels would still be operable in that a valid SG low-low water level trip function would not be delayed. With the inoperable TTD processor meeting this required action, the above note will still apply for the inoperable TTD processor and/or one additional TTD processor.

~~N~~$\boxed{W}$.1 or ~~N~~$\boxed{W}$.2

Condition ~~N~~$\boxed{W}$ applies to:

- Manual Initiation of Steam Line Isolation; and
- Manual Initiation of Auxiliary Feedwater.

If a channel is inoperable, 48 hours is allowed to return the channel to an OPERABLE status. The specified Completion Time is reasonable considering the nature of these functions, the available redundancy, and the low probability of an event occurring during this interval. If the Function cannot be returned to OPERABLE status, the associated pump or valve shall be declared inoperable immediately and the REQUIRED ACTION of 3.7.5 or 3.7.2 as applicable complied with immediately.

~~O~~$\boxed{X}$.1 ~~or O.2.1 and O.2.2~~

INSERT B-2

Condition ~~O~~$\boxed{X}$ applies to Safety Injection resulting from Containment Pressure - High.

If one channel is inoperable, 72 hours are allowed to restore the channel to OPERABLE status or to place it in the tripped condition. Failure of one channel places the function in a two-out-of-two configuration since the trip coincidence is two-out-of-three. The inoperable channel must be tripped to place the Function in a one-out-of-two configuration that satisfies redundancy requirements.

(continued)

BASES

ACTIONS

~~O~~$\boxed{X}$.1 ~~or O.2.1 and O.2.2~~ (continued)

~~Failure to restore the inoperable channel to OPERABLE status or place it in the tripped condition within 72 hours requires the unit be placed in MODE 3 within 78 hours and MODE 5 in 108 hours.~~

~~The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 5, these functions are no longer required OPERABLE.~~

The Required Actions are modified by a Note that allows the inoperable channel to be tested in bypass or with the inoperable channel in trip, one additional channel maybe tested in bypass for up to 12 hours while performing surveillance testing. This function is a two-out-of-three trip logic and the allowed testing configurations provide flexibility for testing, while assuring that during testing no configuration will cause an inadvertent actuation of the function or keep a valid signal from actuating the function as it was designed. The 72 hours allowed to restore the channel to operable status or to place the inoperable channel in the tripped condition, and the 12 hours allowed for testing, are justified in Reference 17. This note is not intended to allow simultaneous testing of coincident channels on a routine basis.

INSERT B-25

~~P~~$\boxed{Z}$.1 ~~or P.2.1 and P.2.2~~

Condition ~~P~~$\boxed{Z}$ applies to:

Containment Spray - Containment Pressure - High-High.

Containment Isolation - Phase B Isolation - Containment Pressure - High-High

Neither of these signals has input to a control function. Thus, two-out-of-three logic is necessary to meet acceptable protective requirements. However, a two-out-of-three design would require tripping a failed channel. This is undesirable because a single failure would then cause spurious containment spray initiation. Spurious spray actuation is undesirable because of the cleanup problems presented. Therefore, these channels are designed with two-out-of-four logic so that a failed channel may be bypassed rather than tripped. Note that one channel may be bypassed and still satisfy the single failure criterion. Furthermore, with one channel bypassed, a single instrumentation channel failure will not spuriously initiate containment spray. The containment spray signal is also interlocked with SI and will not initiate without simultaneous SI and containment spray signals.

(continued)

BASES

ACTIONS

~~P~~Z.1~~ or P.2.1 and P.2.2~~ (continued)

To avoid the inadvertent actuation of containment spray and Phase B containment isolation, the inoperable channel is bypassed. Restoring the channel to OPERABLE status, or placing the inoperable channel in the bypass condition within 72 hours, is sufficient to assure that the Function remains OPERABLE and minimizes the time that the Function may be in a partial trip condition (assuming the inoperable channel has failed high). The 72 hours allowed to restore the channel to OPERABLE status or to place it in the bypassed condition is justified in Reference 17.

~~Failure to restore the inoperable channel to OPERABLE status or place it in the bypassed condition within 72 hours requires the unit be placed in MODE 3 within 78 hours, and MODE 5 in 108 hours.~~

~~The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 5, these Functions are no longer required OPERABLE.~~

The Required Actions are modified by a Note that allows the inoperable channel to be tested in bypass for up to 12 hours for surveillance testing. In addition, the Note allows the inoperable channel and one additional channel to be tested in bypass for up to 12 hours for surveillance testing **only** if the Function 1.c channel associated with the inoperable channel is in trip during the testing.

This function is a two-out-of-four actuation logic and three of its channels are contained on common control channels with three other functions and the fourth channel is on a common control channel with two other functions. As a result, if a common control channel is inoperable then one channel from each of its contained functions is inoperable. Three of the common control channels each contain a channel from the Safety Injection Containment Pressure – High (Function. 1.c). Function 1.c, is a two-out-of-three logic, which requires an inoperable channel to be placed in trip to continue operability and only one channel at a time is allowed to be bypassed for testing. As a result, for the three common control channels that include a Function 1.c channel the testing of a second common control channel in bypass requires verification that the Function 1.c channel on the inoperable common control channel is in trip. Otherwise no second common control channel can be tested in bypass. However, if the fourth common control channel is the inoperable channel, then with that common control channel in bypass, any one of the other three common control channels may be tested in bypass without placing the associated Function 1.c, channel in trip.

(continued)

BASES (continued)

ACTIONS

~~P~~Z.1 ~~or P.2.1 and P.2.2~~ (continued)

Placing a second channel in the bypass condition for up to 12 hours for testing purposes is justified in Reference 17. The allowed testing configurations provide flexibility for testing, while assuring that during testing no configuration will cause an inadvertent actuation of the function or keep a valid signal from actuating the function or an associated function as designed. This note is not intended to allow simultaneous testing of coincident channels on a routine basis.

INSERT B-26

SURVEILLANCE REQUIREMENTS

The SRs for each ESFAS Function are identified by the SRs column of Table 3.3.2-1.

A Note has been added to the SR Table to clarify that Table 3.3.2-1 determines which SRs apply to which ESFAS Functions.

Note that each channel of process protection supplies both trains of the ESFAS. When testing channel I, train A and train B must be examined. Similarly, train A and train B must be examined when testing channel II, channel III, and channel IV (if applicable).

The CHANNEL CALIBRATION and COTs are performed in a manner that is consistent with the assumptions used in analytically calculating the required channel accuracies.

SR 3.3.2.1

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

Agreement criteria are established in STP I-1A, based on a combination of the channel instrument uncertainties, including indication and reliability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

(continued)

BASES (continued)

APPLICABILITY

The need for pressure control is most pertinent when core heat can cause the greatest effect on RCS temperature, resulting in the greatest effect on pressurizer level and RCS pressure control. Thus, applicability has been designated for MODES 1 and 2. The applicability is also provided for MODE 3. The purpose is to prevent solid water RCS operation during heatup and cooldown to avoid rapid pressure rises caused by normal operational perturbation, such as reactor coolant pump startup.

In MODES 1, 2, and 3, there is need to maintain the availability of pressurizer heaters capable of being powered from either the offsite power source or the emergency power supply, and if necessary, using bus cross-tie to an OPERABLE emergency diesel generator. In the event of a loss of offsite power, the initial conditions of these MODES give the greatest demand for maintaining the RCS in a hot pressurized condition with loop subcooling for an extended period. For MODE 4, 5, or 6, it is not necessary to control pressure (by heaters) to ensure loop subcooling for heat transfer when the Residual Heat Removal (RHR) System is in service, and therefore, the LCO is not applicable.

ACTIONS

<u>A.1, A.2, A.3, and A.4</u>

Pressurizer water level control malfunctions or other plant evolutions may result in a pressurizer water level above the nominal upper limit, even with the plant at steady state conditions. The upper limit of this LCO is below the Pressurizer Water Level - High Trip at 90% of span.

If the pressurizer water level is not within the limit, action must be taken to bring the unit to a MODE in which the LCO does not apply. To achieve this status, within 6 hours the unit must be brought to MODE 3, with rods fully inserted and the Rod Control System not capable of rod withdrawal (e.g., de-energize all CRDMs by opening the RTBs or de-energizing the motor - generator sets). Additionally, the unit must be brought to MODE 4 within 12 hours. This takes the unit out of the applicable MODES.

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

INSERT B-1

~~B.1~~

If one required group of pressurizer heaters is inoperable, restoration is required within 72 hours. The Completion Time is reasonable considering the anticipation that a demand caused by loss of offsite power would be unlikely in this period. Pressure control may be maintained during this time using normal station powered heaters.

INSERT B-27

(continued)

BASES

ACTIONS (continued)

~~C~~**D**.1 and ~~C~~**D**.2

If one **or two** required group**s** of pressurizer heaters ~~is~~ **are** inoperable and cannot be restored in the allowed Completion Time ~~of Required Action B.1~~, 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 MODE 3 within 6 hours and to MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1

This SR requires that during steady state operation, pressurizer level is maintained below the nominal upper limit to provide a minimum space for a steam bubble. The Surveillance is performed by observing the indicated level. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

SR 3.4.9.2

The SR is satisfied when the power supplies are demonstrated to be capable of producing the minimum power and the associated pressurizer heaters are verified to be at their design rating. This may be done by testing the power supply output and by performing an electrical check on heater element continuity and resistance. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

SR 3.4.9.3

This SR demonstrates that the heaters can be manually transferred from the normal to the emergency power supply and energized. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

REFERENCES

1. FSAR, Section 15.
2. NUREG-0737, November 1980.

BASES (continued)

APPLICABILITY

In MODES 1, 2, and 3, and portions of MODE 4 above the LTOP arming temperature, OPERABILITY of three valves is required because the combined capacity is required to keep reactor coolant pressure below 110% of its design value during certain accidents. MODE 3 and portions of MODE 4 are conservatively included, although the listed accidents may not require the safety valves for protection.

The LCO is not applicable in MODE 4 when any RCS cold leg temperature is ≤ LTOP arming temperature specified in the PTLR, or in MODE 5 because LTOP is provided. Overpressure protection is not required in MODE 6 with reactor vessel head closure bolts fully de-tensioned.

The Note allows entry into MODES 3 and 4 with the lift settings outside the LCO limits. This permits testing and examination of the safety valves at high pressure and temperature near their normal operating range, but only after the valves have had a preliminary cold setting. The cold setting gives assurance that the valves are OPERABLE near their design condition. Only one valve at a time will be removed from service for testing. The 54 hour exception is based on 18 hour outage time for each of the three valves. The 18 hour period is derived from operating experience that hot testing can be performed in this time frame.

ACTIONS

INSERT B-1

A.1

With one pressurizer safety valve inoperable, restoration must take place within 15 minutes. The Completion Time of 15 minutes reflects the importance of maintaining the RCS Overpressure Protection System. An inoperable safety valve coincident with an RCS overpressure event could challenge the integrity of the pressure boundary.

B.1 and B.2

If the Required Action of A.1 cannot be met within the required Completion Time or if two or more pressurizer safety valves are inoperable, the plant must be brought to a MODE in which the requirement does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 4 with any RCS cold leg temperatures ≤ LTOP arming temperature specified in the PTLR within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. With any RCS cold leg temperature at or

(continued)

BASES

ACTIONS (continued)

A.1 (continued)

(MODE 6) so that maintenance can be performed on the PORVs to eliminate the problem condition. Normally, the PORVs should be available for automatic mitigation of overpressure events and should be returned to OPERABLE and automatic actuation status prior to entering startup (MODE 2).

Quick access to the PORV for pressure control can be made when power remains on the closed block valve. The Completion Time of 1 hour is based on plant operating experience that has shown that minor problems can be corrected or closure accomplished in this time period.

B.1, B.2, and B.3

If one PORV is inoperable and not capable of automatic pressure relief or not capable of being manually cycled, it must be either restored or isolated by closing the associated block valve and removing the power to the associated block valve. The Completion Time of 1 hour for Required Actions B.1 and B.2 is reasonable, based on challenges to the PORVs during this time period, and provides the operator adequate time to correct the situation.

INSERT B-2

If the inoperable PORV cannot be restored to OPERABLE status, it must be isolated within the specified time **of 1 hour**. Because at least one Class I PORV remains OPERABLE, an additional 72 hours is provided to restore the inoperable PORV to OPERABLE status if it is Class I. If the valve is the non-Class I PORV, there is no required Completion Time. If the Class I PORV cannot be restored within this additional time, the plant must be brought to a MODE in which the LCO does not apply as required by Condition D.

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

If one PORV block valve is inoperable, then it is necessary to either restore the block valve to OPERABLE status within the Completion Time of 1 hour or place the associated PORV in manual control. The PORV control switch has three positions; open, close, and auto. Placing the PORV in manual control, if required in ACTION C, is accomplished by positioning the switch out of the auto control mode. The prime importance for the capability to close the block valve is to isolate a stuck open PORV. Therefore, if the block valve cannot be restored to OPERABLE status within 1 hour, the Required Action is to place the associated PORV in manual control.

(continued)

BASES

ACTIONS (continued)

INSERT B-2

C.1, C.2, and C.3 (continued)

This action is taken to avoid the potential for a stuck open PORV if the valve were to open under automatic control at a time that the block valve is inoperable. The Completion Time of 1 hour is reasonable, based on the small potential for challenges to the system during this time period, and provides the operator time to correct the situation. If the inoperable block valve is associated with a Class 1 PORV, the operator is permitted a Completion Time of 72 hours to restore the inoperable block valve to OPERABLE status. The time allowed to restore the Class I PORV block valve is based upon the Completion Time for restoring an inoperable Class I PORV in Condition B, since the PORVs are not capable of mitigating a SGTR or spurious operation of the safety injection system at power event when inoperable. If the block valve is restored within the Completion Time of 72 hours, the PORV will be transferred to the automatic mode of operation. If the block valve cannot be restored within this additional time, the plant must be brought to a MODE in which the LCO does not apply as required by Condition D.

If the inoperable block valve is associated with the non-Class I PORV, the block valve may be closed and the power removed. The 72 hour Completion Time for closing the block valve is the same applied in Required Action C.2. This recognizes that some restoration work may be required since the block valve is inoperable.

Restoration of the non-class I PORV block valve to OPERABLE status is not required because the non-Class I PORV is not required is not required to be available, although having the valve closed impairs the load rejection design capability. Therefore, once the block valve has been closed per Required Action C.3, Completion Time requirements of Condition D do not apply.

If the block valve can not be placed in the closed position, per Required Action C.3, Condition D applies and the unit must be taken to MODE 4 until the block valve is restored or closed.

The Required Actions are modified by a Note stating that the Required Actions do not apply if the sole reason for the block valve being declared inoperable is as a result of power being removed to comply with other Required Actions. In this event, the Required Actions for inoperable PORV(s) (which require the block valve power to be removed once it is closed) are adequate to address the condition.

(continued)

BASES

ACTIONS (continued)

INSERT B-1

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

If the Required Action of Condition A, B, or C is not met, then 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 6 hours and to MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. In MODES 4, 5, and 6 with the reactor vessel head closure bolts not fully de-tensioned, maintaining Class I PORV OPERABILITY is required by LCO 3.4.12.

E.1, E.2, E.3, ~~E.4,~~ ~~and~~ E.~~5~~4

If more than one Class I PORV ~~is~~ inoperable for reasons other than excessive seat leakage, it is necessary to either restore at least one valve, within the Completion Time of 1 hour, or isolate the flow path by closing and removing the power to the associated block valves. The Completion Time of 1 hour is reasonable, based on the small potential for challenges to the system during this time and provides the operator time to correct the situation. If one Class I PORV is restored and one Class I PORV remains inoperable, then the plant will be in Condition B with the time clock started at the original declaration of having two Class I PORVs inoperable. ~~If no Class I PORVs are restored within the Completion Time, then 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 6 hours and to MODE 4 within 12 hours.~~

~~The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. In MODES 4, 5, and 6 with the reactor vessel head closure bolts not fully de-tensioned, maintaining Class I PORV OPERABILITY is required by LCO 3.4.12.~~

(continued)

BASES

ACTIONS (continued)

INSERT B-2

F.1, F.2, F.3, and F.4

If more than one PORV block valve is inoperable, it is necessary to either restore the block valves within the Completion Time of 1 hour, or place the associated PORVs in manual control and restore at least one block valve within 2 hours and restore the remaining block valve within 72 hours. The PORV control switch has three positions; open, close and auto. Placing the PORV in manual control, if required in ACTION F, is accomplished by positioning the switch out of the auto control mode. The Completion Times are reasonable, based on the small potential for challenges to the system during this time and provide the operator time to correct the situation.

If the inoperable block valve is associated with the non-Class I PORV, the block valve may be closed and the power removed. The 72 hour Completion Time for closing the block valve is the same time used in Required Action F.3. This recognizes that some restoration work may be required since the block valve is inoperable. Restoration of the non-class I PORV block valve to OPERABLE status is not required because the non-Class I PORV is not required to be available, although having the valve closed impairs the load rejection design capability. Therefore, once the block valve has been closed per Required Action F.4, Completion Time requirements of Condition G do not apply.

If the block valve can not be placed in the closed position per Required Action F.4, Condition G applies until the block valve is restored or closed.

The required Actions are modified by a Note stating that the Required Actions do not apply if the sole reason for the block valve being declared inoperable is as a result of power being removed to comply with other Required Actions. In this event, the Required Actions for inoperable PORV(s) (which require the block valve power to be removed once it is closed) are adequate to address the condition.

(continued)

BASES

ACTIONS (continued)

G.1, G.2 and G.3

If the Required Actions of Condition E or F are not met, then 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 6 hours and to MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. In MODES 4, 5, and 6 with the reactor vessel head closure bolts not fully de-tensioned, maintaining Class I PORV OPERABILITY is required by LCO 3.4.12.

SURVEILLANCE REQUIREMENTS

SR 3.4.11.1

Block valve cycling verifies that the valve(s) can be closed if needed. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

The Note modifies this SR by stating that it is not required to be performed with the block valve closed in accordance with the Required Action of this LCO. Opening the block valve in this condition increases the risk of an unisolable leak from the RCS since the PORV is already inoperable.

SR 3.4.11.2

SR 3.4.11.2 requires a complete cycle of each PORV. Operating a PORV through one complete cycle ensures that the PORV can be manually actuated for mitigation of an SGTR. Operating experience has shown that these valves usually pass the surveillance when performed at the required Inservice Testing Program frequency. The frequency is acceptable form a reliability standpoint.

The Note modifies this SR to allow entry into an operation in MODE 3 prior to performing the SR. This allows the surveillance to be performed in MODE 3 or 4.

The Note that modified this SR to allow entry into and operation in MODE 3 prior to performing the SR. This allows the test to be performed in MODE 3 under operating temperature and pressure conditions, prior to entering MODE 1 or 2. In accordance with Reference 4, administrative controls require this test be performed in MODE 3 or 4 to adequately simulate operating temperature and pressure effects on PORV operation.

(continued)

BASES (continued)

APPLICABILITY

In MODES 1 and 2, and in MODE 3 with RCS pressure > 1000 psig, the accumulator OPERABILITY requirements are based on full power operation. Although cooling requirements decrease as power decreases, the accumulators are still required to provide core cooling as long as elevated RCS pressures and temperatures exist.

This LCO is only applicable at RCS pressures > 1000 psig. At pressures ≤ 1000 psig, the rate of RCS blowdown is such that the ECCS pumps can provide adequate injection to ensure that peak clad temperature remains below the 10 CFR 50.46 (Ref. 2) limit of 2200°F.

In MODE 3, with RCS pressure ≤ 1000 psig, and in MODES 4, 5, and 6, the accumulator motor operated isolation valves are normally closed to isolate the accumulators from the RCS. This allows RCS cooldown and depressurization without discharging the accumulators into the RCS or requiring depressurization of the accumulators.

INSERT B-1

~~Accumulator may be unisolated when accumulator pressure is less than the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR. This condition is in agreement with the TS 3.4.12 LCO requirement.~~

ACTIONS

A.1

If the boron concentration of one accumulator is not within limits, it must be returned to within the limits within 72 hours. In this Condition, the ability to maintain subcriticality or minimum boron precipitation time may be reduced. The boron in the accumulators contributes to the assumption that the combined ECCS water in the partially recovered core during the early reflooding phase of a large break LOCA is sufficient to keep that portion of the core subcritical. One accumulator below the minimum boron concentration limit, however, will have no effect on available ECCS water and an insignificant effect on core subcriticality during reflood. Boiling of ECCS water in the core during reflood concentrates boron in the saturated liquid that remains in the core. In addition, current analyses demonstrate that the accumulators will discharge following a large main steam line break. The impact of their discharge is minor and not a design limiting event. Thus, 72 hours is allowed to return the boron concentration to within limits.

B.1

If one accumulator is inoperable for a reason other than boron concentration, the accumulator must be returned to OPERABLE status within 24 hours. In this Condition, the required contents of three accumulators cannot be assumed to reach the core during a LOCA. Due to the severity of the consequences should a LOCA occur in these conditions, the 24 hour Completion Time to open the valve, remove

(continued)

BASES

ACTIONS

B.1 (continued)

power to the valve, or restore the proper water volume or nitrogen cover pressure ensures that prompt action will be taken to return the inoperable accumulator to OPERABLE status. The Completion Time minimizes the potential for exposure of the plant to a LOCA under these conditions. The 24 hours allowed to restore an inoperable accumulator to OPERABLE status is justified in WCAP-15049-A, Rev 1. (Ref. 7)

INSERT B-28

~~C.1 and C.2~~

D.1 and D.2

If the accumulators cannot be returned to OPERABLE status within the associated Completion Time, 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 MODE 3 within 6 hours and RCS pressure reduced to $\leq$ 1000 psig within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

~~D.1~~

~~If more than one accumulator is inoperable, the plant is in a condition outside the accident analyses; therefore, LCO 3.0.3 must be entered immediately.~~

SURVEILLANCE REQUIREMENTS

SR 3.5.1.1

Each accumulator motor operated isolation valve (8808A, B, C, and D) should be verified to be fully open. This verification ensures that the accumulators are available for injection and ensures timely discovery if a valve should be less than fully open. If an isolation valve is not fully open, the rate of injection to the RCS would be reduced. Although a motor operated valve position should not change with power removed, a closed valve could result in not meeting accident analyses assumptions. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

SR 3.5.1.2 and SR 3.5.1.3

Borated water volume and nitrogen cover pressure are verified for each accumulator. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

(continued)

BASES (continued)

ACTIONS

A.1

INSERT B-1

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

An ECCS train is inoperable if it is not capable of delivering design flow to the RCS. Individual components are inoperable if they are not capable of performing their safety function or supporting systems are not available.

The LCO requires the OPERABILITY of a number of independent subsystems. Due to the redundancy of trains and the diversity of subsystems, the inoperability of one component in a train does not render the ECCS incapable of performing its function. Neither does the inoperability of two different components, each in a different train, necessarily result in a loss of function for the ECCS. The intent of this Condition is to maintain a combination of equipment such that 100% of the ECCS flow equivalent to a single OPERABLE ECCS train remains available. (i.e. minimum of one OPERABLE CCP, SI, and RHR pump and applicable flow paths capable of drawing from the RWST and injecting into the RCS cold legs). This allows increased flexibility in plant operations under circumstances when components in opposite trains are inoperable.

The intent of this Condition, to maintain a combination of equipment such that 100% of the ECCS flow equivalent to a single OPERABLE ECCS train remains available, applies to both the injection mode and the recirculation mode.

An event accompanied by a loss of offsite power and the failure of an EDG can disable one ECCS train until power is restored. A reliability analysis (Ref. 5) has shown that the impact of having one full ECCS train inoperable is sufficiently small to justify continued operation for 72 hours.

Reference 6 describes situations in which one component, such as an RHR cross-tie valve can disable both ECCS trains. With one or more component(s) inoperable such that 100% of the flow equivalent to a

(continued)

BASES

ACTIONS

A.1 (continued)

single OPERABLE ECCS train is not available, the facility is in a condition outside the accident analysis. Therefore, ~~LCO 3.0.3~~ **Condition B** must be immediately entered.

Opening the containment recirculation sump strainer system access ports, or lower plenum drain valve (SI-1-294 for Unit 1 or SI-2-295 for Unit 2) without pipe cap or inlet strainer (STR-440) installed in MODES 1 through 3 is considered to be a condition which is outside the accident analysis. Therefore, ~~LCO 3.0.3~~ **Condition B** must be immediately entered.

~~A.2.1, A.2.2, and A.2.3~~

~~These Required Actions allow restoring one inoperable ECCS train with no more than one inoperable subsystem to OPERABLE status with a CT of 14 days if it is determined that only one subsystem in one ECCS train is inoperable and that the OPERABLE subsystem is not inoperable due to common cause failure. The common cause failure investigation shall be associated with the subsystem failure that prompts the ECCS subsystem to be declared inoperable originally. The common cause failure evaluation can be performed by analyses, inspection, and/or testing. The addition of these Required Actions into this TS was per LA 202 for Unit 1 and LA 203 for Unit 2. The 14-day CT is intended to be used for unplanned corrective maintenance or inspections.~~

~~The justification to extend the CT to 14 days is based on risk-informed insight where the evaluation would meet the NRC risk informed criteria assuming only one subsystem in one ECCS train is inoperable and with the elimination of conditional failure probability of the redundant ECCS subsystem due to common cause failure. PRA analysis assumes no more than one subsystem in one ECCS train is inoperable. The PRA risk-insignificance thresholds are not met for the14-day Completion Time when a RHR subsystem component is found to be inoperable as a result of a higher conditional failure probability of the redundant component due to common cause failure. To comply with the assumption in the PRA analysis that only one subsystem in one ECCS train is inoperable and to eliminate the common cause failure concerns, the 14-day Completion Time assumes that actions are to be taken within 72 hours to determine that there is only one subsystem in one ECCS train inoperable and there is no common cause failure in the same subsystem in the OPERABLE ECCS train.~~

(continued)

BASES

ACTIONS

~~A.2.1, A.2.2, and A.2.3 (continued)~~

~~The 72 hour Completion Time in Required Actions A.2.1 and A.2.2 are reasonable and is chosen so that the risk is no worse than the risk associated with the 72 hour Completion Time for Required Action A.1. The Completion Time is modified by a Note stating that the Required Action A.1 Completion Time is to be used for planned maintenance or inspections. The Completion Times of Required Actions A.2.1, A.2.2, and A.2.3 are for unplanned corrective maintenance or inspections. This is to prevent accumulating excessive Maintenance Rule unavailability hours.~~

INSERT B-29

~~B.1 and B.2~~

C.1 and C.2

or the ECCS flow equivalent cannot be returned to 100% of the ECCS flow equivalent to a single OPERABLE ECCS train

If the inoperable trains cannot be returned to OPERABLE status within the associated Completion Time, 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 MODE 3 within 6 hours and MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.5.2.1

Verification of proper valve position ensures that the flow path from the ECCS pumps to the RCS is maintained. Valve position is the concern and not indicated position in the control room. Misalignment of these valves could render both ECCS trains inoperable. Securing these valves in position by removal of power ensures that they cannot change position as a result of an active failure or be inadvertently misaligned. The surveillance can be satisfied using indicated position in the control room but may also be satisfied using local observation. These valves are of the type, described in References 6 and 7, that can disable the function of both ECCS trains and invalidate the accident analyses. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program. As noted in LCO Note 1, both SI pump flow paths may each be isolated for two hours in MODE 3 by closure of one or more of these valves to perform pressure isolation valve testing.

In addition to the valves listed in SR 3.5.2.1, there are other ECCS related valves that must be appropriately positioned. Improper valve position can affect the ECCS performance required to meet the analysis assumptions. These valves are identified in plant documents and are listed in the following table.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)	Temperature Minimum RWST water temperature is not a factor in SGTR. The heat capacity of RWST water injected into the RCS is small relative to the RCS inventory and heat sources.
LCO	The RWST ensures that an adequate supply of borated water is available to cool and depressurize the containment in the event of a Design Basis Accident (DBA), to cool and cover the core in the event of a LOCA, to maintain the reactor subcritical following a DBA, and to ensure adequate level in the containment recirculation sump to support ECCS pump operation in the recirculation mode. To be considered OPERABLE, the RWST must meet the water volume, boron concentration, and temperature limits established in the SRs.
APPLICABILITY	In MODES 1, 2, 3, and 4, RWST OPERABILITY requirements are dictated by ECCS and CS System OPERABILITY requirements. Since both the ECCS and the CS System must be OPERABLE in MODES 1, 2, 3, and 4, the RWST must also be OPERABLE to support their operation. Core cooling requirements in MODE 5 are addressed by LCO 3.4.7, "RCS Loops-MODE 5, Loops Filled," and LCO 3.4.8, "RCS Loops-MODE 5, Loops Not Filled." MODE 6 core cooling requirements are addressed by LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation-High Water Level," and LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation-Low Water Level."
ACTIONS	<u>A.1</u> With RWST boron concentration or borated water temperature* not within limits, they must be returned to within limits within 8 hours. **INSERT B-1** Under these conditions neither the ECCS nor the CS System can perform its design function. Therefore, prompt action must be taken to restore the tank to OPERABLE condition. The 8 hour limit to restore the RWST temperature or boron concentration to within limits was developed considering the time required to change either the boron concentration or temperature and the fact that the contents of the tank are still available for injection. DCPP does not have an upper limit for RWST borated water temperature. An upper limit would typically be about 100°F. The coastal weather at the DCPP site is moderated by the Pacific Ocean and historically does not exceed 100°F. A requirement for a high temperature limit would therefore not be of value.

(continued)

BASES

ACTIONS

A.1 (continued)

* The requirement for RWST temperature is to be greater than or equal to the minimum required temperature. The expression "within the required limits", applied to RWST temperature is satisfied when the temperature is greater than or equal to the minimum.

B.1

INSERT B-1

With the RWST inoperable for reasons other than Condition A (e.g., water volume), it must be restored to OPERABLE status within 1 hour.

In this Condition, neither the ECCS nor the CS System can perform its design function. Therefore, prompt action must be taken to restore the tank to OPERABLE status or to place the plant in a MODE in which the RWST is not required. The short time limit of 1 hour to restore the RWST to OPERABLE status is based on this condition simultaneously affecting redundant trains and that borated water volume can be restored more rapidly than boron concentration or temperature.

C.1 and C.2

If the RWST cannot be returned to OPERABLE status within the associated Completion Time, 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 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.5.4.1

The RWST borated water temperature should be verified to be above the minimum assumed in the accident analyses. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

The SR is modified by a Note that eliminates the requirement to perform this Surveillance when ambient air temperature is above the minimum temperature for the RWST. With ambient air temperature above the minimum temperature, the RWST temperature should not exceed the limit.

(continued)

BASES

ACTIONS

B.1, B.2, and B.3 (continued)

Required Action B.3 is modified by a Note that applies to air lock doors located in high radiation areas and allows these doors to be verified locked closed 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 the door, once it has been verified to be in the proper position, is small.

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

With one or more air locks inoperable for reasons other than those described in Condition A or B, Required Action C.1 requires action to be initiated immediately to evaluate previous combined leakage rates using current air lock test results. An evaluation is acceptable, since it is overly conservative to immediately declare the containment inoperable if both doors in an air lock have failed a seal test or if the overall air lock leakage is not within limits. In many instances (e.g., only one seal per door has failed), containment remains OPERABLE, yet only 1 hour (per LCO 3.6.1) would be provided to restore the air lock door to OPERABLE status prior to requiring a plant shutdown. In addition, even with both doors failing the seal test, the overall containment leakage rate can still be within limits.

INSERT B-1

Required Action C.2 requires that one door in the affected containment air lock must be verified to be closed within the 1 hour Completion Time. This specified time period is consistent with the ACTIONS of LCO 3.6.1, which requires that containment be restored to OPERABLE status within 1 hour.

Additionally, the affected air lock(s) must be restored to OPERABLE status within the 24 hour Completion Time. The specified time period is considered reasonable for restoring an inoperable air lock to OPERABLE status, assuming that at least one door is maintained closed in each affected air lock.

D.1 and D.2

If the inoperable containment air lock cannot be restored to OPERABLE status within the required Completion Time, 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 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

(continued)

BASES

INSERT B-1

ACTIONS

A.1 and A.2 (continued)

cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic isolation valve, a closed manual valve (this includes power operated valves with power removed), a blind flange, and a check valve with flow through the valve secured. For a penetration flow path isolated in accordance with Required Action A.1, the device used to isolate the penetration should be the closest available one to containment. Required Action A.1 must be completed within 4 hours. The 4 hour Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4.

For affected penetration flow paths that cannot be restored to OPERABLE status within the 4 hour Completion Time and that have been isolated in accordance with Required Action A.1, the affected penetration flow paths must be verified to be isolated on a periodic basis. This is necessary to ensure that containment penetrations required to be isolated following an accident and no longer capable of being automatically isolated will be in the isolation position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification through a system walkdown, which may include the use of local or remote indicators, that those isolation devices outside containment and capable of being mispositioned are in the correct position. The Completion Time of "once per 31 days **following isolation** for isolation devices outside containment" is appropriate considering the fact that the devices are operated under administrative controls and the probability of their misalignment is low. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

Condition A has been modified by a Note indicating that this Condition is only applicable to those penetration flow paths with two containment isolation valves. For penetration flow paths with only one containment isolation valve and a closed system, Condition C provides the appropriate actions.

(continued)

BASES

ACTIONS

A.1 and A.2 (continued)

Required Action A.2 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. 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. Therefore, the probability of misalignment of these devices once they have been verified to be in the proper position, is small.

INSERT B-1

B.1

With two containment isolation valves in one or more penetration flow paths requiring isolation following a DBA inoperable, the affected penetration flow path must be isolated within 1 hour. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve (this includes power operated valves with power removed), and a blind flange. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1. In the event the affected penetration is isolated in accordance with Required Action B.1, the affected penetration must be verified to be isolated on a periodic basis per Required Action A.2, which remains in effect. This periodic verification is necessary to assure leak tightness of containment and that penetrations requiring isolation following an accident are isolated. The Completion Time of once per 31 days for verifying each affected penetration flow path is isolated is appropriate considering the fact that the valves are operated under administrative control and the probability of their misalignment is low.

Condition B is modified by a Note indicating this Condition is only applicable to penetration flow paths with two containment isolation valves. Condition A of this LCO addresses the condition of one containment isolation valve inoperable in this type of penetration flow path.

(continued)

BASES

ACTIONS (continued)

C.1 and C.2

With one or more penetration flow paths requiring isolation following a DBA with one containment isolation valve inoperable, the inoperable valve flow path must be restored to OPERABLE status or the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve (this includes power operated valves with power removed), and a blind flange. A check valve may not be used to isolate the affected penetration flow path. Required Action C.1 must be completed within the 72 hour Completion Time. INSERT B-1 The specified time period is reasonable considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of maintaining containment integrity during MODES 1, 2, 3, and 4 (See FSAR Table 6.2-39, GDC-57 valves). In the event the affected penetration flow path is isolated in accordance with Required Action C.1, the affected penetration flow path must be verified to be isolated on a periodic basis. This periodic verification is necessary to assure leak tightness of containment and that containment penetrations requiring isolation following an accident are isolated. The Completion Time of once per 31 days **following isolation** for verifying that each affected penetration flow path is isolated is appropriate because the valves are operated under administrative controls and the probability of their misalignment is low.

Condition C is modified by a Note indicating that this Condition is only applicable to those penetration flow paths with only one containment isolation valve and a closed system. The closed system must meet the requirements of Reference 3. This Note is necessary since this Condition is written to specifically address those penetration flow paths in a closed system.

Required Action C.2 is modified by two Notes. Note 1 applies to valves and blind flanges located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. 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. Therefore, the probability of misalignment of these valves, once they have been verified to be in the proper position, is small.

(continued)

BASES

ACTIONS (continued)

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

In the event one or more Containment Purge supply and exhaust, or Containment Pressure/Vacuum Relief isolation valves in one or more penetration flow paths are not within leakage limits, leakage must be reduced to within limits, or the affected penetration flow path must be isolated. For this Action, the leakage limit is as specified under the Leakage Rate Testing Program and exceeding this limit would require evaluation per Note 4 under LCO 3.6.3. The method of isolation must be by the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, closed manual valve (this includes power operated valves with power removed), or blind flange. A Containment Purge supply and exhaust, or Containment Pressure/Vacuum Relief isolation valve with resilient seals utilized to satisfy Required Action D.1 must have been demonstrated to meet the leakage requirements of SR 3.6.3.7. The specified Completion Time is reasonable, considering that one valve remains closed so that a gross breach of containment does not exist.

INSERT B-2

In accordance with Required Action D.2, this penetration flow path must be verified to be isolated on a periodic basis. The periodic verification is necessary to ensure that containment penetrations required to be isolated following an accident, which are no longer capable of being automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, which may include the use of local or remote indicators, that those isolation devices outside containment capable of being mispositioned are in the correct position. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

For the Containment Purge supply and exhaust, or Containment Pressure/Vacuum Relief isolation valve with resilient seal that is isolated in accordance with Required Action D.1, SR 3.6.3.7 must be performed at least once every 92 days **following isolation**. This assures that degradation of the resilient seal is detected and confirms that the leakage rate of the containment purge valve does not increase beyond the limits during the time the penetration is isolated. The normal Frequency for SR 3.6.3.7, is 24 months per the Containment Leakage Rate Testing Program. Since more reliance is placed on a single valve while in this

(continued)

BASES

ACTIONS

D.1, D.2, and D.3 (continued)

condition, it is prudent to perform the SR more often. Therefore, a Frequency of once per 92 days **following isolation** was chosen and has been shown to be acceptable based on operating experience.

Required Action D.2 is modified by two Notes. Note 1 applies to valves and blind flanges located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. 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. Therefore, the probability of misalignment of these valves, once they have been verified to be in the proper position, is small.

E.1 and E.2

If the Required Actions and associated Completion Times are not met, 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 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.3.1

Not Used

SR 3.6.3.2

This SR ensures that the 48 inch Containment Purge supply and exhaust and the 12 inch Containment Pressure/Vacuum Relief valves are closed as required or, if open, open for an allowable reason. If a purge or pressure relief 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. The SR is not required to be met when the Containment Purge supply and exhaust or Containment Pressure Relief valves are open for the reasons stated. The valves may be opened for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open. The Containment Purge supply and exhaust or Containment Pressure/Vacuum Relief valves are capable of closing in the

(continued)

BASES (continued)

ACTIONS

A.1

With one containment spray train inoperable, the inoperable containment spray train must be restored to OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE spray and cooling trains are adequate to perform the iodine removal and containment cooling functions. The 72 hour Completion Time takes into account the redundant heat removal capability afforded by the Containment Spray System, reasonable time for repairs, and low probability of a DBA occurring during this period.

INSERT B-1

~~The Completion Time is modified by a Note stating that for planned maintenance or inspections, the Completion time is 72 hours. The Completion Times of Required Action A.2 are for unplanned corrective maintenance or inspections.~~

~~A.2~~

~~With one containment spray train inoperable, the inoperable containment spray train must be restored to OPERABLE status within 14 days. This Required Action applies to unplanned corrective maintenance or inspections. In this Condition, the remaining OPERABLE spray and cooling trains are adequate to perform the iodine removal and containment cooling functions. The 14-day Completion Time is based on PRA analysis and has taken into account the redundant heat removal capability afforded by the Containment Spray System, reasonable time for repairs, and low probability of a DBA occurring during this period.~~

~~These Required Action and Completion Time were added to the TS by LA 202 for Unit 1 and LA 203 for Unit 2. The 14-day Completion Time is intended to be used for unplanned corrective maintenance or inspections.~~

(continued)

BASES

ACTIONS (continued)

C.1

With ~~one~~**the** CFCU system inoperable such that a minimum of two CFCUs remain operable, restore the ~~required~~ CFCU~~s~~ **system** to OPERABLE status within 7 days. The components in this degraded condition are capable of providing at least 100% of the heat removal needs. The 7 day Completion Time was developed taking into account the redundant heat removal capabilities afforded by combinations of the Containment Spray System and ~~Containment Cooling~~**CFCU** System and the low probability of DBA occurring during this period.

INSERT B-1

D.1 and D.2

With one train of containment spray inoperable and the CFCU~~s~~ ~~s~~**S**ystem inoperable such that a minimum of two CFCUs remain OPERABLE, restore one ~~required~~ train of containment spray or CFCU system to OPERABLE status within 72 hours. The components remaining in OPERABLE status in this degraded condition provide iodine removal capabilities and are capable of providing at least 100% of the heat removal needs after an accident. The 72 hour Completion Time was developed taking into account the redundant heat removal capabilities afforded by combinations of the Containment Spray System and ~~Containment Cooling~~**CFCU** System, the iodine removal function of the Containment Spray System, and the low probability of DBA occurring during this period.

INSERT B-30

~~E~~**F**.1 and ~~E~~**F**.2

If the Required Action and associated Completion Time of Condition C**,** ~~or~~ D **or E** of this LCO are not met, 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 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

~~F.1~~

~~With two containment spray trains or one containment spray train inoperable and two CFCU systems inoperable such that one or less CFCUs remain OPERABLE or one or less CFCUs are OPERABLE, the unit is in a condition outside the accident analysis. Therefore, LCO 3.0.3 must be entered immediately.~~

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

c. A break downstream of the MSIVs will be isolated by the closure of the MSIVs.

d. Following a steam generator tube rupture, closure of the MSIVs isolates the ruptured steam generator from the intact steam generators to minimize radiological releases.

e. The MSIVs are also utilized during other events such as a feedwater line break. This event is less limiting so far as MSIV OPERABILITY is concerned.

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

LCO

This LCO requires that four MSIVs in the steam lines be OPERABLE. The MSIVs are considered OPERABLE when the isolation times are within limits, and they close on an isolation actuation signal.

This LCO provides assurance that the MSIVs will perform their design safety function to mitigate the consequences of accidents that could result in offsite exposures comparable to the 10 CFR 100 (Ref. 4) limits or the NRC staff approved licensing basis.

APPLICABILITY

The MSIVs must be OPERABLE in MODE 1, and in MODES 2 and 3 except when closed and de-activated (vented or prevented from opening), when there is significant mass and energy in the RCS and steam generators. When the MSIVs are closed, they are already performing the safety function.

In MODE 4, the steam generator energy is low, thus OPERABILITY in MODE 4 is not required.

INSERT B-1

In MODE 5 or 6, the steam generators do not contain much energy because their temperature is below the boiling point of water; therefore, the MSIVs are not required for isolation of potential high energy secondary system pipe breaks in these MODES.

ACTIONS

A.1

With one MSIV inoperable in MODE 1, action must be taken to restore OPERABLE status within 8 hours. Some repairs to the MSIV can be made with the unit hot. The 8 hour Completion Time is reasonable, considering the low probability of an accident occurring during this time period that would require a closure of the MSIVs.

The 8 hour Completion Time is greater than that normally allowed for containment isolation valves because the MSIVs are valves that isolate a closed system penetrating containment. These valves differ from other containment isolation valves in that the closed system provides an additional means for containment isolation.

INSERT B-31

(continued)

BASES

ACTIONS (continued)

~~B~~ $\boxed{C}$.1

~~If the MSIVs cannot be restored to OPERABLE status within 8 hours,~~ **When Required Action A.1 or B.1 cannot be completed with the required Completion Time,** the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in MODE 2 within 6 hours and Condition ~~C~~ $\boxed{D}$ would be entered. The Completion Times are reasonable, based on operating experience, to reach MODE 2 and to close the MSIVs in an orderly manner and without challenging unit systems.

~~C~~ $\boxed{D}$.1 and ~~C~~ $\boxed{D}$.2

Condition ~~C~~ $\boxed{D}$ is modified by a Note indicating that separate Condition entry is allowed for each MSIV.

Since the MSIVs are required to be OPERABLE in MODES 2 and 3, the inoperable MSIVs may either be restored to OPERABLE status or closed. When closed, the MSIVs are already in the position required by the assumptions in the safety analysis. MSIV closure is indicated by the control room valve indicating lights or monitor light box lights.

The 8 hour Completion Time is consistent with that allowed in Condition A.

For inoperable MSIVs that cannot be restored to OPERABLE status within the specified Completion Time, but are closed, the inoperable MSIVs must be verified on a periodic basis to be closed. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, in view of MSIV status indications available in the control room, and other administrative controls, to ensure that these valves are in the closed position.

~~D~~ $\boxed{E}$.1 and ~~D~~ $\boxed{E}$.2

If the MSIVs cannot be restored to OPERABLE status or are not closed within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed at least in MODE 3 within 6 hours, and in MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from MODE 2 conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.2.1

This SR verifies that MSIV closure time is ≤ 5.0 seconds. The remote manual hand switch may be used as the actuation signal for this SR. The MSIV closure time is assumed in the accident and containment

(continued)

BASES (continued)

APPLICABILITY

In MODES 1, 2, and 3, all four ADVs are required to be OPERABLE. In MODE 4, only the ADVs associated with the steam generators being relied upon for heat removal, are required to be OPERABLE.

In MODE 5 or 6, an SGTR is not a credible event.

INSERT B-1

ACTIONS

A.1

With one required ADV line inoperable~~, action~~ must be taken to restore OPERABLE status within 7 days. The 7 day Completion Time allows for the redundant capability afforded by the remaining OPERABLE ADV lines, a non-safety grade backup in the Steam Bypass System, and MSSVs ~~and is based on a PRA analysis and the low probability of a SGTR and LOOP event occurring during this period that would require the ADV lines~~.

B.1

With two ADV lines inoperable, action must be taken to restore at least one ADV line to OPERABLE status **within 72 hours**. This will result in at least three operable ADVs. Since the block valve can be closed to isolate an ADV, some repairs may be possible with the unit at power. The 72 hour Completion Time is reasonable to repair inoperable ADV lines, based on the availability of the Steam Dump System (40% steam dump valves to the condenser) and MSSVs, and the low probability of an event occurring during this period that would require the ADV lines.

C.1

With three or more ADV lines inoperable, action must be taken to restore at least two ADV lines to OPERABLE status. This will result in at least two operable ADVs. Since the block valve can be closed to isolate an ADV, some repairs may be possible with the unit at power. The 24 hour Completion Time is reasonable to repair inoperable ADV lines, based on the availability of the Steam Dump System (40% steam dump valves to the condenser) and MSSVs, and the low probability of an event occurring during this period that would require the ADV lines.

INSERT B-2

D.1 and D.2

If the ADV lines cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4, without reliance upon steam generator for heat removal, within 18 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

(continued)

BASES

LCO (continued)

each powered by a separated vital bus, be OPERABLE in two diverse paths, each supplying AFW to separate steam generators. The turbine driven AFW pump is required to be OPERABLE with redundant steam supplies from each of two main steam lines upstream of the MSIVs, and shall be capable of supplying AFW to any of the steam generators. The piping, valves, instrumentation, and controls in the required flow paths also are required to be OPERABLE.

The LCO is modified by a Note indicating that one AFW train, which includes a motor driven pump, is required to be OPERABLE in MODE 4. This is because of the reduced heat removal requirements and short period of time in MODE 4 during which the AFW is required and the insufficient steam available in MODE 4 to power the turbine driven AFW pump.

APPLICABILITY

In MODES 1, 2, and 3, the AFW System is required to be OPERABLE in the event that it is called upon to function when the MFW is lost. In addition, the AFW System is required to supply enough makeup water to replace the steam generator secondary inventory, lost as the unit cools to MODE 4 conditions.

In MODE 4 the AFW System may be used for heat removal via the steam generators.

In MODE 5 or 6, the steam generators are not normally used for heat removal, and the AFW System is not required.

ACTIONS

INSERT B-1

A Note prohibits the application of LCO 3.0.4.b to an inoperable AFW train. There is an increased risk associated with entering a MODE or other specified condition in the Applicability with an AFW train inoperable and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

<u>A.1</u>

If one of the two steam supplies to the turbine driven AFW train is inoperable, action must be taken to restore **the inoperable steam supply to** OPERABLE status within 7 days. **If the turbine driven AFW pump is inoperable while in MODE 3 immediately following refueling, action must be taken to restore the inoperable equipment to an OPERABLE status within 7 days.** The 7 day Completion Time is reasonable, based on the following reasons:

a. The redundant OPERABLE steam supply to the turbine driven AFW pump;

(continued)

BASES

ACTIONS

A.1 (continued)

b. The availability of redundant OPERABLE motor driven AFW pumps; and

c. The low probability of an event occurring that requires the inoperable steam supply to the turbine driven AFW pump.

B.1

INSERT B-1

With one of the required AFW trains (pump or flow path) inoperable in MODE 1, 2, or 3 for reasons other than Condition A, action must be taken to restore OPERABLE status within 72 hours. This Condition includes the loss of two steam supply lines to the turbine driven AFW pump. The 72 hour Completion Time is reasonable, based on redundant capabilities afforded by the AFW System, time needed for repairs, and the low probability of a DBA occurring during this time period.

INSERT B-32

(continued)

BASES

ACTIONS (continued)

~~C~~**E**.1 and ~~C~~**E**.2

When Required Action A.1, ~~or~~ B.1**, C.1, C.2 or D.1** cannot be completed within the required Completion Time, ~~or if two AFW trains are inoperable in MODE 1, 2, or 3,~~ the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 18 hours.

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

~~In MODE 4 with two AFW trains inoperable, operation is allowed to continue because only one motor driven pump AFW train is required in accordance with the Note that modifies the LCO. Although not required, the unit may continue to cool down and initiate RHR.~~

~~D~~**F**.1

If all three AFW trains are inoperable in MODE 1, 2, or 3, the unit is in a seriously degraded condition with no safety related means for conducting a cooldown, and only limited means for conducting a cooldown with non-safety related equipment. In such a condition, the unit should not be perturbed by any action, including a power change, that might result in a trip. The seriousness of this condition requires that action be started immediately to restore one AFW train to OPERABLE status.

Required Action ~~D~~**F**.1 is modified by a Note indicating that all required MODE changes or power reductions are suspended until one AFW train is restored to OPERABLE status. In this case, LCO 3.0.3 is not applicable because it could force the unit into a less safe condition.

~~E~~**G**.1

In MODE 4, either the reactor coolant pumps or the RHR loops can be used to provide forced circulation. This is addressed in LCO 3.4.6, "RCS Loops-MODE 4." With one required AFW train inoperable, action must be taken to immediately restore the inoperable train to OPERABLE status. The immediate Completion Time is consistent with LCO 3.4.6.

(continued)

BASES (continued)

LCO

The CST volume required is for a usable volume of ≥ 200,000 gallons (51% indicated level without instrument uncertainty) for Unit 1 and ≥ 166,000 gallons (43% indicated level without instrument uncertainty) for Unit 2. The volume for Unit 1 is based on holding the unit in MODE 3 for 1 hour, followed by a natural circulation cooldown to RHR entry conditions at 25°F/hour. The volume for Unit 2 is based on holding the unit in MODE 3 for 2 hours, followed by a natural circulation cooldown to RHR entry conditions at 50°F/hour. These bases are established in Reference 4 and exceed the volume required by the accident analyses.

The OPERABILITY of the CST for each unit is determined by maintaining the tank volume (equivalent indicated level) at or above the minimum required volume.

APPLICABILITY

In MODES 1, 2, and 3, and in MODE 4, when steam generator is being relied upon for heat removal, the CST is required to be OPERABLE.

In MODE 5 or 6, the CST is not required because the AFW System is not required.

ACTIONS

A.1 and A.2

INSERT B-2

If the CST is not OPERABLE, the OPERABILITY of the backup supply should be verified by administrative means within 4 hours and once every 12 hours thereafter. OPERABILITY of the backup feedwater supply must include verification that that the flow paths from the backup water supply to the AFW pumps are OPERABLE, and that the backup supply has the required volume of water available. The CST must be restored to OPERABLE status within 7 days, because the backup supply may be performing this function in addition to its normal functions. The 4 hour Completion Time is reasonable, based on operating experience, to verify the OPERABILITY of the backup water supply. Additionally, verifying the backup water supply every 12 hours is adequate to ensure the backup water supply continues to be available. The 7 day Completion Time is reasonable, based on an OPERABLE backup water supply being available, and the low probability of an event occurring during this time period requiring the CST. The seismically-qualified fire water storage tank and alternate non-seismically qualified water sources are examples of back-up water supplies available to supply water to supplement the CST volume.

(continued)

BASES

LCO (continued)

A vital CCW loop is considered OPERABLE when:

a. Two CCW pumps, one CCW heat exchanger, one vital CCW header and the surge tank are OPERABLE; and

b. The associated piping, valves, and instrumentation and controls required to perform the safety related function are OPERABLE.

The isolation of CCW from other components or systems may render those components or systems inoperable but does not affect the OPERABILITY of the CCW System, except for isolation of CCW to the CFCUs. Isolation of CCW to the CFCUs could potentially affect the flow balance and requires evaluation to ensure continued operability.

Split loop alignment of the CCW system during normal operation requires Condition A to be entered because the CCW system cannot tolerate a single failure in this configuration.

APPLICABILITY

In MODES 1, 2, 3, and 4, the CCW System is a normally operating system, which must be prepared to perform its principal safety related function of removal of accident generated containment heat via the CFCUs and removal of decay heat from the reactor via the Residual Heat Removal (RHR) System.

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

ACTIONS

A.1

INSERT B-1

Required Action A.1 is modified by a Note indicating that the applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops-MODE 4," be entered if an inoperable vital CCW loop results in an inoperable RHR loop. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components.

If one vital CCW loop is inoperable, action must be taken to restore two vital CCW loops to OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE vital CCW loop is adequate to perform the heat removal function. The 72 hour Completion Time is reasonable, based on the overall heat transfer capability of ultimate heat sink system, operator action, and the low probability of a DBA occurring during this period.

Split loop alignment of the CCW system during normal operation requires Condition A to be entered because the CCW system cannot tolerate a single failure in this configuration.

INSERT B-33

(continued)

BASES

ACTIONS (continued)

~~B~~$\boxed{C}$.1 and ~~B~~$\boxed{C}$.2

If the vital CCW loops cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.7.1

This SR is modified by a Note indicating that the isolation of the CCW flow to individual components may render those components inoperable but does not affect the OPERABILITY of the CCW System. A possible exception to this note, is isolation of CCW to the CFCUs. Isolation of CCW to the CFCUs could potentially affect the flow balance and requires evaluation to ensure continued operability.

Verifying the correct alignment for manual, power operated, and automatic valves in the CCW flow path provides assurance that the proper flow paths exist for CCW operation. The CCW flow path consists of the direct flow path servicing the safety related equipment (e.g., ECCS pump coolers, CFCUs, RHR heat exchanger) and portions of any branch line flow path off the direct flow path that a valve misposition could result in degradation of the system safety function. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves which are closed and secured by a cap or blind flange (e.g., manual test, vent, and drain valves), to valves that cannot be inadvertently misaligned (e.g., check valves), or to valves in instrument or sample lines. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position.

The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

SR 3.7.7.2

This SR verifies proper automatic operation of the CCW valves on an actual or simulated Phase A or Phase B containment isolation actuation signal. The CCW System is a normally operating system that cannot be fully actuated as part of routine testing during normal operation. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

(continued)

INSERT B-1

BASES (continued)

ACTIONS

A.1

If one ASW train is inoperable, action must be taken to restore OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE ASW train is adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure in the OPERABLE ASW train could result in loss of ASW system function. The Note indicates that the applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops-MODE 4," should be entered if an inoperable ASW train results in an inoperable decay heat removal train. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components. The 72 hour Completion Time is based on the redundant capabilities afforded by the OPERABLE train, and the low probability of a DBA occurring during this time period.

INSERT B-34

~~B~~C.1 and ~~B~~C.2

If the ASW trains cannot be restored to OPERABLE status within the associated Completion Time~~s~~, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours.

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

SURVEILLANCE REQUIREMENTS

SR 3.7.8.1

Verifying the correct alignment for manual and power operated valves in the ASW system flow path provides assurance that the proper flow paths exist for ASW system operation. The ASW system flow path consists of the direct flow path servicing the safety related equipment (e.g., CCW heat exchanger) and portions of any branch line flow path off the direct flow path that a valve misposition could result in degradation of the system safety function. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to being locked, sealed, or secured. This SR also does not apply to valves which are closed and secured by a cap or blind flange (e.g., manual test, vent, and drain valves), to valves that cannot be inadvertently misaligned (e.g., check valves), or to valves in instrument or sample lines. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of 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 based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

(continued)

BASES (continued)

APPLICABILITY

The AC sources are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

a. Acceptable fuel design, limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

The AC power requirements for MODES 5 and 6 are covered in LCO 3.8.2, "AC Sources - Shutdown."

ACTIONS

A Note prohibits the application of LCO 3.0.4.b to an inoperable DG. There is an increased risk associated with entering a MODE or other specified condition in the Applicability with an inoperable DG and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

A.1

To ensure a highly reliable power source remains with one offsite circuit inoperable, it is necessary to verify the OPERABILITY of the remaining required offsite circuit on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action not met. However, if a second required circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition C, for two offsite circuits inoperable, is entered.

INSERT B-2

A.2

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours. With one offsite circuit inoperable, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the unit safety systems. In this Condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E Distribution System.

(continued)

BASES

ACTIONS (continued)

B.3.1 and B.3.2

Required Action B.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DGs. If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DGs, SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on other DGs, the other DGs would be declared inoperable upon discovery and Condition E of LCO 3.8.1 would be entered. Once the failure is repaired, the common cause failure no longer exists, and Required Action B.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DGs, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of those DGs. If a DG has already started and loaded on a bus, it is not necessary to shutdown the DG and perform SR 3.8.1.2. The DG is verified OPERABLE since it is performing its intended function.

In the event the inoperable DG is restored to OPERABLE status prior to completing either B.3.1 or B.3.2, the plant corrective action program will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B.

According to Generic Letter 84-15 (Ref. 7), 24 hours is reasonable to confirm that the OPERABLE DGs are not affected by the same problem as the inoperable DG.

B.4

Operation may continue in Condition B for a period that should not exceed 14 days. This Completion Time was revised from 72 hours to 7 days by License Amendment (LA) 44 for Unit 1 and LA 43 for Unit 2 and from 7 days to 14 days by LA 166 for Unit 1 and LA 167 for Unit 2. In accordance with Reference 17, the 14-day Completion Time is intended to be used for planned maintenance or inspections at a frequency of no more than once per DG per operating cycle for each DG. For all other DG maintenance or inspections, the Completion Time is expected to remain at 7 days. This is consistent with the Completion Times assumed in References 17 and 18.

INSERT B-2

In Condition B, the remaining OPERABLE DGs and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. The 14 day Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

(continued)

INSERT B-2

ACTIONS

C.1 and C.2 (continued)

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition C for a period that should not exceed 24 hours. This level of degradation means that the offsite electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This level of degradation generally corresponds to a total loss of the immediately accessible offsite power sources.

Because of the normally high availability of the offsite sources, this level of degradation may appear to be more severe than other combinations of two AC sources inoperable that involve one or more DGs inoperable. However, two factors tend to decrease the severity of this level of degradation:

a. The configuration of the Class 1E AC electrical power system that remains available is not susceptible to a single bus or switching failure; and

b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With both of the required offsite circuits inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, a simultaneous loss of offsite AC sources, a DBA, and a worst case single failure were postulated as a part of the design basis in the safety analysis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of one of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria.

According to Reference 6, with the available offsite AC sources, two less than required by the LCO, operation may continue for 24 hours. If two offsite sources are restored within 24 hours, unrestricted operation may continue. If only one offsite source is restored within 24 hours, power operation continues in accordance with Condition A.

D.1 and D.2

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition D for a period that should not exceed 12 hours.

In Condition D, individual redundancy is lost in the offsite electrical power system and may be lost in the onsite AC electrical power system. Since power system redundancy is provided by two diverse sources of power, however, the reliability of the power systems in this

(continued)

BASES

ACTIONS

D.1 and D.2 (continued)

Condition may appear higher than that in Condition C (loss of both required offsite circuits). This difference in reliability is offset by the susceptibility of this power system configuration to a single bus or switching failure. The 12 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

E.1

With two or more DGs inoperable, the remaining onsite AC sources are inadequate. Thus, with an assumed loss of offsite electrical power, insufficient standby AC sources are available to power the minimum required ESF functions. Since the offsite electrical power system may be the only source of AC power for this level of degradation, the risk associated with continued operation for a very short time could be less than that associated with an immediate controlled shutdown (the immediate shutdown could cause grid instability, which could result in a total loss of AC power). Since any inadvertent generator trip could also result in a total loss of offsite AC power, the time allowed for continued operation is severely restricted. The intent here is to avoid the risk associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

According to Reference 6, with two or more DGS inoperable, operation may continue for a period that should not exceed 2 hours.

INSERT B-2

F.1

Condition F corresponds to a level of degradation in which one train of the DFO transfer system is inoperable. The onsite AC electrical power systems are redundant and available to support ESF loads. However, one subsystem required for the onsite AC electrical system operability has lost its redundancy (DFO supply to the DGs).

The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

G.1

With both trains of DFO inoperable, the onsite AC sources are inadequate (loss of DFO supply to all DGs). With an assumed loss of offsite electrical power, insufficient AC sources are available to power the minimum required ESF functions. Since the offsite electrical power system is the only source for AC power for this level of degradation, the risk associated with continued operation for a very short time could

(continued)

BASES

ACTIONS

G.1 (continued)

be less than that associated with an immediate controlled shutdown (the immediate shutdown could cause grid instability, which could result in a total loss of AC power). Since any inadvertent generator trip could also result in a total loss of offsite AC power, the time allowed for continued operation is severely restricted. The intent here is to avoid ~~the risk associated with an~~ immediate controlled shutdown and to minimize the risk associated with this ~~level of degradation.~~

INSERT B-2

INSERT B-35

~~H~~J.1 and ~~H~~J.2

If the inoperable AC electric power sources cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

~~I.1~~

~~Condition I corresponds to a level of degradation in which all redundancy in the AC electrical power supplies has been lost. At this severely degraded level, further loss of the remaining offsite circuit will cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown.~~

~~J.1~~

~~Condition J corresponds to a level of degradation in which all redundancy in the AC electrical power supplies has been lost. At this severely degraded level, further loss of a remaining DG will cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown.~~

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with 10 CFR 50, Appendix A, GDC 18 (Ref. 8). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGS are in accordance with the recommendations of Regulatory Guide 1.9 Rev. 3 (Ref. 15) for the types of surveillance tests and surveillance frequencies, Regulatory Guide 1.108 (Ref. 9), and Regulatory Guide 1.137 (Ref. 10), as addressed in the FSAR.

(continued)

BASES (continued)

LCO

The DC electrical power subsystems, each subsystem consisting of one battery, battery charger for each battery and the corresponding control equipment and interconnecting cabling supplying power to the associated bus are required to be OPERABLE to ensure the availability of the required power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. Loss of any one DC electrical power subsystem does not prevent the minimum safety function from being performed (Ref. 4).

An OPERABLE DC electrical power subsystem requires the battery and its normal or backup charger to be operating and connected to the associated DC bus.

APPLICABILITY

The DC electrical power sources are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure safe unit operation and to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided, and containment integrity and other vital functions are maintained in the event of a postulated DBA.

The DC electrical power requirements for MODES 5 and 6 are addressed in the Bases for LCO 3.8.5, "DC Sources - Shutdown."

ACTIONS

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

INSERT B-1

Condition A represents one DC electrical power subsystem with one dedicated battery charger inoperable (e.g., the voltage limit of SR 3.8.4.1 is not maintained). The ACTION~~S~~s provide a tiered response that focuses on returning the battery to the fully charged state and restoring a fully qualified charger to OPERABLE status in a reasonable time period. Required Action A.1 requires that the terminal voltage be restored to greater than or equal to the minimum established float voltage within 2 hours. This time provides for returning the dedicated charger to OPERABLE status or providing an alternate means of restoring the associated battery terminal voltage to greater than or equal to the minimum established float voltage. Restoring the battery terminal voltage to greater than or equal to the minimum established float voltage provides good assurance that, within 12 hours, the battery will be restored to its fully charged condition (Required Action A.2) from any discharge that might have occurred due to the charger inoperability.

(continued)

BASES

ACTIONS (continued)

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

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

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

Required Action A.2 requires that the battery float current be verified as less than or equal to 2 amps. This indicates that, if the battery had been discharged as the result of the inoperable battery charger, it has now been fully recharged. If at the expiration of the 12 hour period the battery float current is not less than or equal to 2 amps this indicates there may be additional battery problems and the battery must be declared inoperable in accordance with LCO 3.8.6 Required Action B.2.

INSERT B-2

Required Action A.3 limits the restoration time for the inoperable dedicated battery charger to 14 days. This action is applicable if an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage has been used (e.g., backup charger or non-Class 1E battery charger). The 14 day completion time reflects a reasonable time to effect restoration of the dedicated battery charger to operable status.

(continued)

BASES

ACTIONS (continued)

B.1

Condition B represents one DC electrical power subsystem with one battery inoperable. With one battery inoperable, the DC bus is being supplied by the associated OPERABLE battery charger. Any event that results in a loss of the associated 480 VAC vital bus supporting the normal battery charger will also result in loss of or degraded DC to the associated DC electrical power subsystem. Recovery of the 480 VAC vital bus, especially if it is due to a loss of offsite power, will be hampered by the fact that many of the components necessary for the recovery (e.g., diesel generator control and field flash, AC load shed and diesel generator output circuit breakers, etc.) likely rely upon the battery. In addition, the energization transients of any DC loads that are beyond the capability of the battery charger and normally require the assistance of the battery will not be able to be brought online. The 2 hour limit allows sufficient time to effect restoration of an inoperable battery given that the majority of the conditions that lead to battery inoperability (e.g., loss of battery charger, battery cell voltage less than 2.07 V, etc.) are identified in Specifications 3.8.4, 3.8.5, and 3.8.6 together with additional specific completion times.

INSERT B-2

~~B.2.1.1, B.2.1.2, B.2.2~~

~~The completion time for restoring the inoperable battery to OPERABLE status can be extended to 4 hours, on a one-time basis for Unit 1 Vital Battery 1-1 for Unit 1 cycle 14, if additional Required Actions are taken. The 4 hour completion time is based upon Probabilistic Risk Assessment (PRA) calculation of risk given one battery is inoperable. This PRA assessment makes the assumptions that actions are taken to either determine that the OPERABLE batteries are not inoperable due to common cause failure or SR 3.8.4.1 and SR 3.8.6.1 are performed for the OPERABLE batteries. Taking steps to determine whether the battery condition is a result of a common cause failure will provide assurance that a similar failure will not occur to other OPERABLE batteries. Performing SR 3.8.4.1 and SR 3.8.6.1 will serve the same purpose of ensuring the OPERABLE batteries remain in OPERABLE condition. The 2 hour completion times for Required Actions B.2.1.1, and B.2.1.2 are consistent with completion time to restore a battery to OPERABLE status in Required Action B.1. When Required Actions B.2.1.1 or B.2.1.2 are met, then the inoperable battery can be restored to OPERABLE status in 4 hours.~~

(continued)

BASES

ACTIONS (continued)

C.1

Condition C represents one Class 1E DC electrical power subsystem and associated ESF equipment with a loss of ability to completely respond to an event, and a potential loss of ability to remain energized during normal operation. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of DC power to the affected subsystem. The 2 hour limit is consistent with the allowed time for an inoperable DC distribution subsystem.

INSERT B-2

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

(continued)

BASES

ACTIONS
(continued)

D.1

The design of the 125 VDC electrical power distribution system is such that a battery can have associated with it a dedicated full capacity charger powered from its associated 480 VAC vital bus or a backup full capacity charger powered from another 480 VAC vital bus. Use of the backup full capacity charger results in more than one full capacity charger receiving power simultaneously from a single 480 V vital bus and causes the requirements of independence and redundancy between subsystems to no longer be maintained. Thus, operation with two chargers powered by the same vital bus is limited to 14 days.

INSERT B-36

~~E~~**F**.1 and ~~E~~**F**.2

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

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1

The minimum established float voltage provided by the battery manufacturer is 2.17 Vpc or 130.2 V at the battery terminals for a 60-cell battery. This voltage maintains the battery plates in a condition that supports maintaining the grid life (expected to be approximately 20 years). Verifying battery terminal voltage while on float charge for the batteries helps to ensure the effectiveness of the battery chargers, which support the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery and maintain the battery in a fully charged state, while supplying the continuous steady state loads of the associated DC electrical power subsystem. On float charge, battery cells will receive adequate current to optimally charge the battery. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

(continued)

BASES

LCO (continued)	Maintaining the required inverters OPERABLE ensures that the redundancy incorporated into the design of the RPS and ESFAS instrumentation and controls is maintained. The four inverters ensure an uninterruptible supply of AC electrical power to the 120 VAC vital buses even if the 4.16 kV safety buses are de-energized. Operable inverters require the associated 120 VAC vital bus to be powered by the inverter with output voltage within tolerances, and power input to the inverter from a 125 VDC station battery. Alternatively, power supply may be from an internal AC source via rectifier as long as the station battery is available as the uninterruptible power supply.
APPLICABILITY	The inverters are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that: a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and b. Adequate core cooling is provided, and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA. Inverter requirements for MODES 5 and 6 are covered in the Bases for LCO 3.8.8, "Inverters - Shutdown."
ACTIONS **INSERT B-2**	<u>A.1</u> With a required inverter inoperable, its associated 120 VAC vital bus becomes inoperable until it is re-energized from its Class 1E constant voltage source transformer. For this reason a Note has been included in Condition A requiring the entry into the Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating." This ensures that the 120 VAC bus is re-energized within 2 hours. Required Action A.1 allows 24 hours to fix the inoperable inverter and return it to service. The 24 hour limit is based upon engineering judgment, taking into consideration the time required to repair an inverter and the additional risk to which the unit is exposed because of the inverter inoperability. This has to be balanced against the risk of an immediate shutdown, along with the potential challenges to safety systems such a shutdown might entail. When the 120 VAC vital bus is powered from its constant voltage source, it is relying upon interruptible

(continued)

BASES

ACTIONS	A.1 (continued) AC electrical power sources (offsite and onsite). The uninterruptible inverter source to the 120 VAC vital buses is the preferred source for powering instrumentation trip setpoint devices. **INSERT B-37** ~~B~~ $\boxed{C}$.1 and ~~B~~ $\boxed{C}$.2 If the inoperable devices or components cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.
SURVEILLANCE REQUIREMENTS	SR 3.8.7.1 This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and 120 VAC vital buses energized from the inverter. The verification of proper voltage output ensures that the required power is readily available for the instrumentation of the RPS and ESFAS connected to the AC vital buses. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.
REFERENCES	1. FSAR, Chapter 7. 2. FSAR, Chapter 6. 3. FSAR, Chapter 15.

BASES

LCO (continued)	In addition, tie breakers between redundant safety related Class 1E AC, DC, and 120 VAC vital bus power distribution subsystems, if they exist, must be open. This prevents any electrical malfunction in any power distribution subsystem from propagating to the redundant subsystem, that could cause the failure of a redundant subsystem and a loss of essential safety function(s). If any tie breakers are closed, the affected redundant electrical power distribution subsystems are considered inoperable. This applies to the onsite, safety related redundant electrical power distribution subsystems. It does not, however, preclude redundant Class 1E 4.16 kV buses from being powered from the same offsite circuit.
APPLICABILITY	The electrical power distribution subsystems are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that: a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and b. Adequate core cooling is provided, and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA. Electrical power distribution subsystem requirements for MODES 5 and 6 are covered in the Bases for LCO 3.8.10, "Distribution Systems - Shutdown."
ACTIONS	A.1 With one **or more** required Class 1E AC electrical power subsystem inoperable, the remaining portions of the AC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining portions of the power distribution subsystems could result in the minimum required ESF functions ~~not being~~ supported. Therefore, the required Class 1E AC buses, load centers, ~~and~~ motor control centers must be restored to OPERABLE status within 8 hours. **INSERT B-1** Condition A worst scenario is one AC electrical power distribution subsystem without AC power (i.e., no offsite power to the 4160 V ESF bus and the associated DG inoperable). In this Condition, the unit is more vulnerable to a complete loss of AC power. It is, therefore, imperative that the unit operator's attention be focused on minimizing the potential for loss of power to the remaining AC electrical power

(continued)

BASES

ACTIONS

A.1 (continued)

distribution subsystems by stabilizing the unit, and on restoring power to the affected subsystem. The 8 hour time limit before requiring a unit shutdown in this Condition is acceptable because of:

a. The potential for decreased safety if the unit operator's attention is diverted from the evaluations and actions necessary to restore power to the affected subsystem, to the actions associated with taking the unit to shutdown within this time limit; and

b. The potential for an event in conjunction with a single failure of a redundant component in the other AC electrical power distribution subsystems with AC power.

B.1

With one **or more** 120 VAC vital bus subsystem inoperable, the remaining OPERABLE 120 VAC vital buses are capable of supporting the minimum safety functions necessary to shut down the unit and maintain it in the safe shutdown condition. Overall reliability is reduced, however, since an additional single failure could result in the minimum required ESF functions not being supported. Therefore, the required AC vital bus subsystem must be powered from an alternate source within 2 hours by powering the bus from the associated inverter via inverted DC, inverter using internal AC source, or Class 1E

(continued)

INSERT B-2

BASES

ACTIONS

B.1 (continued)

constant voltage transformer. The required AC vital bus subsystems must then be re-powered by restoring it's associated inverter to OPERABLE status within 24 hours under LCO 3.8.7. ACTION A.1.

Condition B represents one **or more** 120 VAC vital bus**es** without power; potentially both the DC source and the associated AC source are nonfunctioning. In this situation, the unit is significantly more vulnerable to a complete loss of all noninterruptible power. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for loss of power to the remaining vital buses and restoring power to the affected 120 VAC vital bus subsystem.

This 2 hour limit is more conservative than Completion Times allowed for the vast majority of components that are without adequate 120 VAC power. Taking exception to LCO 3.0.2 for components without adequate vital 120 VAC power, that would have the Required Action Completion Times shorter than 2 hours if declared inoperable, is acceptable because of:

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) and not allowing stable operations to continue;

b. The potential for decreased safety by requiring entry into numerous Applicable Conditions and Required Actions for components without adequate vital 120 VAC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected subsystem; and

c. The potential for an event in conjunction with a single failure of a redundant component.

The 2 hour Completion Time takes into account the importance to safety of restoring the 120 VAC vital bus to OPERABLE status, the redundant capability afforded by the other OPERABLE 120 VAC vital buses, and the low probability of a DBA occurring during this period.

(continued)

BASES

ACTIONS

C.1

With one **or more** DC electrical power distribution subsystem**s** inoperable, the remaining portions of the DC electrical power distribution subsystem are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining portion of the DC electrical power distribution subsystems could result in the minimum required ESF functions not being supported. Therefore, the DC buses must be restored to OPERABLE status within 2 hours by powering the bus from the associated battery or charger.

INSERT B-2

Condition C represents one **or more** DC electrical power distribution subsystem**s** without adequate DC power; potentially both with the battery significantly degraded and the associated charger nonfunctioning for the affected bus. In this situation, the unit is significantly more vulnerable to a complete loss of all DC power. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for loss of power to the remaining DC electrical power distribution subsystems and restoring power to the affected subsystem.

This 2 hour limit is more conservative than Completion Times allowed for the vast majority of components that would be without power. Taking exception to LCO 3.0.2 for components without adequate DC power, which would have Required Action Completion Times shorter than 2 hours, is acceptable because of:

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) while allowing stable operations to continue;

(continued)

BASES

ACTIONS

C.1 (continued)

b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required Actions for components without DC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected subsystem; and

c. The potential for an event in conjunction with a single failure of a redundant component.

The 2 hour Completion Time for DC buses is consistent with Regulatory Guide 1.93 (Ref. 3).

D.1 and D.2

If the inoperable distribution subsystem$\boxed{\textbf{(s)}}$ cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

~~(continued)~~

BASES

~~ACTIONS (continued)~~	~~E.1~~ ~~Condition E corresponds to two required Class 1E AC, DC, or 120 VAC vital buses with inoperable distribution subsystems that result in a loss of safety function, adequate core cooling, containment OPERABILITY and other vital functions for DBA mitigation would be compromised, and immediate plant shutdown in accordance with LCO 3.0.3 is required.~~
SURVEILLANCE REQUIREMENTS	SR 3.8.9.1 This Surveillance verifies that the required Class 1E AC, DC, and 120 VAC vital bus electrical power distribution systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical divisions is maintained, and the appropriate voltage is available to each required bus. The verification of proper voltage availability on the buses ensures that the required voltage is readily available for motive as well as control functions for critical system loads connected to these buses. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program. Table B 3.8.9-1 The table on the next page defines the general features of the AC and DC Electrical Power Distribution System.
REFERENCES	1. FSAR, Chapter 6. 2. FSAR, Chapter 15. 3. Regulatory Guide 1.93, December 1974.

INSERT B-1

or in accordance with the Risk Informed Completion Time Program.

INSERT B-2

Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

INSERT B-3

C.1

With two Reactor Manual Trip channels inoperable, the Required Action is to restore at least one channel to OPERABLE status within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of inoperable channels. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when the second Manual Reactor Trip channel is intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one Reactor Manual Trip channel is inoperable for any reason and the second Reactor Manual Trip channel is found to be inoperable, or if both Reactor Manual Trip channels are found to be inoperable at the same time.

INSERT B-4

F.1

With two or more Power Range Neutron Flux - High channels inoperable, the Required Action is to restore sufficient inoperable channels to OPERABLE status to reduce total inoperable channels to one within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of inoperable channels. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when two or more Power Range Neutron Flux - High channels are intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one Power Range Neutron Flux - High channel is inoperable for any reason and additional Power Range Neutron Flux - High channels are found to be inoperable, or if two or more Power Range Neutron Flux - High channels are found to be inoperable at the same time.

INSERT B-5

H.1

With two or more channels inoperable the Required Action is to restore sufficient inoperable channels to OPERABLE status to reduce total inoperable channels to one within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of inoperable channels. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when two or more channels are intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one channel is inoperable for any reason and additional channels are found to be inoperable, or if two or more channels are found to be inoperable at the same time.

INSERT B-6

N.1 and N.2

If the Required Action and associated Completion Time of Condition D or M is not met, the unit must be placed in a MODE in which the requirement does not apply. To achieve this status, action must be initiated immediately to ensure that all rods are fully inserted, and the Rod Control System must be placed in a condition incapable of rod withdrawal (e.g., by de-energizing all CRDMs, by opening the RTBs, or by de energizing the motor generator (MG) sets) within 1 hour. A Completion Time of 1 hour provides sufficient time to accomplish the action in an orderly manner and is justified in Reference 7. With rods fully inserted and the Rod Control System incapable of rod withdrawal, these Functions are no longer required.

INSERT B-7

Q.1

With two or more channels inoperable the Required Action is to restore sufficient inoperable channels to OPERABLE status to reduce total inoperable channels to one within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of inoperable channels. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when two or more channels are intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one channel is inoperable for any reason and additional channels are found to be inoperable, or if two or more channels are found to be inoperable at the same time.

R.1

If the Required Action and associated Completion Time of Condition P or Q is not met, 6 hours is allowed to reduce THERMAL POWER to below P-7.

INSERT B-8

T.1

With two RCP Breaker Position channels inoperable the Required Action is to restore sufficient inoperable channels to OPERABLE status to reduce total inoperable channels to one within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of the inoperable channels. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when the second Reactor Coolant Pump Breaker Position channel is intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one Reactor Coolant Pump Breaker Position channel is inoperable for any reason and the second Reactor Coolant Pump Breaker Position channel is found to be inoperable, or if two Reactor Coolant Pump Breaker Position channels are found to be inoperable at the same time.

U.1

If the Required Action and associated Completion Time of Condition S or T is not met, THERMAL POWER must be reduced below the P-8 setpoint within 4 hours. This places the unit in a MODE where the LCO is no longer applicable. This Function does not have to be OPERABLE below the P-8 setpoint because other RTS Functions provide core protection below the P-8 setpoint. The 4 hours to reduce THERMAL POWER to below the P-8 setpoint is justified in Reference 7.

INSERT B-9

W.1

With two or more Turbine Trip on Low Auto Stop Oil Pressure channels inoperable, the Required Action is to restore sufficient inoperable channels to OPERABLE status to reduce total inoperable channels to one within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of sufficient channels. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when two or more Turbine Trip on Low Auto Stop Oil Pressure channels are intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one Turbine Trip on Low Auto Stop Oil Pressure channel is inoperable for any reason and additional Turbine Trip on Low Auto Stop Oil Pressure channels are found to be inoperable, or if two or more Turbine Trip on Low Auto Stop Oil Pressure channels are found to be inoperable at the same time.

INSERT B-10

<u>Y.1</u>

If the Required Action and associated Completion Time of Condition V, W, or X is not met, THERMAL POWER must be reduced below the P-9 setpoint within 4 hours. This places the unit in a MODE where the LCO is no longer applicable. The 4 hours allowed for reducing power is justified in Reference 28.

INSERT B-11

<u>AA.1</u>

With two trains inoperable the Required Action is to restore at least one train to OPERABLE status within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of the inoperable trains. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when the second train is intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if a train is inoperable for any reason and the second train is found to be inoperable, or if two trains are found to be inoperable at the same time.

INSERT B-12

<u>CC.1</u>

With two RTB trains inoperable the Required Action is to restore at least one train to OPERABLE status within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of the inoperable trains. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when the second RTB train is intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if an RTB train is inoperable for any reason and the second RTB train is found to be inoperable, or if two RTB trains are found to be inoperable at the same time.

INSERT B-13

<u>FF.1</u>

If the Required Action and associated Completion Time of Condition EE is not met, the unit must be placed in MODE 2 within 6 hours. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 2 from full power in an orderly manner and without challenging unit systems.

INSERT B-14

<u>HH.1</u>

With one trip mechanism inoperable for two or more RTBs, the Required Action is to restore sufficient inoperable trip mechanisms to OPERABLE status to reduce total inoperable RTBs to one within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of the trip mechanisms. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when one trip mechanism for two or more RTBs is intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if the trip mechanisms for two or more RTBs are inoperable for any reason and additional trip mechanisms for two or more RTBs are found to be inoperable, or if two or more trip mechanisms for two or more RTBs are found to be inoperable at the same time.

INSERT B-15

<u>KK.1</u>

If the Required Action and associated Completion Time of Condition B, C, E, F, G, H, Z, AA, BB, CC, DD, GG, HH, II, or JJ is not met, the unit must be placed in MODE 3 within 6 hours. The Completion Time of 6 hours is a reasonable time, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging unit systems. With the unit in MODE 3, ACTION D would apply to any inoperable RTB, RTB trip mechanism, or to any inoperable Manual Reactor Trip Function if the Rod Control System is capable of rod withdrawal or one or more rods are not fully inserted.

INSERT B-16

C.1

With two channels or trains inoperable the Required Action is to restore at least one of the inoperable channels or trains to OPERABLE status within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of the inoperable channels or trains. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable if the second channel or train is intentionally made inoperable. The Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one channel or train is inoperable for any reason and the second channel or train is found to be inoperable, or if two channels or trains are found to be inoperable at the same time.

INSERT B-17

E.1

With two trains inoperable the Required Action is to restore at least one of the inoperable trains to OPERABLE status within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of the inoperable trains. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable if the second train is intentionally made inoperable. The Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one train is inoperable for any reason and the second train is found to be inoperable, or if two trains are found to be inoperable at the same time.

INSERT B-18

G.1

With two or more channels inoperable, or more than one channel inoperable in more than one loop, steam line, or steam generator, the Required Action is to restore sufficient inoperable channels to OPERABLE status to reduce total inoperable channels to one per loop, steam line, or steam generator within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of the inoperable channels. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when two or more required channels or one channel in more than one loop, steam line, or steam generator are intentionally made inoperable. The Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one channel is inoperable for any reason and additional channels are found to be inoperable, or if two or more channels are found to be inoperable at the same time.

INSERT B-19

I.1

With two or more Containment Pressure channels inoperable the Required Action is to restore sufficient inoperable Containment Pressure channels to OPERABLE status to reduce the total inoperable Containment Pressure channels to one within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of the inoperable channels. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when the second Containment Pressure channel is intentionally made inoperable. The Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one Containment Pressure channel is inoperable for any reason and additional Containment Pressure channels are found to be inoperable, or if two or more Containment Pressure channels are found to be inoperable at the same time.

INSERT B-20

L.1

With two trains inoperable the Required Action is to restore at least one inoperable train to OPERABLE status within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of the inoperable trains. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when the second train is intentionally made inoperable. The Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one train is inoperable for any reason and the second trains is found to be inoperable, or if two trains are found to be inoperable at the same time.

INSERT B-21

N.1

With two trains inoperable the Required Action is to restore at least one inoperable train to OPERABLE status within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of the inoperable trains. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when the second train is intentionally made inoperable. The Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one train is inoperable for any reason and the second trains is found to be inoperable, or if two trains are found to be inoperable at the same time.

INSERT B-22

P.1

With two or more channels inoperable the Required Action is to restore sufficient inoperable channels to OPERABLE status to reduce total inoperable channels to one within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of sufficient channels. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when two or more channels are intentionally made inoperable. The Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one channel is inoperable for any reason and the additional channels are found to be inoperable, or if two or more channels are found to be inoperable at the same time.

INSERT B-23

R.1

With two or more channels inoperable the Required Action is to restore sufficient inoperable channels to OPERABLE status to reduce total inoperable channels to one within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of sufficient channels. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when two or more channels are intentionally made inoperable. The Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one channel is inoperable for any reason and the additional channels are found to be inoperable, or if two or more channels are found to be inoperable at the same time.

INSERT B-24

T.1

With two or more channels inoperable the Required Action is to restore sufficient inoperable channels to OPERABLE status to reduce total inoperable channels to one within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of sufficient channels. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when two or more channels are intentionally made inoperable. The Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one channel is inoperable for any reason and the additional channels are found to be inoperable, or if two or more channels are found to be inoperable at the same time.

INSERT B-25

Y.1

With two or more channels inoperable the Required Action is to restore sufficient inoperable channels to OPERABLE status to reduce total inoperable channels to one within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of sufficient channels. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when two or more channels are intentionally made inoperable. The Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one channel is inoperable for any reason and the additional channels are found to be inoperable, or if two or more channels are found to be inoperable at the same time.

INSERT B-26

AA.1

With two or more channels inoperable the Required Action is to restore sufficient inoperable channels to OPERABLE status to reduce total inoperable channels to one within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of sufficient channels. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when two or more channels are intentionally made inoperable. The Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one channel is inoperable for any reason and the additional channels are found to be inoperable, or if two or more channels are found to be inoperable at the same time.

BB.1 and BB.2

If the Required Action and associated Completion Time of Condition B, C, D, E, S, T, X, Y, Z, or AA is not met, the unit must be placed in MODE 3 within 6 hours and MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 5, these Functions are no longer required OPERABLE.

CC.1 and CC.2

If the Required Action and associated Completion Time of Condition F, G, H, I, J, K, L, U, or V is not met, the unit must be placed in MODE 3 within 6 hours and MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. In MODE 4, these Functions are no longer required OPERABLE.

DD.1

If the Required Action and associated Completion Time of Condition M, N, Q, or R is not met, the unit must be placed in MODE 3 within 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. In MODE 3, these Functions are no longer required OPERABLE.

EE.1

If the Required Action and associated Completion Time of Condition O or P is not met, the unit must be placed in MODE 2 within 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 2 from full power conditions in an orderly manner and without challenging unit systems. In MODE 2, these Functions are no longer required OPERABLE.

INSERT B-27

C.1

With two required groups of pressurizer heaters inoperable, the Required Action is to restore at least one inoperable required group of pressurizer heaters to OPERABLE status within 1 hour prior to initiating actions to place the plant in a MODE or other specified condition in which the LCO does not apply. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when the second required group of pressurizer heaters is intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one required group of pressurizer heaters is inoperable for any reason and the second required group of pressurizer heaters is found to be inoperable, or if two required groups of pressurizer heaters are found to be inoperable at the same time.

INSERT B-28

With two or more accumulators inoperable the Required Action is to restore sufficient inoperable accumulators to OPERABLE status to reduce the total inoperable accumulators to one within 1 hour. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of sufficient accumulators. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when two or more accumulators are intentionally made inoperable. The Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one accumulator is inoperable for any reason and additional accumulators are found to be inoperable, or if two or more accumulators are found to be inoperable at the same time.

INSERT B-29

Condition A is applicable with one or more trains inoperable. The allowed Completion Time is based on the assumption that at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train is available. With less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available, the facility is in a condition outside of the accident analyses and flow must be restored to 100% of the ECCS flow equivalent to a single OPERABLE ECCS train within the 1 hour Completion Time, or a Completion Time determined under the Risk Informed Completion Time Program. The Completion Time is based on the need to restore the ECCS flow to within the safety analysis assumptions.

The Condition is modified by a Note stating it is not applicable when the second ECCS train is intentionally made inoperable. The Required Actions are not intended for voluntary removal of redundant systems or components from service. The Required Actions are only applicable if one ECCS train is inoperable for any reason and the second ECCS train is found to be inoperable, or if two ECCS trains are found to be inoperable at the same time.

INSERT B-30

With two containment spray trains inoperable, or one containment spray train inoperable and the CFCU System inoperable such that one or less CFCUs remain OPERABLE, or one or less CFCUs are OPERABLE, sufficient containment spray trains and/or CFCUs must be restored to OPERABLE status so that no more than one containment spray train is inoperable and two CFCUs are OPERABLE within one hour or in accordance with the Risk Informed Completion Time Program. The allowed Completion Time provides a short time to restore the trains to OPERABLE, before proceeding with a plant shutdown required by Condition F.

The Condition is modified by a Note stating it is not applicable when two containment spray trains or four CFCUs are intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one containment spray train or a combination of one containment spray train and CFCUs are inoperable for any reason and a second containment spray train or additional CFCUs are found to be inoperable at the same time.

INSERT B-31

B.1

With two or more MSIVs inoperable the Required Action is to restore sufficient required inoperable MSIVs to OPERABLE status within 1 hour to regain a method of main steam line isolation. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of sufficient MSIVs. Alternately, a Completion time can be determined in accordance with the Risk Informed Completion time Program.

The Condition is modified by a Note stating it is not applicable when two or more MSIVs are intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one MSIV is inoperable for any reason and additional MSIVs are found to be inoperable, or if two or more MSIVs are found to be inoperable at the same time.

INSERT B-32

C.1 and C.2

With one motor driven AFW train inoperable coincident with one turbine driven AFW pump steam supply where the remaining OPERABLE motor driven AFW train provides feedwater to the steam generator with the inoperable steam supply, action must be taken to restore either the inoperable motor driven AFW train or the inoperable steam supply with 48 hours, or in accordance with the Risk Informed Completin Time Program. The 48 hour Completion Time is reasonable, based on redundant capabilities afforded by the AFW System with on OPERABLE motor driven AFW train, and the turbine driven pump with one OPERABLE steam supply with the capability to provide feedwater to the steam generator with the OPERABLE steam supply by the turbine driven pump.

D.1

With two AFW trains are inoperable in MODE 1, 2, or 3 for reasons other than Condition C, the Required Action is to restore the inoperable AFW trains to OPERABLE status within 1 hour to regain a method of decay heat removal. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of at least one train. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when the second AFW train is intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one AFW train is inoperable for any reason and a second AFW train is found to be inoperable, or if two AFW trains are found to be inoperable at the same time.

In MODE 4 with two AFW trains inoperable, operation is allowed to continue because only one motor driven pump AFW train is required in accordance with the Note that modifies the LCO. Although not required, the unit may continue to cool down and initiate RHR.

INSERT B-33

B.1

With two vital CCW loops inoperable the Required Action is to restore the inoperable vital CCW loops to OPERABLE status within 1 hour to regain a heat sink for safety related components. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of at least one vital CCW loop. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when the second vital CCW loop is intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one vital CCW loop is inoperable for any reason and a second vital CCW loop is found to be inoperable, or if two vital CCW loops are found to be inoperable at the same time.

INSERT B-34

B.1

With two ASW trains inoperable, the Required Action is to restore the inoperable ASW trains to OPERABLE status within 1 hour to regain a heat sink for safety related components. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of at least one train. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when the second ASW train is intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one ASW train is inoperable for any reason and a second ASW train is found to be inoperable, or if two ASW trains are found to be inoperable at the same time.

INSERT B-35

H.1

With two or more DGs and one or more required offsite circuits inoperable, the Required Action is to restore enough of the required inoperable AC sources to OPERABLE status within 1 hour to regain some level of redundancy in the AC electrical power supplies. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of sufficient AC electrical power supplies. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when an offsite circuit or second DG is intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one required offsite circuit and DG are inoperable for any reason and additional DGs are found to be inoperable, or if two DGs are inoperable and one or more required offsite circuits are found to be inoperable at the same time.

I.1

With two or more required offsite circuits and one or more DGs inoperable, the Required Action is to restore enough of the required inoperable AC sources to OPERABLE status within 1 hour to regain some level of redundancy in the AC electrical power supplies. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of sufficient AC electrical power supplies. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when a DG or second offsite circuit is intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one required offsite circuit and DG are inoperable for any reason and additional offsite circuits are found to be inoperable, or if two required offsite circuits are inoperable and one or more DGs are found to be inoperable at the same time.

INSERT B-36

E.1

With two DC electrical power subsystems inoperable, the Required Action is to restore at least one of the required inoperable DC electrical power subsystems to OPERABLE status within 1 hour to regain control power for the AC emergency power system. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of at least one DC electrical power subsystem. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when the second DC electrical power subsystem is intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one DC electrical power subsystem is inoperable for any reason and a second DC electrical power subsystem is found to be inoperable, or if two DC electrical power subsystem are found to be inoperable at the same time.

INSERT B-37

B.1

With two or more required inverters inoperable the Required Action is to restore at least one of the required inverters to OPERABLE status within 1 hour to regain AC electrical power to the vital buses. The 1 hour Completion Time is acceptable because it minimizes risk while allowing time for restoration of at least one [required] inverter. Alternately, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

The Condition is modified by a Note stating it is not applicable when two or more required inverters are intentionally made inoperable. This Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one required inverter is inoperable for any reason and additional required inverters are found to be inoperable, or if two or more required inverters are found to be inoperable at the same time.

Attachment 4

List of Regulatory Commitments

List of Regulatory Commitments

1. Plant procedures will be developed to incorporate the following with regards to probabilistic risk assessment (PRA) model update process:

    - Plant changes affecting systems, structures, and components within the scope of the configuration risk management program (CRMP) will be reviewed prior to implementation to identify if an interim update of the CRMP model or other interim administrative control for the Risk Informed Completion Time (RICT) Program is required; and,
    - Discovered conditions affecting the CRMP model will be addressed in the corrective action program.

2. The CRMP model used for the RICT Program will include logic for the pressurizer heaters to require at least one group of functional heaters in order to credit secondary heat removal prior to any application of the RICT Program for a RICT for Technical Specification (TS) 3.4.9.

3. Shared systems and equipment between the two units will be identified in plant procedures used for establishing risk management actions when required by the RICT Program.

4. The error in the PRA model related to not modeling shorter containment sump recirculation time window for small loss-of-coolant accidents (LOCAs) when the containment fan cooling system fails will be corrected in the CRMP model before the RICT Program is implemented.

5. The emergency core cooling system charging pump recovery factor will not be credited in the RICT Program whenever an emergency core cooling system charging pump is made unavailable.

6. The 24-hour mission time will be applied to the emergency diesel generators and fuel oil transfer pumps in the RICT program whenever the offsite power 230 kV system is made unavailable.

7. The Risk Informed Completion Time (RICT) Program will assume inoperability of the auxiliary saltwater (ASW) train if one or more vacuum breakers are nonfunctional.

8. At any time when a RICT is in effect, a continuous fire watch will be established in the Cable Spreading and Solid State Protection System (SSPS) rooms until incipient detection and hot shutdown panel modifications are implemented.

9. At any time when a RICT is in effect, welding and cutting activities will be prohibited in the following fire areas until fire wrap and circuit rerouting modifications in these areas are implemented:

    - Unit 1, Fire Area 3-BB, Elevation 115
    - Unit 2, Fire Area 5-B-4

10. The following peer review findings and observations, identified and discussed in Table A6-1, will be resolved prior to implementation of the RICT Program:

    - AS-B3-01
    - SC-A5-01
    - SC-A5-02
    - SC-B3-01
    - SC-B3-02
    - SY-A16-01
    - SY-B10-01
    - SY-B15-01
    - HR-A1-01
    - HR-C3-01
    - HR-D3-01
    - HR-G7-01
    - DA-C1-01
    - QU-C2-01

Attachment 5
List of Revised Required Actions to Corresponding Probabilistic Risk Assessment (PRA) Functions

List of Revised Required Actions to Corresponding
Probabilistic Risk Assessment (PRA) Functions

Section 4.0, Item 2 of the Nuclear Regulatory Commission's (NRC) Final Safety Evaluation (Reference 1) for NEI 06-09, Revision 0, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," (Reference 2) identifies the following license amendment request (LAR) content needed on applicable Technical Specifications (TS), comparison of the TS functions to the probabilistic risk assessment (PRA) functions, and comparison of design basis assumptions to the scope of the PRA:

- The LAR will provide identification of the TS Limiting Conditions for Operation (LCO) and action requirements to which the RMTS will apply.
- The LAR will provide a comparison of the TS functions to the PRA modeled functions of the structures, systems, and components (SSCs) subject to those LCO actions.
- The comparison should justify that the scope of the PRA model, including applicable success criteria such as number of SSCs required, flowrate, etc., are consistent [with] licensing basis assumptions (i.e., 50.46 emergency core cooling system (ECCS) flowrates) for each of the TS requirements, or an appropriate disposition or programmatic restriction will be provided.

This attachment provides confirmation that the Diablo Canyon PRA models include the necessary scope of SSCs and their functions to address each proposed application of the Risk-Informed Completion Time (RICT) Program to the proposed scope TS LCO Conditions, and provides the information requested for Item 2 of the NRC safety evaluation. The scope of the comparison includes each of the TS LCO conditions and associated required actions within the scope of the RICT Program, as identified in Table 1 of the LAR.

Table A5-1 below lists each TS LCO Condition to which the RICT Program is proposed to be applied, and documents the following information regarding the TS with the associated safety analyses, the analogous PRA functions, and the results of the comparison:

- Column "TS LCO/Condition": Lists all of the LCOs and condition statements within the scope of the 4B implementation.
- Column "SSCs Covered by TS LCO/Condition": The SSCs addressed by each action requirement.
- Column "SSCs Modeled in PRA": Indicates whether the SSCs addressed by the TS LCO/Condition are included in the PRA.

- Column "Function Covered by TS LCO/Condition": A summary of the required functions from the design basis analyses.
- Column "Design Success Criteria": A summary of the success criteria from the design basis analyses.
- Column "PRA Success Criteria": The function success criteria modeled in the PRA.
- Column "Disposition": Justification or resolution to address any inconsistencies between the TS and PRA functions, regarding the scope of SSCs and the success criteria. Where the PRA scope of SSCs is not consistent with the TS, additional information is provided to describe how the LCO condition can be evaluated using appropriate surrogate events. Differences in the success criteria for TS functions are addressed to demonstrate the PRA criteria provide a realistic estimate of the risk of the TS condition as required by NEI 06-09.

The corresponding SSCs for each TS LCO and the associated TS functions are identified and compared to the PRA. This description also includes the design success criteria and the applicable PRA success criteria. Any differences between the scope or success criteria are described in the table. Scope differences are justified by identifying appropriate surrogate events which permit a risk evaluation to be completed using the CRMP tool for the RICT program. Differences in success criteria typically arise due to the requirement in the PRA standard (for example, SC-B1) to make PRAs realistic rather than bounding, whereas design basis criteria are necessarily conservative and bounding. The use of realistic success criteria is necessary to conform to Capability Category II of the PRA standard as required by NEI 06-09.

The calculated RICT is provided in Table A5-2 for each individual condition to which the RICT applies (assuming no other SSCs modeled in the PRA are unavailable). Unless stated otherwise, RICTs presented are based on a Unit 1 model calculation and should be considered applicable to Unit 2 for the purpose of providing an estimate due to the close similarity between the Unit 1 and Unit 2 models. (Actual RICT values will be calculated based on the actual plant configuration using a current revision of the PRA model which represents the as-built/as-operated condition of the plant, as required by NEI 06-09 and the NRC safety evaluation, and may differ from the RICTs presented.)

Table A5-1: In Scope TS/LCO Conditions to Corresponding PRA Functions

TS LCO/Condition	SSCs Covered by TS LCO/ Condition	SSCs Modeled in PRA	Function Covered by TS LCO/ Condition	Design Success Criteria	PRA Success Criteria	Disposition
3.3.1 Reactor Trip System (RTS) Instrumentation			(1) Unit shutdown to protect core fuel design limits and Reactor Coolant System (RCS) pressure boundary			Note 1
3.3.1 Function 1 – Manual Reactor Trip	2 channels	No				The operator action for failure to actuate a manual reactor trip will be used as a surrogate to conservatively bound the risk increase associated with this function as permitted by NEI 06-09.
3.3.1 Functions: 2, 3, 6, 7, 8a, 8b, 9, 10, 11, 12, 13, 14a, 16a, 16b, and 17 (instrumentation inputs to automatic RTS function)						Note 2
3.3.1 Function 19 – Reactor Trip Breakers (RTB)	2 trains	Yes		(1) 1 of 2 trains	(1) SAME	SSCs for the RTBs are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.

Table A5-1: In Scope TS/LCO Conditions to Corresponding PRA Functions

TS LCO/Condition	SSCs Covered by TS LCO/ Condition	SSCs Modeled in PRA	Function Covered by TS LCO/ Condition	Design Success Criteria	PRA Success Criteria	Disposition
3.3.1 Function 20 – RTB Undervoltage and Shunt Trip Mechanisms	1 per RTB	Yes		(1) 1 of 2 mechanisms per RTB	(1) SAME	SSCs for the mechanisms are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.
3.3.1 Function 21 – Automatic Trip Logic	2 trains	Yes		(1) 1 of 2 trains	(1) SAME	SSCs for the automatic RTS logic are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.
3.3.2 Engineered Safety Features Actuation System (ESFAS) Instrumentation			(1) Initiate safety systems to protect against violating core design limits and RCS pressure boundary, and to mitigate accidents			
3.3.2 Function 1a – safety injection (SI) – Manual Initiation	2 channels	No				The operator action for failure to actuate a manual SI will be used as a surrogate to conservatively bound the risk increase associated with this function as permitted by NEI 06-09.

Table A5-1: In Scope TS/LCO Conditions to Corresponding PRA Functions

TS LCO/Condition	SSCs Covered by TS LCO/ Condition	SSCs Modeled in PRA	Function Covered by TS LCO/ Condition	Design Success Criteria	PRA Success Criteria	Disposition
3.3.2 Function 1b – SI – Automatic Actuation Logic and Actuation Relays	2 trains	Yes		(1) 1 of 2 trains	(1) SAME	SSCs for automatic SI actuation are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.
3.3.2 Function 1c – SI – Containment Pressure – High	3 channels	Yes		(1) 2 of 3 channels	(1) SAME	SSCs for SI actuation on containment pressure – high are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.
3.3.2 Function 1d – SI – Pressurizer Pressure – Low	4 channels	Yes		(1) 2 of 4 channels	(1) SAME	SSCs for SI actuation on pressurizer pressure – low are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.

Table A5-1: In Scope TS/LCO Conditions to Corresponding PRA Functions

TS LCO/Condition	SSCs Covered by TS LCO/ Condition	SSCs Modeled in PRA	Function Covered by TS LCO/ Condition	Design Success Criteria	PRA Success Criteria	Disposition
3.3.2 Function 1e – SI – Steam Line Pressure – Low	3 channels per steam line	Yes		(1) 2 of 3 channels on 1 of 4 steam lines	(1) SAME	SSCs for SI actuation on steam line pressure – low are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.
3.3.2 Function 2a – Containment Spray (CS) – Manual Initiation	2 channels	No				SSCs for manual CS actuation can be evaluated by a bounding assessment assuming unavailability of the CS system as permitted by NEI 06-09.
3.3.2 Function 2b – CS – Automatic Actuation Logic and Actuation Relays	2 trains	Yes		(1) 1 of 2 trains	(1) SAME	SSCs for automatic CS actuation are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. (See Note 3 for impact on fire PRA.) The success criteria in the PRA are consistent with the design basis criteria.
3.3.2 Function 2c – CS – Containment Pressure – High-High	4 channels	Yes		(1) 2 of 4 channels	(1) SAME	SSCs for CS actuation on containment pressure – high-high are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.

Table A5-1: In Scope TS/LCO Conditions to Corresponding PRA Functions

TS LCO/Condition	SSCs Covered by TS LCO/ Condition	SSCs Modeled in PRA	Function Covered by TS LCO/ Condition	Design Success Criteria	PRA Success Criteria	Disposition
3.3.2 Function 3a1 – Phase A Isolation – Manual Initiation	2 channels	No				The operator action for failure to actuate a manual Phase A will be used as a surrogate to conservatively bound the risk increase associated with this function as permitted by NEI 06-09.
3.3.2 Function 3a2 – Phase A Isolation – Automatic Actuation Logic and Actuation Relays	2 trains	Yes		(1) 1 of 2 trains	(1) SAME	SSCs for automatic containment isolation Phase A actuation are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.
3.3.2 Function 3b1 – Phase B Isolation – Manual Initiation	2 channels	No				The operator action for failure to actuate a manual Phase B will be used as a surrogate to conservatively bound the risk increase associated with this function as permitted by NEI 06-09.
3.3.2 Function 3b2 – Phase B Isolation – Automatic Actuation Logic and Actuation Relays	2 trains	Yes		(1) 1 of 2 trains	(1) SAME	SSCs for automatic containment isolation Phase B actuation are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.

Table A5-1: In Scope TS/LCO Conditions to Corresponding PRA Functions

TS LCO/Condition	SSCs Covered by TS LCO/ Condition	SSCs Modeled in PRA	Function Covered by TS LCO/ Condition	Design Success Criteria	PRA Success Criteria	Disposition
3.3.2 Function 3b3 – Phase B Isolation – Containment Pressure – High-High	4 channels	Yes		(1) 2 of 4 channels	(1) SAME	SSCs for containment isolation Phase B on containment pressure – high-high are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.
3.3.2 Function 4a – Steam Line Isolation – Manual Initiation	2 channels	No				The operator action for failure to actuate manual steam line isolation will be used as a surrogate to conservatively bound the risk increase associated with this function as permitted by NEI 06-09.
3.3.2 Function 4b – Steam Line Isolation – Automatic Actuation Logic and Actuation Relays	2 trains	Yes		(1) 1 of 2 trains	(1) SAME	SSCs for automatic steam line isolation actuation are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.

Table A5-1: In Scope TS/LCO Conditions to Corresponding PRA Functions

TS LCO/Condition	SSCs Covered by TS LCO/ Condition	SSCs Modeled in PRA	Function Covered by TS LCO/ Condition	Design Success Criteria	PRA Success Criteria	Disposition
3.3.2 Function 4c – Steam Line Isolation – Containment Pressure – High-High	4 channels	Yes		(1) 2 of 4 channels	(1) SAME	SSCs for steam line isolation on containment pressure – high are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.
3.3.2 Function 4d1 – Steam Line Isolation – Steam Line Pressure – Low	2 channels per steam line	Yes		(1) 2 of 3 channels on 1 of 4 steam lines	(1) SAME	SSCs for steam line isolation on steam line pressure – low are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.
3.3.2 Function 5a – Feedwater Isolation – Automatic Actuation Logic and Actuation Relays	2 trains	Yes		(1) 1 of 2 trains	(1) SAME	SSCs for automatic feedwater isolation actuation are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.

Table A5-1: In Scope TS/LCO Conditions to Corresponding PRA Functions

TS LCO/Condition	SSCs Covered by TS LCO/ Condition	SSCs Modeled in PRA	Function Covered by TS LCO/ Condition	Design Success Criteria	PRA Success Criteria	Disposition
3.3.2 Function 5b – Feedwater Isolation – Steam Generator (SG) Water Level – High-High (P-14)	3 channels per SG	No				SSCs for feedwater isolation actuation on SG water level – high-high can be evaluated by a bounding assessment assuming unavailability of the associated SG low level actuation of AFW (TS 3.3.2 Function 6d1) as permitted by NEI 06-09.
3.3.2 Function 6b – Auxiliary Feedwater (AFW)– Automatic Actuation Logic and Actuation Relays	2 trains	Yes		(1) 1 of 2 trains	(1) SAME	SSCs for automatic AFW actuation are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.
3.3.2 Function 6d1 and 6d2 – AFW – SG Water Level – Low-Low	3 channels per SG	Yes		(1) 2 of 3 channels on 1 of 4 SGs	(1) SAME	SSCs for AFW actuation on SG water level – low-low are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.
3.3.2 Function 6g – reactor coolant pump (RCP) undervoltage AFW start	2 channels per bus	No				SSCs for AFW actuation on RCP undervoltage can be evaluated by a bounding assessment assuming unavailability of the turbine-driven AFW pump as permitted by NEI 06-09.

Table A5-1: In Scope TS/LCO Conditions to Corresponding PRA Functions

TS LCO/Condition	SSCs Covered by TS LCO/ Condition	SSCs Modeled in PRA	Function Covered by TS LCO/ Condition	Design Success Criteria	PRA Success Criteria	Disposition
3.3.2 Function 7 - refueling water storage tank (RWST) low level residual heat removal (RHR) pump trip	3 channels	No				Note 4
3.4.9 Pressurizer Heaters	2 groups of heaters	No	(1) Maintain RCS subcooling margin			Note 5
3.4.10 Pressurizer safety relief valves (SRVs)	3 SRVs	Yes	(1) Prevent RCS pressure from exceeding safety limit	(1) 3 of 3 SRVs	(1) SAME for limiting anticipated transient without trip (ATWT); 1 of 3 SRVs for non-ATWT scenarios.	SSCs are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria for the limiting ATWT scenarios; other non-ATWT scenarios use realistic success criteria for RCS pressure control consistent with the PRA standards for Capability Category II..

Table A5-1: In Scope TS/LCO Conditions to Corresponding PRA Functions

TS LCO/Condition	SSCs Covered by TS LCO/ Condition	SSCs Modeled in PRA	Function Covered by TS LCO/ Condition	Design Success Criteria	PRA Success Criteria	Disposition
3.4.11 Pressurizer power operated relief valves (PORVs)	3 PORVs (2 Class I, 1 non-Class I) 3 PORV block valves	Yes	(1) Depressurize RCS (2) Mitigate spurious operation of safety injection system at power (3) No excessive seat leakage	(1) 1 of 2 Class I PORVs open (2) 1 of 2 Class I PORVs open (3) Associated block valve manually closed	(1) SAME or more restrictive (2) SAME (3) SAME	SSCs are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria, and in some cases are more restrictive when the PORVs are used to mitigate some beyond design basis scenarios. The PRA also credits the Non-Class I PORV if it is not failed; this is consistent with the TS bases which identifies that the Non-Class I PORV can be used if it is available.
3.5.1 Accumulators	4 accumulators	Yes	(1) Emergency core cooling system (ECCS) injection during loss-of-coolant accident (LOCA)	(1) 3 of 4 accumulators	(1) SAME for large LOCA scenarios	SSCs are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria for large LOCA scenarios. For medium LOCA scenarios, the PRA success criteria do not require accumulator injection based on realistic analyses consistent with the PRA standards for Capability Category II.

Table A5-1: In Scope TS/LCO Conditions to Corresponding PRA Functions

TS LCO/Condition	SSCs Covered by TS LCO/ Condition	SSCs Modeled in PRA	Function Covered by TS LCO/ Condition	Design Success Criteria	PRA Success Criteria	Disposition
3.5.2 ECCS – Operating	2 Centrifugal charging (CH) pumps (high pressure) 2 SI pumps (intermediate pressure) 2 RHR pumps (low pressure) Associated piping, valves and heat exchangers	Yes	(1) Injection from RWST into cold legs (2) Cold leg recirculation from containment sumps (3) Hot leg recirculation from containment sumps	(1) (a) 1 of 2 CH pumps for small/medium LOCA until RCS depressurized to allow 1 of 2 SI pumps (b) 1 of 2 RHR pumps, SI pumps, and CH pumps for large LOCA (c) 1 of 2 CH pumps for steam generator tube rupture (SGTR) or main steam line break (MSLB) (2) 1 of 2 RHR pumps to supply other required ECCS pumps suction and RCS cold legs (3) 1 of 2 RHR pumps to supply other required ECCS pumps suction and RCS hot legs	(1) (a) small LOCA: 1 of 4 CH pumps or SI pumps into 3 cold legs; medium LOCA: 2 of 4 CH pumps or SI pumps (b) 1 of 2 RHR pumps (c) 1 CH pump or SI pump for SGTR, nonefor MSLB. (2) SAME except injection into 2 cold legs (3) Not required	SSCs are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The PRA success criteria differ from the design basis in: (1) crediting CCPs or SI pumps where the design basis requires one of each to function; (2) not requiring injection into all RCS loops; (3) not crediting mitigation for MSLB events; (4) not requiring hot leg recirculation. Success criteria in PRA are based on plant-specific realistic analyses consistent with the PRA standards for Capability Category II.

Table A5-1: In Scope TS/LCO Conditions to Corresponding PRA Functions

TS LCO/Condition	SSCs Covered by TS LCO/ Condition	SSCs Modeled in PRA	Function Covered by TS LCO/ Condition	Design Success Criteria	PRA Success Criteria	Disposition
3.5.4 RWST	RWST	Yes	(1) Supply borated water to ECCS and CS system during LOCA injection phase for: (a) containment cooling and depressurization, (b) core cooling and replacement inventory, and (c) negative reactivity for reactor shutdown	(1) RWST boron concentration, temperature, and level within limits	(1) SAME	The PRA does not explicitly model the impact of out of limit boron or temperature, but conservatively these can be addressed for the RICT Program by assuming the RWST is unavailable. Therefore, this LCO condition can be evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.
3.6.2 Containment Air Locks	2 air locks (personnel and emergency)	No	(1) post-accident containment leakage within limits			SSCs for the containment air locks can be evaluated by a bounding assessment as permitted by NEI 06-09. The PRA model includes an event which involves a large, pre-existing containment leak; this would be bounding on risk on an inoperable air lock and can be used as a bounding surrogate.

Table A5-1: In Scope TS/LCO Conditions to Corresponding PRA Functions

TS LCO/Condition	SSCs Covered by TS LCO/ Condition	SSCs Modeled in PRA	Function Covered by TS LCO/ Condition	Design Success Criteria	PRA Success Criteria	Disposition
3.6.3 Containment Isolation Valves	2 active or passive isolation devices on each fluid penetration line	Yes	(1) Each containment penetration isolated within the time limits assumed in the safety analyses	(1) 1 of 2 isolation devices per penetration isolate within required stroke time.	(1) SAME for: containment pressure and vacuum relief and containment purge lines; SG blowdown and sample lines; reactor cavity common drain line; RCP seal water return and letdown line; reactor coolant drain tank (RCDT) discharge, vent header, and nitrogen supply lines; and pressurizer relief tank (PRT) nitrogen supply lines. All other penetrations evaluated as not significant sources of fission product leakage and are screened out.	SSCs for containment isolation valves not in the PRA model can be evaluated by a bounding assessment as permitted by NEI 06-09. The PRA model includes an event which involves a large, pre-existing containment leak; this would be bounding on risk on an inoperable isolation valve and can be used as a bounding surrogate. The PRA does not explicitly model the impact of excessive stroke time. This condition can be addressed for the RICT Program by conservatively assuming the inoperable containment isolation valve is unclosable if it is open. Otherwise, the success criteria in the PRA are consistent with the design basis criteria.
3.6.6 CS and Cooling Systems	2 CS trains 5 containment fan cooling units (CFCU)	Yes	(1) Containment atmosphere cooling to limit post-accident pressure and temperature (2) Iodine removal to reduce the release of fission product radioactivity from containment to the environment	(1) 1 of 2 CS trains and 2 CFCUs (2) 1 of 2 CS trains	(1) SAME (2) Not modeled	The SSCs in the TS scope are modeled in the PRA. The iodine removal function of the CS trains is not required for mitigation of severe accidents and is not modeled. (Note 3)

Table A5-1: In Scope TS/LCO Conditions to Corresponding PRA Functions

TS LCO/Condition	SSCs Covered by TS LCO/ Condition	SSCs Modeled in PRA	Function Covered by TS LCO/ Condition	Design Success Criteria	PRA Success Criteria	Disposition
3.7.2 Main Steam Isolation Valves (MSIVs)	4 MSIVs	Yes	(1) Isolate steam flow from the secondary side of the SGs following a high energy line break (HELB)	(1) MSIV on affected steamline closes, or remaining 3 MSIVs on unaffected steamlines close.	(1) SAME or more restrictive	SSCs are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria for a HELB. The PRA also credits MSIV closure for isolation of a ruptured SG, and on 3 of 4 steam lines to prevent RCS overcooling in the event of a failure of the turbine trip function.
3.7.4 Atmospheric Dump Valves (ADVs)	4 ADV lines (one per steam generator, each with ADV and block valve)	Yes	(1) Cool unit to RHR entry conditions, if preferred heat sink via steam dump to condenser not available (2) Cool down RCS following SGTR to permit termination of primary to secondary break flow.	(1) 4 of 4 ADVs to cool down unit at design rate of 100°F per hour; 1 of 4 ADVs permit 25°F per hour cooldown for a natural circulation cooldown event. (2) 3 ADVs on intact steam generator lines.	(1) 1 of 4 ADVs (2) 1 of 4 ADVs on intact steam generator lines	SSCs are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA do not require a maximum rate cooldown capability to mitigate severe accidents, and therefore more realistic criteria are applicable consistent with the PRA standards for Capability Category II.

Table A5-1: In Scope TS/LCO Conditions to Corresponding PRA Functions						
TS LCO/Condition	**SSCs Covered by TS LCO/ Condition**	**SSCs Modeled in PRA**	**Function Covered by TS LCO/ Condition**	**Design Success Criteria**	**PRA Success Criteria**	**Disposition**
3.7.5 AFW System	2 motor-driven pumps and 1 turbine-driven pump	Yes	(1) Supply feedwater to SGs to remove RCS decay heat	(1) 2 motor-driven pumps or 1 turbine-driven pump for the most limiting event (loss of main feedwater)	(1) 1 of 3 pumps	SSCs are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are based on a "better estimate" evaluation which demonstrates any one AFW pump can provide 100% of the feedwater flow required for removal of decay heat from the reactor. This is discussed in the plant-specific TS Bases. The use of more realistic success criteria is consistent with the PRA standards for Capability Category II.
3.7.6 Condensate Storage Tank (CST)	1 CST	Yes	(1) Safety grade source of water to SGs for removing heat from RCS	(1) 1 CST aligned with minimum water volume	(a) SAME	SSCs are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.

Table A5-1: In Scope TS/LCO Conditions to Corresponding PRA Functions

TS LCO/Condition	SSCs Covered by TS LCO/ Condition	SSCs Modeled in PRA	Function Covered by TS LCO/ Condition	Design Success Criteria	PRA Success Criteria	Disposition
3.7.7 Component Cooling Water (CCW) System	2 vital loops	Yes	(1) Heat sink for removal of process and operating heat from safety-related components	(1) 1 of 2 vital loops with 2 of 3 CCW pumps and 1 of 2 heat exchangers	(1) SAME unless successful isolation of unnecessary CCW heat loads	SSCs are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria, but also include credit for operator action to isolate unnecessary CCW heat loads; in this case, only 1 of 3 CCW pumps is required.
3.7.8 Auxiliary Saltwater (ASW) System	2 trains	Yes	(1) Heat sink for removal of process and operating heat from the CCW system	(1) 1 of 2 trains	(1) SAME; however, cross-tie to unaffected unit is also credited.	SSCs are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.
3.8.1 Alternating Current (AC) Sources - Operating	2 offsite circuits 3 diesel generators (DG) 2 supply trains of diesel fuel oil (DFO) transfer system	Yes (in part)	(1) Source of power to engineered safety features (ESF) systems (2) Source of fuel oil to DGs	(1) Automatically power associated ESF busses (2) 1 of 2 trains	(1) SAME (2) SAME	SSCs are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. (Note 6) The success criteria in the PRA are consistent with the design basis criteria.

Table A5-1: In Scope TS/LCO Conditions to Corresponding PRA Functions

TS LCO/Condition	SSCs Covered by TS LCO/ Condition	SSCs Modeled in PRA	Function Covered by TS LCO/ Condition	Design Success Criteria	PRA Success Criteria	Disposition
3.8.4 Direct Current (DC) Sources - Operating	3 Class 1E DC subsytems	Yes	(1) Provide control power to AC emergency power system, motive and control power to selected safety related equipment and backup 120 VAC vital bus power	(1) Aligned to provide power to associated equipment from battery and associated charger	(1) SAME	SSCs are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.
3.8.7 Inverters - Operating	4 Class 1E inverters	Yes	(1) Provide uninterruptible power to reactor protection system (RPS) and ESFAS	(1) Align to associated 120 VAC vital bus, with input power from vital AC and associated battery	(1) SAME	SSCs are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.
3.8.9 Distribution Systems - Operating	Class 1E AC, DC, and 120 volts, alternating current (VAC) vital bus electrical power distribution subsystems	Yes	(1) Provide necessary power to ESF systems	(1) Align to provide power to busses	(1) SAME	SSCs are modeled consistent with the TS scope and so can be directly evaluated using the CRMP. The success criteria in the PRA are consistent with the design basis criteria.

Note 1: The reactor trip function is assumed successful for all fires in the fire PRA which is consistent with NUREG/CR-6850 and satisfies the PRA standard at Capability Category II. This is acceptable since implementation of a RICT requires that at least one train remain functional such that the reactor trip capability will be available, consistent with the assumption in the fire PRA.

Note 2: Individual RTS instrumentation channels for input to the automatic RTS function will be evaluated using a bounding evaluation as permitted by NEI 06-09. The design basis provides for initiation of an automatic reactor trip from two or more signals for any initiating event, and so the failure probability of the automatic RTS function is typically dominated by failure of the common noninstrumentation components in the RTS system. Generic logic will address failure of the automatic trip function when two of two generic RTS signals fail. Any inoperability of one or more channels of a RTS signal will be assumed to result in unavailability of that signal as an input to the automatic RTS function. For the RICT Program, the risk for one or more inoperable instrument channels for one trip signal will be evaluated assuming that one of the two generic RTS signals is unavailable, and crediting only one remaining signal for automatic reactor trip for all initiating events. If two or more RTS signals have inoperable instrument channels, then no credit will be taken for the automatic RTS function by assuming unavailability of both generic RTS signal inputs. This is a bounding conservative risk assessment as permitted by NEI 06-09. It is conservative because: (1) inoperability of any single instrument channel for any RTS function is evaluated as causing the loss of that RTS function even if the remaining channels could actuate a reactor trip; (2) inoperability of any RTS signal is assumed to impact mitigation of all transient and accident conditions, even though only a subset of all initiating events would be impacted; and (3) no credit is taken for automatic RTS actuation for more than two RTS signals for any initiator.

Note 3: The fire PRA does not credit containment sprays or CFCUs.

Note 4: ESFAS Function 7 for RHR pump trip on low RWST level: Any inoperability of this function will be evaluated for the RICT Program by a bounding assessment as permitted by NEI 06-09 assuming the affected RHR pump cannot be aligned for recirculation. This function to protect the RHR pumps if they have not been manually aligned for recirculation when the RWST is empty is not credited in the PRA. This function only provides a plant risk reduction if the operator fails to align recirculation such that by automatically tripping the RHR pumps the operator can then recover the error. Very limited credit for such a recovery action can be justified, such that this function would have an insignificant impact if it were credited.

Note 5: The pressurizer heaters will be evaluated for the RICT Program by a bounding assessment as permitted by NEI 06-09. The function of the heaters is to maintain subcooled conditions in the RCS for decay heat removal using forced or natural circulation. In the PRA, this is addressed by secondary cooling via the

SGs. Inoperability of the pressurizer heaters will be conservatively bounded by assuming secondary cooling is unavailable if there are no pressurizer heaters are available.

Note 6: The 500 kV offsite circuits are only credited for mitigation of internal events.

Table A5-2: Unit 1/Unit 2 In Scope TS/LCO Conditions RICT Estimate	
TS LCO/Condition	**RICT Estimate[1]**
3.3.1 RTS Instrumentation Condition B, One of two manual reactor trip channels inoperable	> 1 year
3.3.1 RTS Instrumentation (Various Conditions) One of two credited automatic RTS functions inoperable	225.2 day
3.3.1 RTS Instrumentation Condition CC, One of two reactor trip breakers inoperable	> 1 year
3.3.1 RTS Instrumentation Condition AA, One of two automatic trip logic trains inoperable	79.3 day[3]
3.3.2 ESFAS Instrumentation Condition B, One of two manual SI channels inoperable	22.7 day[2, 4]
3.3.2 ESFAS Instrumentation Condition D, One of two automatic SI actuation and logic trains inoperable	79.3 day
3.3.2 ESFAS Instrumentation Conditions H, Y, AA, One containment pressure channel inoperable	> 1 year
3.3.2 ESFAS Instrumentation Condition F, One pressurizer pressure channel inoperable	> 1 year
3.3.2 ESFAS Instrumentation Condition F, One steam line pressure channel inoperable	92.8 day
3.3.2 ESFAS Instrumentation Condition D, One of two containment spray automatic actuation logic trains inoperable (Note 2)	79.3 day
3.3.2 ESFAS Instrumentation Condition D, One of two containment isolation Phase A automatic actuation logic trains inoperable	79.3 day[3]
3.3.2 ESFAS Instrumentation Condition D, One of two containment isolation Phase B automatic actuation logic trains inoperable	79.3 day[3]
3.3.2 ESFAS Instrumentation Condition L, One of two steam line isolation automatic actuation logic trains inoperable	79.3 day[3]

Table A5-2: Unit 1/Unit 2 In Scope TS/LCO Conditions RICT Estimate	
TS LCO/Condition	**RICT Estimate[1]**
3.3.2 ESFAS Instrumentation Condition N, One of two feedwater isolation automatic actuation logic trains inoperable	79.3 day[3]
3.3.2 ESFAS Instrumentation Conditions F, R, W, One steam generator water level channel inoperable	> 1 year
3.3.2 ESFAS Instrumentation Condition L, One of two AFW automatic actuation logic trains inoperable	79.3 day[3]
3.3.2 ESFAS Instrumentation Condition T, One RHR pump train trip on RWST low level inoperable	259.7 day
3.4.9 Pressurizer Heaters B. One pressurizer heater group inoperable	(Note 5)
3.4.10 Pressurizer Safety Valves A. One pressurizer safety valve inoperable	> 1 year
3.4.11 Pressurizer Power Operated Relief Valves (PORVs) B. One PORV inoperable and not capable of being manually cycled	100.3 day
3.4.11 Pressurizer Power Operated Relief Valves (PORVs) C. One block valve inoperable	100.3 day
3.4.11 Pressurizer Power Operated Relief Valves (PORVs) E. Two Class I PORVs inoperable and not capable of being manually cycled	47.3 day
3.4.11 Pressurizer Power Operated Relief Valves (PORVs) F. More than one block valve inoperable	47.3 day
3.5.1 Accumulators A, B. One accumulator inoperable	> 1 year
3.5.2 ECCS – Operating A. One or more trains inoperable AND At least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available	45.8 day
3.5.4 Refueling Water Storage Tank (RWST): A, B, D. RWST inoperble	0.8 day
3.6.2 Containment Air Locks: C. One containment air lock inoperable	7.2 day[2]

Table A5-2: Unit 1/Unit 2 In Scope TS/LCO Conditions RICT Estimate	
TS LCO/Condition	**RICT Estimate[1]**
3.6.3 Containment Isolation Valves: A, B, C. One or more penetration flow paths with one containment isolation valve inoperable	107.4 day[2]
3.6.6 Containment Spray and Cooling Systems: A. One containment spray train inoperable	> 1 year
3.6.6 Containment Spray and Cooling Systems: C. One CFCU inoperable	> 1 year
3.6.6 Containment Spray and Cooling Systems: D. One containment spray train and one CFCU inoperable	> 1 year
3.7.2 Main Steam Isolation Valves (MSIVs): A. One or more steam lines with one MSIV system inoperable in MODE 1	301.6 day
3.7.4 Atmospheric Dump Valves (ADVs): A. One required ADV lines inoperable	> 1 year
3.7.4 ADVs: B. Two required ADV line inoperable	> 1 year
3.7.5 Auxiliary Feedwater (AFW) System: A. One steam supply to turbine-driven AFW pump inoperable	> 1 year
3.7.5 AFW System: B. One AFW train inoperable for reasons other than Condition A	19.4 day
3.7.5 Auxiliary Feedwater (AFW) System: C. One motor-driven AFW pump and one turbine-driven pump steam supply inoperable	1.4 day
3.7.6 (Unit 1) Condensate Storage Tank (CST): A. CST volume not within limit	0.3 day
3.7.7 Component Cooling Water (CCW) System: A. One CCW train inoperable	> 1 year
3.7.8 Auxiliary Salt Water (ASW) System: A. One ASW train inoperable	> 1 year
3.8.1 AC Sources - Operating: A. One required offsite circuit inoperable	17.3 day
3.8.1 AC Sources - Operating: B. One DG inoperable	157.9 day

Table A5-2: Unit 1/Unit 2 In Scope TS/LCO Conditions RICT Estimate	
TS LCO/Condition	**RICT Estimate[1]**
3.8.1 AC Sources - Operating: C. Two required offsite circuits inoperable	17.3 day
3.8.1 AC Sources - Operating: D. One required offsite circuit inoperable and one DG inoperable	4.4 day
3.8.1 AC Sources - Operating: E. Two DGs inoperable	21.8 day
3.8.1 AC Sources - Operating: F. One DFO supply train inoperable	55.4 day
3.8.4 DC Sources - Operating: A. One battery charger inoperable	27.1 day
3.8.4 DC Sources - Operating: B. One battery inoperable	5.7 day
3.8.7 Inverters - Operating: A. One required inverter inoperable	> 1 year
3.8.7 Inverters - Operating: B. Two or more [required] inverters inoperable	> 1 year
3.8.9 Distribution Systems - Operating: A. One or more AC electrical power distribution subsystems inoperable	9.9 day
3.8.9 Distribution Systems - Operating: B. One or more AC vital bus electrical power distribution subsystems inoperable	76.3 day
3.8.9 Distribution Systems - Operating: C. One or more DC electrical power distribution subsystems inoperable	5.9 day

1 Actual results are provided, but RICT is limited to a maximum of 30 days.
2 Large early release frequency (LERF) is the limiting risk metric.
3 Model fails all automatic actuations of ESFAS functions.
4 Model fails all manual actuations of ESFAS functions.
5 Pressurizer heaters are not currently modeled and will be added to CRMP model to support the RICT Program.

References

1. ML071200238, *Final Safety Evaluation for Nuclear Energy Institute (NEI) Topical Report (TR) NEI 06-09, "Risk-Informed Technical Specifications Initiative 4B, Risk-Managed Technical Specifications (RMTS) Guidelines (TAC No. MD4995)*," Letter from Jennifer M. Golder (NRR) to Biff Bradley (NEI), May 17, 2007.

2. NEI 06-09, *Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines, Industry Guidance Document*, Nuclear Energy Institute, Revision 0, November 2006.

Attachment 6

Information Supporting Consistency with Regulatory Guide 1.200, Revision 2

Information Supporting Consistency with Regulatory Guide 1.200, Revision 2

Introduction

NEI 06-09, Revision 0, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," (Reference 1) Section 2.3.4 identifies that the probabilistic risk assessment (PRA) shall be reviewed using the guidance of Regulatory Guide (RG) 1.200, Revision 0 (Reference 2) for a PRA which meets Capability Category II for the supporting requirements (SRs) of the internal events at power PRA standard, and that deviations shall be justified and documented. Section 4.0, Item 3 of the Nuclear Regulatory Commission's (NRC) Final Safety Evaluation (Reference 3) for NEI 06-09 requires the license amendment request (LAR) to include a discussion of the results of peer reviews and self-assessments conducted for the plant-specific PRA models which support the RMTS Program, including the resolution or disposition of any identified deficiencies (i.e., findings and observations from peer reviews). The scope of this information includes the internal events PRA model, and other models for which additional standards have been endorsed by a revision to RG 1.200.

This attachment provides information on the technical adequacy of the Diablo Canyon PRA internal event, internal flood, fire, and seismic models which support the Risk-Informed Completion Time (RICT) Program, in support of the LAR to revise Technical Specifications (TS) to implement NEI 06-09. This information is consistent with the requirements of item 3 of Reference 3, and addresses each PRA model for which a RG 1.200 endorsed standard exists. The information is provided as follows:

Table A6-1	Internal Event PRA Model Peer Review
Table A6-2	Internal Flood PRA Model Peer Review
Table A6-3	Seismic PRA Model Peer Review
Table A6-4	Internal Fire PRA Model Peer Review

Note that other external hazards are not addressed by PRA models, and are further discussed in Attachment 8. Shutdown modes of operation are not in the scope of the RICT Program, and so low power and shutdown PRA models are not addressed. No other PRA standards are endorsed by RG 1.200, Revision 2 (Reference 12).

No changes have been made to the internal event, internal flood, or fire PRA models since the peer reviews that would constitute an upgrade as defined by ASME/ANS RA-Sa-2009, and therefore no additional focused-scope peer reviews are required to support implementation of the RICT Program. Future changes to the DCPP PRA models will be performed consistent with station procedures for design changes, procedure changes, and equipment performance monitoring. This will also include updates to implemented risk informed applications as applicable and appropriate.

Internal Event and Internal Flood PRA

PG&E conducted an internal event and internal flood PRA peer review in December 2012 (Reference 4). The full-scope peer review of these models was performed consistent with RG 1.200, Revision 2, using the current endorsed standard ASME/ANS RA-Sa-2009, "Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications, Addendum A to RA-S-2008" (Reference 5).

The peer review identified facts and observations (F&Os) for SRs of the internal event and internal flood PRA models. These included: findings (F) for elements which did not meet at least Capability Category II of a SR of the standard, suggestions (S) from the peer review team for elements which met the SR but could be improved, and best practices (BP). All F&Os categorized by the peer review team as findings have been either resolved by PRA model revision, including documentation updates, or evaluated in terms of their impact on the RICT Program and dispositioned, as presented in Table 1, Internal Event PRA Peer Review – Findings Resolution, and Table 2, Internal Flood PRA Peer Review – Findings Resolution.

Seismic PRA

Seismic risk is not expected to be a significant contributor to configuration risk calculations of the RICT Program for Diablo Canyon. This is due to the robust seismic design of the plant, such that a very significant seismic event is required to cause any substantial equipment failures. Less significant seismic events which do not result in failure of safety-related equipment or structures are bounded in impact by a plant trip coincident with a loss of offsite power. The design of the safety-related equipment is such that the seismic impact is the same for each safety train, such that it is very likely that seismic failures will be correlated; that is, if the seismic event is of sufficient magnitude to fail one train, it will similarly fail the redundant train, and therefore the impact of out of service equipment to seismic risk is minimal. Further, most large, beyond design basis seismic events result in equipment impacts such that mitigation by the affected equipment is not able to be credited, and so there is no impact on seismic risk calculations for the RICT Program.

A review of the sample RICTs provided in Attachment 5 identified only two cases where the RICT was less than the 30-day backstop and had a seismic contribution above 10 percent of the total risk change in core damage frequency (CDF) and/or large early release frequency (LERF) from all sources (internal, seismic, and fire).

1) The RICT associated with one containment airlock door inoperable has a 7.1-day RICT based on LERF; seismic change in risk contributes about 19 percent of the total risk change. This contribution is due to the bounding assessment made for this case, where it is assumed that the airlock inoperability directly fails containment and results in all core damage sequences becoming large early

releases. The redundant airlock door is functional and provides for containment integrity, so that a realistic calculation would result in a much longer RICT, and the seismic risk contribution would not be significant.

2) The RICT associated with two inoperable diesel generators (DG) has a 21.8 day RICT based on CDF; seismic change in risk contributes about 29 percent of the total risk change. This contribution is due to the assumptions that the seismic event directly fails offsite power circuits such that these cannot be recovered. These assumptions are somewhat conservative, in that repairs to offsite circuits would be attempted, and that other cooling strategies which do not rely on AC power (e.g., turbine-driven AFW pump operation with loss of DC power) are not credited in the seismic PRA. Since simultaneous maintenance on more than one DG is not typical, this TS Condition would most likely only be rarely entered for emergent conditions.

The seismic PRA model uses the internal events model as its basis; this model was separately peer-reviewed in December 2012, as discussed above.

PG&E conducted a seismic PRA peer review in January 2013 (Reference 6). The full-scope peer review, that also included a review of seismic hazard and fragility analyses, was performed consistent with RG 1.200, Revision 2, using the current endorsed standard ASME/ANS RA-Sa-2009. The peer review identified F&Os as described above for the internal event and internal flood PRA peer review. All F&Os categorized as findings have been either resolved by PRA model revision, including documentation updates, or evaluated in terms of their impact on the RICT Program and dispositioned, as presented in Table 3, Seismic PRA Peer Review – Findings Resolution. The seismic hazards and fragilities analyses are currently being updated to incorporate more recent available data and methodologies, as well as specifically addressing the seismic PRA standard requirements. Fragilities were updated for the Turbine Building prior to the peer review, based on initial estimates which suggest that this building is the most risk significant structure from a seismic standpoint. The update of seismic hazards and fragilities for the remaining buildings and equipment is currently expected to be completed in early 2015. The updated methodologies used in the hazards and fragilities analyses were reviewed during the seismic PRA peer review.

For the RICT Program, PG&E proposes to use the existing seismic hazards and fragilities analyses until the update is completed and all peer review F&Os are fully resolved. The existing analyses are robust, and the Diablo Canyon study is specifically identified in the endorsed seismic PRA standard as representing a Capability Category III seismic hazard study (Reference 5, Section 5-2.1 page 218). As noted in the standard, the methodology for seismic PRA has been well established for more than 20 years. The Diablo Canyon analysis is identified in the standard as a basis used to establish the requirements of the seismic PRA standard: Reference 5-26 is cited in several instances in the standard as an acceptable method.

These seismic PRA analyses were previously provided to NRC and reviewed and approved as part of the initial licensing basis for the plant. The Unit 1 full-power Operating License included a condition, in Section 2.C.(7), to require, in part, that PG&E perform a seismic PRA. PG&E submitted a program plan for the seismic design-basis reevaluation, titled the Long-Term Seismic Program (LTSP), which included a description of a PRA model to assess seismic risk. The staff and the Advisory Committee on Reactor Safeguards reviewed and approved a modified version of the LTSP, and PG&E submitted its final report on the Diablo Canyon LTSP, which included a description of the seismic PRA in Chapter 6 or the report. The NRC staff safety evaluation, Supplement 34 to NUREG-0675 (SSER 34) (Reference 10), closing out the DCPP LTSP, stated in part:

> *"As a result of its review, conducted with the assistance of a number of expert consultants, the NRC staff has concluded that, subject to satisfactory analytical substantiation of the confirmatory item discussed below, PG&E has met all aspects of License Condition 2.C.(7) of Facility Operating License DPR-80."*

To resolve the confirmatory item contained in Supplement 34 to NUREG-0675, PG&E performed additional analysis to show that the plant can withstand staff estimates of seismic ground motion that were higher in certain frequency ranges than originally assumed by PG&E in the initial LTSP report studies. The NRC staff safety evaluation closing out the DCPP LTSP confirmatory item was provided to PG&E in a NRC letter dated April 17, 1992 (Reference 11), and stated:

> *"The staff has reviewed these submittals and concurs with PG&E's conclusions. On this basis the staff finds that the confirmatory item from SSER 34 has been satisfactorily resolved."*

Based on the limited impact on RICT calculations from seismic risk contributions, the robustness of the existing seismic PRA methodology, and prior NRC reviews of the acceptability of the seismic PRA, PG&E judges that the existing seismic PRA is acceptable for use in the RICT Program.

<u>Fire PRA</u>

The fire PRA was reviewed in January 2008 as part of the pilot application of the peer review process of NEI 07-12 (Reference 7). The 2008 peer review was conducted against the requirements of the American Nuclear Society (ANS) Standard "FPRA Methodology" ANSI/ANS-58.23-2007 (Reference 8). At the time of this first peer review, certain technical elements of the fire PRA had not been completed. The second phase of the peer review was completed in December 2010 (Reference 9). The 2010 Peer Review was conducted against the requirements of Section 4 of ASME/ANS RA-Sa-2009, the Combined Probabilistic Risk Assessment (PRA) Standard (Reference 5.) The scope of the 2010 review included rereview of elements from the 2008 review which did not meet at least Capability Category II of the standard.

The peer review identified F&Os as described above for the internal event and internal flood PRA peer review.

All F&Os categorized as findings have been either resolved by PRA model revision, including documentation updates, or evaluated in terms of their impact on the RICT Program and dispositioned, as presented in Table 4, Fire PRA Peer Review – Findings Resolution.

All fire PRA related F&Os, except SF-A5-01 against SR SF-A5, have been addressed and dispositioned as closed. SF-A5-01 tracks the implementation (revision of the fire brigade training procedure) of a recommendation related to a fire brigade training requirement dealing with seismically induced fires. This is a documentation item that will not otherwise impact the fire PRA.

Per the 2010 peer review, the fire PRA meets Capability Category II or better in all SRs but two (CF-A1 and FSS-D7). This includes SRs not meeting Capability Category II from the 2008 review, which were within the scope of the 2010 review. The F&Os identifying the deficiencies associated with these two SRs have been addressed, and these two SRs are now considered to be met at Capability Category II or better.

Table A6-1 Diablo Canyon Internal Events PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
IE-A5	IE-A5-01 (Systematic review of each system) IE-A5 not met	F	Closed	There is no evidence in the documentation of a systematic evaluation of every system to assess the possibility of an initiating event occurring due to failure of the system.	This F&O has been resolved by additional reviews; no new or changed initiating events were identified. Each system was screened for potential initiating events. If a system did not screen, it was then reviewed to confirm that a bounding or representative initiating event is already modeled in the PRA. An interview with an Operations representative was conducted to confirm the system screening and to discuss low power or non-power operations for each system. This SR is judged to now be met at Capability Category II, based on the use of a structured approach for evaluation of each system for initiating event potential.
IE-A7	IE-A7-01 (Events which occurred other than at-power) IE-A7 not met Associated SRs: IE-A8 met at Capability Category I IE-A9 met at Capability Category I	F	Closed	The identification of initiating events does not include consideration of events occurring during low-power or shutdown conditions, and events which result in a controlled shutdown leading to a scram prior to reaching low-power conditions as specified in the standard. A review of historical events, plant operating history, and interviews with plant personnel are also required by the standard.	This F&O has been resolved by additional reviews; no new or changed initiating events were identified. A rereview of plant information in the Twice-Daily Shift Manager Turnover Reports, On-line/Off-line Daily Log, and Outage History was conducted to identify potential initiating events. Low power and non-power operation events were discussed as part of the system screening performed to resolve F&O IE-A5, discussed above. This SR is judged to now be met, based on consideration of shutdown and low power events and unplanned shutdowns. Associated SRs IE-A8 and IE-A9 are also judged to be met at Capability Category II

Table A6-1 Diablo Canyon Internal Events PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
					based on interviews having been conducted, and on review of operating history for precursor events.
IE-C5	IE-C5-01 (Initiating event frequency based on a reactor year basis) IE-C5 not met	F	Open	Initiating event frequencies are converted to events per calendar year by multiplying by the site critical hours per calendar year factor calculated from site operating experience, instead of a unit-specific factor as required by the standard. This distinguishes differences in the plant units' operating experience.	This F&O has no impact the RICT Program. In accordance with Note 1 of Table 2.2.1-4(c) of the PRA standard (Reference 5), weighting of initiating event frequencies by the fraction of the year the plant was actually operating is not applicable to configuration risk management applications. The CRMP used for RICT Program calculations will not use any weighting factors since the RICT calculations assume the plant is operating. Therefore, resolution of this F&O would not impact the calculations of risk changes for the RICT Program.
IE-C10	IE-C10-01 (Combination of component failure with the unavailability of other components) IE-C10 met	F	Open	Use of plant specific information, including common cause failure (CCF) treatment, plant-specific data, repair times, and the applicability of mitigating function success criteria in the initiating event fault tree was not evident.	This F&O will be resolved by additional review and model update if required. A summary review of the initiating event fault trees indicates that plant-specific information, including CCF treatment, plant-specific data, repair times, and the applicability of the mitigating function success criteria are currently used in the PRA model. A detailed review will be performed and documented to confirm that all the required plant-specific information is included in the initiating event fault trees.
IE-C14	IE-C14-01 (Interfacing systems loss-of-coolant accident (ISLOCA)	F	Open	There is no documented systematic review of all containment penetrations for potential	This F&O has no impact on the RICT Program. A systematic review of containment

Table A6-1 Diablo Canyon Internal Events PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
	frequency) IE-C14 not met			ISLOCAs, including identification of screened penetrations and the basis for screening, and relevant surveillance test procedures and their impact on the potential for an ISLOCA.	penetrations for potential ISLOCA initiators was performed as part of the fire PRA development, and no new ISLOCA initiators were identified. The criteria for fire-induced ISLOCA are more conservative than for internal events, so the evaluation is bounding. Updating the documentation to disposition each containment penetration would not impact the calculations of risk changes for the RICT Program.
IE-C15	IE-C15-01 (Uncertainty associated with initiating events) IE-C15 not met Associated SR: IE-C1 met	F	Open	No discussion of uncertainty parameters for initiating event fault trees was identified.	This F&O has no impact on the RICT Program. Updating documentation to include a characterization of uncertainty parameters for initiating event fault trees would not impact the calculations of risk changes for the RICT Program.
IE-D1	IE-D1-01 (Documentation) ID-D1 not met Associated SRs: IE-D2 not met IE-D3 not met AS-C1 not met SY-C1 not met DA-E1 not met QU-F1 not met	F	Open	The documentation is not written in manner that facilitates PRA applications, upgrades, and peer review. The peer review team identified that the existing documentation heavily references the original DCPP PRA documents, especially PLG-0637. This makes it difficult to understand details of the model, difficult to confirm that the model addresses PRA requirements, and difficult to update and use it for PRA applications. This finding applies to other elements of the standard besides IE.	This F&O has no impact on the RICT Program. Updating documentation to address the clarity of information and references made to the original PRA basis document would not impact the calculations of risk changes for the RICT Program.

Table A6-1 Diablo Canyon Internal Events PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
	LE-G1 not met IFPP-B1 not met IFSO-B1 not met IFSN-A5 met IFSN-B1 not met IFQU-B1 met				
IE-D2	IE-D2-01 (Documentation) IE-D2 not met Associated SRs: IE-A3 met IE-A10 met IE-B3 met at Capability Category II IE-C2 met IE-C3 met IE-C4 met IE-C8 met IE-C9 met IE-C10 met IE-C12 met IE-D1 not met	F	Open	The peer review team identified specific examples of deficiencies in the documentation of initiating events which need to be addressed, including specific references missing, addressing dual unit loss of instrument air as an initiating event, identification of "freeze dates," identification of credited operator recovery actions, details of uncertainty parameters and Bayesian updating of data, details of initiating event fault trees (see IE-C10-01), and comparison to generic data sources.	This F&O has no impact on the RICT Program. Updating the documentation for specific information which is unclear or needs correction to address specific requirements of the standard would not impact the calculations of risk changes for the RICT Program.

Table A6-1 Diablo Canyon Internal Events PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
AS-A11	AS-A11-01 (Transfer between event trees and preserving dependencies) AS-A11 met	S	Open	This F&O is a suggestion that the event tree transfers would be more easily followed if they were explicitly given in the event trees.	This F&O has no impact on the RICT Program. Updating documentation as per this suggestion F&O to improve the clarity of documentation related to transfers between event trees in the PRA logic would not impact the calculations of risk changes for the RICT Program.
AS-B3	AS-B3-01 (Phenomenological conditions created by accident progressions) AS-B3 not met Associated SRs: AS-B3 not met SY-A18 met SY-A21met SY-A23 met SY-B14 (met)	F	Open	There does not appear to be a review of phenomenological conditions created by each accident sequence; thus, there may be nonsafety-related components that are affected by an accident sequence that were not reviewed for the accident impact on the functionality of the component.	This F&O will be resolved by additional evaluation and model updates. A review of the nonsafety-related components credited in the PRA will be conducted to ensure unqualified components are not being improperly credited for mitigation of initiating events which may involve harsh environments. Upon resolution of this F&O, SR AS-B3 will be met.
AS-B7	AS-B7-01 (Time-phased dependencies) AS-B7 met	F	Open	Time-phased dependencies were found to be modeled in the accident sequences (e.g., AC power recovery and DC battery depletion). However, the documentation has inconsistencies that need to be resolved.	This F&O has no impact on the RICT Program. It has been confirmed that the modeling is consistent and correct for time-phased dependencies. Updating documentation to ensure consistency of the details related to time-phased dependencies would not impact the calculations of risk changes for the RICT Program.

Table A6-1 Diablo Canyon Internal Events PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
AS-C2	AS-C2-01 (Documenting processes used to develop accident sequences) AS-C2 not met	F	Open	The processes used to develop accident sequences are not sufficiently documented, as noted in F&Os AS-A11-01 and AS-B7-01, which identify issues related to the documentation of the accident sequence analyses.	This F&O has no impact on the RICT Program. Updating documentation to improve the clarity of the accident sequence documentation would not impact the calculations of risk changes for the RICT Program.
SC-A1	SC-A1-01 (Definition of core damage) SC-A1 not met Associated SR: SC-A2 not met	F	Closed	Two definitions of core damage are used in the documentation. The first definition, peak node temperature >1800°F, is a valid success criterion, and meets the definition in Section 1-2 of the standard. However, the second criterion of "the time until the water level is collapsed below the top of active fuel" is not a valid definition since the definition of core damage as written in Section 1-2 requires the consideration of uncovery and heat-up, and this definition does not consider heat-up.	This F&O has been resolved by further evaluation; no PRA model changes were required. In some cases, the core uncovery definition of core damage was used as the end point in the timing analysis for the Human Reliability Analysis (HRA). The use of core uncovery instead of peak clad temperature results in a slightly conservative estimate of the time available to accomplish an action, which potentially results in slight conservatism in the calculated human error probabilities. This conservatism is acceptable for the RICT Program calculations.
SC-A4	SC-A4-01 (Shared systems between units) SC-A4 not met	F	Closed	The identification of shared systems between the units and how they are credited is not documented. For example, no discussion on the Diesel Fuel Oil (DFO) Transfer System is provided, although it is a known shared system. This is significant to ensure that a shared system is not inadvertently credited for both units simultaneously if the system does not have that capacity.	This F&O has been resolved by further evaluation; no PRA model changes were required. A review of the mitigating systems credited in the PRA model for dual-unit initiators identified only the DFO Transfer System as a shard mitigation system not specifically evaluated. Other shared systems were identified correctly. The model correctly credits the DFO system with consideration made that both units are impacted.

Table A6-1 Diablo Canyon Internal Events PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
					With this F&O resolved, SR SC-A4 is met.
SC-A5	SC-A5-01 (Mission times) SC-A5 not met	F	Open	No discussion could be found that verified that each accident sequence actually reached a safe stable state at the minimum specified mission time of 24 hours.	This F&O will be resolved by a model change. The condensate supply has a 20-hour capacity, and therefore a supplemental water supply for auxiliary feedwater (AFW), or other decay heat removal method (such as residual heat removal (RHR) or sump recirculation (for loss-of-coolant accident (LOCAs)) would be required. With this F&O resolved, along with additional F&O SC-A5-02 (see below), SR SC-A5 is met at Capability Category II/III.
SC-A5	SC-A5-02 (Mission times) SC-A5 not met	F	Open	Several accident sequences were identified where RHR entry conditions were met prior to 24 hours, but RHR was not required for success in the accident sequence. If RHR is not questioned, then the end state may not be stable since heat removal via the steam generators (SGs) will be diminished as decay heat lowers, and RHR will be required to maintain temperatures long term.	See response to F&O SC-A5-01 (above).
SC-B3	SC-B3-01 (LOCA break sizes) SC-B3 not met Associated SRs: SC-B1 met at Capability Category II	F	Open	The current success criterion for LOCAs is based on plant capabilities and system responses. The specific break sizes associated with the transitions between the LOCA definitions have not been adequately justified by specific thermal-hydraulic evaluations.	This F&O will be resolved by an update to initiating event frequencies. Additional analyses have been performed and break sizes have been identified. The medium LOCA transition size will be updated, and the frequencies of LOCAs adjusted. Upon resolution of this F&O, and additional

Table A6-1 Diablo Canyon Internal Events PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
	IE-B4 met IE-C1 met IE-C13 met at Capability Category I/II				F&O SC-B3-02 (below), the SR SC-B3 will be met.
SC-B3	SC-B3-02 (ISLOCA sizes) SC-B3 not met Associated SR: SC-B1met at Capability Category II	F	Open	The thermal-hydraulic analysis for ISLOCA referenced for the success criteria validation is based on an 8-inch break size, and not on a 2-inch break size. The use of an 8-inch break size is inappropriate because the required equipment and timing associated with responding to a 2-inch break would be significantly different than the required equipment and timing associated with an 8-inch break. In addition, the RHR pumps are assumed to be unavailable based on conservative assumptions related to the effects of the ISLOCA; more realistic assumptions should be applied.	This F&O will be resolved by conducting additional analyses to validate or revise the current ISLOCA break sizes and corresponding success criteria and plant impacts. Documentation will be updated to properly identify and validate assumptions on impacts to the RHR pumps. Upon resolution of this F&O, and additional F&O SC-B3-01 (above), the SR SC-B3 will be met.
SC-B4	SC-B4-01 (Define large break LOCAs) SC-B4 met	F	Closed	The analysis code used to establish success criteria has known limitations with respect to its modeling of large LOCAs. The limitations of the code are not summarized anywhere in the analyses, so it is not clear that the limitations of the code were considered when developing the success criteria.	This F&O has been resolved by additional reviews; no model updates were required. The success criteria from the design basis analysis are consistent with the PRA success criteria for large LOCAs.
SC-B4	SC-B4-02 (Anticipated Transient	F	Open	The discussions associated with the ATWT scenarios and the success criteria for	This F&O will be resolved by additional evaluation and model updates as required to

Table A6-1 Diablo Canyon Internal Events PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
	Without Trip (ATWT) definition) SC-B4 met			ATWT are not consistent in the documentation with regards to parameters relevant to ATWT events. The actual criteria for plant-specific ATWT conditions needs to be defined, justified, and evaluated for system response required to mitigate the ATWT.	the ATWT model to ensure the correct parameters are used to establish the plant response to these events.
SC-B5	SC-B5-01 (Crediting power-operated relief valves (PORVs) for depressurization when AFW not available) SC-B5 met	F	Open	In the documentation of the comparison of success criteria to similar plants, one outlier was noted in the success criteria for a small LOCA without Auxiliary Feedwater (AFW) available. This is assumed to result in core damage, but the use of PORVs to depressurize and cooldown is credited at similar plants. The basis for not crediting the use or PORVs is not documented, and discussions with plant PRA personnel did not identify any reason that the PORVs could not be credited at Diablo Canyon.	This F&O has no adverse impact on the RICT Program. The issue is conservatism in the success criteria applied to small LOCAs in not crediting feed-and-bleed cooling when AFW is not available. This will result in shorter RICTs for AFW, which is acceptable.
SC-C2	SC-C2-01 (Unclear process of developing success criteria) SC-C2 not met	F	Open	The process followed for developing the success criteria for each accident scenario is not clearly documented. For example, there are two definitions of core damage used, the basis for the timing of human actions is not clear (two criteria used - but nothing showing why both are acceptable), the limitations of the software used for the success criteria is not documented, etc.	This F&O has no impact on the RICT Program. Updating the documentation to clarify the basis for success criteria would not impact the calculations of risk changes for the RICT Program.
SC-C3	SC-C3-01(Documenting sources	F	Closed	A review of many of the PRA elements identified that there was no summarization	This F&O has been resolved by a documentation update. Each PRA element

Table A6-1 Diablo Canyon Internal Events PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
	of uncertainty) SC-C3 not met Associated SRs: IE-D3 not met SY-C3 not met			of the sources of uncertainty or assumptions associated with the individual PRA element.	calculation has been reviewed and the assumptions and sources of uncertainty have been documented. With this F&O resolved, SC-C3 is met.
SY-A4	SY-A4-01 (Walkdowns and interviews) SY-A4 not met	F	Open	Neither plant walkdowns nor interviews with knowledgeable plant personnel were performed to confirm that the systems analysis correctly reflects the as-built/as-operated plant.	This F&O has no adverse impact on the RICT Program. The Diablo Canyon system models were prepared by industry and in-house experts in 1988. Since the original development, the system models have been updated and upgraded to reflect the as-built/as-operated plant based on routine review of procedure changes, design changes, equipment reliability data, and other inputs. The models and their technical elements have been continuously refined through their use in various risk-informed applications. Numerous walkdowns for fire and seismic PRA development have been performed over the past five years, and no evidence that the system analyses differ from the as-built/as-operated plant have been identified. Based on the maturity of the system models and their ongoing application at the plant, it is judged unlikely that additional walkdowns or interviews would identify significant deficiencies requiring model updates, and that the current system models reasonably reflect

Table A6-1 Diablo Canyon Internal Events PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
					the as-built/as-operated plant condition and configuration. Therefore, resolution of this F&O would not impact the calculations of risk changes for the RICT Program.
SY-A11	SY-A11-01 (Failures to run in first hour)	S	Closed	Failures to run in first hour (rather than over the entire 24-hour mission time) were not addressed by creating a new basic event. This could lead to model update issues.	This F&O has no impact on the RICT Program. This suggestion F&O is concerned with ease of model update. A review confirmed that the failure to run probability is properly handled in the PRA model (for example, there are separate basic events for the DGs for failure to run for the first two hours and failure to run over the 24-hour mission time). Therefore, this suggestion would not impact the calculations of risk changes for the RICT Program.
SY-A16	SY-A16-01 (Modeling of pre-initiators) SY-A16 not met) Associated SR: HR-A1not met	F	Open	No pre-initiator human failure events (HFEs) are modeled in the AFW system model. Since AFW is a standby system, at least one pre-initiator HFE (e.g., failure to restore pump after maintenance or testing) is expected to be in the model.	See F&O HR-A1-01 (below.) Upon resolution of this F&O, and additional F&O HR-A1-01 (below), the SR SY-A16 will be met at Capability Category I/II.
SY-A20	SY-A20-01 (Simultaneous unavailability of redundant structures, systems, and components (SSCs)) SY-A20 not met	F	Closed	Simultaneous unavailability of redundant safety-related equipment due to a planned activity is excluded from consideration, consistent with TS 3.0.3 restrictions. This assumption is probably not appropriate for nonsafety-related equipment, whose unavailability is not restricted by TS. An example of this is multiple instrument air	This F&O has been resolved by examination of the maintenance schedules and update of documentation. However, it has no impact on the RICT Program because it only impacts the average annual CDF and LERF results. The RICT calculations are based on the actual configuration of the plant at the time the TS action is applicable, and reflects all

Table A6-1 Diablo Canyon Internal Events PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
				compressors concurrently out of service.	unavailable equipment including outages of redundant trains when applicable.
SY-A23	SY-A23-01 (Consistent system model nomenclature) SY-A23 met	F	Open	Consistent system/component failure mode nomenclature is used in all system notebooks, except the AFW notebook.	This F&O has no impact on the RICT Program. Changing nomenclature to achieve consistency would not impact the calculations of risk changes for the RICT Program.
SY-B3	SY-B3-01 (CCF groups) SY-B3 not met	F	Open	No documentation was found for the CCF group definition for the Safety Injection (SI) top event. For other systems, CCF groups appear to generally be defined inside of RISKMAN files but not in the documentation.	This F&O has no impact on the RICT Program. CCFs of the SI system components were confirmed to be modeled and common-cause groups are defined within the model. Therefore, it is judged that SR SY-B3 is met. The common cause groups are not documented in the system notebook. Updating the documentation of the CCF group definition for the SI system would not impact the calculations of risk changes for the RICT Program.
SY-B8	SY-B8-01 (Spatial and environmental hazards impacting multiple SSCs) SY-B8 not met Associated SR: SY-B14 met	F	Closed	No discussion of spatial and environmental dependencies, or room heatup and dependence on heating, ventilation and air conditioning (HVAC) could be found in the sampled system notebooks. The peer review team subsequently identified additional documentation that was available to potentially address these gaps.	This F&O has been closed with no action taken. Documentation of the effects of room heatup is available and references plant specific room heatup calculations. These results are not reiterated within the individual system notebooks but system modeling is consistent with the room heatup calculations.
SY-B10	SY-B10-01 (Modeling of	F	Open	The treatment of permissives and interlocks	This F&O will be resolved by a review of each

Table A6-1 Diablo Canyon Internal Events PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
	permissive and interlocks) SY-B10 not met			could not be located in the system notebooks.	system for permissives and interlocks affecting system operation, and updates to the system model if required. Upon resolution of this F&O, the SR SY-B10 will be met at Capability Category II/III.
SY-B15	SY-B15-01 (Inter-system operator dependencies) SY-B15 not met	F	Open	Human actions that had the potential to impact multiple trains of a given system (miscalibration) and actions from one system that could impact the function of another system are not addressed.	This F&O will be resolved by a model update. A review of system models for potential cross-train and cross-system pre-initiators and adverse impact from credited operator actions on other systems has been performed to identify additional pre-initiator events, which will be incorporated into the model. Upon resolution of this F&O, the SR SY-B15 will be met.
SY-C2	SY-C2-01 (Documentation) SY-C2 not met Associated SRs: SY-A22 met at Capability Category II SY-B1 met SY-B3 not met SY-B6 met SY-B7 met at Capability Category II SY-B9 met	F	Open	The peer review team identified specific examples of deficiencies in the documentation of system models which need to be addressed, including documenting assumptions, references, HVAC dependencies, success criteria and timing, and discussion of available inventories of air, power, and cooling to support the mission time.	This F&O has no impact on the RICT Program. Updating the documentation to address specific examples of missing information would not impact the calculations of risk changes for the RICT Program.

Table A6-1 Diablo Canyon Internal Events PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
	SY-B11 met				
HR-A1	HR-A1-01 (Pre-initiator events) HR-A1 not met Associated SRs: HR-A2 not met SY-A16 not met	F	Open	The identification of pre-initiator HFEs based on whether the procedure or practice involves realignment or calibration should be performed before screening processes are applied.	This F&O will be resolved by a model update. A review of the pre-initiator event screening, including a review of applicable plant procedures, procedure quality, and system configurations, has been completed to identify realignment and calibration activities which could result in system unavailability due to human error. Additional pre-initiator events have been identified and quantified consistent with requirements of the PRA standard. These new pre-initiator events will be added to the PRA model. Upon resolution of this F&O, and additional F&Os HR-A3-01, HR-C3-01, and HR-D3-01 (below), the SR HR-A1 will be met.
HR-A3	HR-A3-01(Pre-initiator events) HR-A3 met	F	Open	Pre-initiator HRA screening criteria could remove restoration errors prematurely. If a system or train is automatically actuated following an event, then a restoration error of manual valves in the flow path could be missed. Examples include mispositioning of a valve in the standby Component Cooling Water (CCW) pump train if it receives an automatic start signal on low header pressure and misposition of a valve in SI pump train if the valve does not automatically open on an engineered safety	See resolution of HR-A1-01.

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SR	Topic	F&O Level	Status	Finding	Disposition
				features actuation system (ESFAS) signal.	
HR-C3	HR-C3-01 (Consideration of miscalibration) HR-C3 not met	F	Open	The pre-initiator HRA documentation discusses the reasons for not including common miscalibration, but the standard requires inclusion of such miscalibration events.	See resolution of HR-A1-01. Upon resolution of this F&O, and additional F&Os HR-A1-01 (above), HR-A3-01 (above), and HR-D3-01 (below), the SR HR-C3 will be met.
HR-D3	HR-D3-01 (Pre-initiator HFEs) HR-D3 met at Capability Category I	F	Open	The detailed discussion of pre-initiator HFEs does not discuss the quality of procedures, administrative controls, or man-machine interface (MMI) requirements in performing the assessments.	See resolution of HR-A1-01. Upon resolution of this F&O, and additional F&Os HR-A1-01, HR-A3-01, and HR-C3-01 (above), the SR HR-D3 will be met at Capability Category II/III.
HR-E1	HR-E1-01 (Crediting manual verification steps when automatic actuation failed) HR-E1 met Associated SR: SY-A17 met	F	Open	Operator actions associated with starting pumps or aligning valves are not credited even when the Emergency Operating Procedures (EOP) specifically states "Verify" pump started or "Verify" valve open/closed. In the event the automatic signal fails to start the pump or align the valve, credit should be taken for the operator backing up the automatic signal.	This F&O does not adversely impact the RICT Program. Additional credit of human action to operate equipment when automatic actuation fails would typically decrease risk and increase calculated RICTs, so the current PRA model is conservative for the RICT Program.
HR-E3	HR-E3-01 (Consistent interpretation of procedures) HR-E3 met at Capability Category I	F	Open	There is no discussion in the HRA documentation on how the specific scenarios discussed in operator talk-throughs were selected, the questions posed to the operators, the entire sequence of procedures followed in the response to the accident sequence, etc. Actual operator	This F&O does not adversely impact the RICT Program. Based on the maturity of the models and their ongoing application at the plant, it is judged unlikely that additional talk-throughs of procedures would identify a mis-interpretation of a procedure which would require an update affecting the human error

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SR	Topic	F&O Level	Status	Finding	Disposition
				interview sheets are not included; only a summary of the discussion is provided. Without having the basis for why the scenarios discussed were selected, it is not possible to ensure that the most risk-significant or important operator actions were discussed. Additionally, without the operator interview sheets it is not possible to verify what the operators/trainers said, and that the responses were taken in context.	probabilities, and that the current system models reasonably reflect the as-built/as-operated plant condition and configuration. Therefore, resolution of this F&O would not impact the calculations of risk changes for the RICT Program. This SR HR-E3 is judged met at Capability Category II based on actual talk-throughs conducted as documented by the peer review team comments.
HR-E4	HR-E4-01 (Confirming response models via simulator observations or talk-throughs) HR-E4 met at Capability Category I	F	Open	Talk-throughs performed with Operations and Training personnel do not address confirming that the response models (i.e., thermal-hydraulic analysis codes) used to support the PRA are realistic. Additionally, no documentation of the use of simulator observations to confirm the response models can be found.	This F&O does not adversely impact the RICT Program. The most recent talk-through with operators does not include discussion of the reasonableness of response models; however, previous talk-throughs did confirm the results of such analyses. Many different talk-throughs of accident scenarios have been performed since the original development of the PRA in 1988 that confirm the accuracy of the accident response models. Based on the maturity of the PRA models and supporting analyses for the HRA timing, it is judged unlikely that additional talk-throughs or simulator observations would identify any significant deficiencies in these analyses, which would require an update affecting the human error probabilities. This SR HR-E4 is judged met at Capability Category II based on actual talk-throughs conducted as documented by the peer review

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SR	Topic	F&O Level	Status	Finding	Disposition
					team comments.
HR-G5	HR-G5-01 (Verification of the time estimates in HRA via observation of simulator or walk-throughs) HR-G5 met at Capability Category II Associated SRs: HR-E3 met at Capability Category I HR-E4 met at Capability Category I	F	Open	For some HFEs, no basis for the required time to perform the action is provided.	This F&O has no impact on the RICT Program. A review confirmed that time-critical operator actions and risk significant HFEs are based on actual time-motion runs and/or talk-throughs, which is not identified in the documentation, but is consistent with the standard at Capability Category II. Therefore, resolution of this F&O would not impact the calculations of risk changes for the RICT Program.
HR-G6	HR-G6-01 (Combining identical HFEs) HR-G6 met	F	Open	Two HFEs appear to be essentially identical with the same human error probability (HEP). These two should be combined into one HFE, since the use of both could adversely affect the HRA dependence analysis and the impact of the state of knowledge correlation in the quantified results.	This F&O has no impact on the RICT Program. A review confirmed that the two identical HFEs are within the same top event and are used exclusively of each other; therefore, the dependency analysis and model results are not impacted. Therefore, resolution of this F&O would not impact the calculations of risk changes for the RICT Program.
HR-G7	HR-G7-01 (HFE dependencies) HR-G7 not met	F	Open	The HFE dependency documentation does not list a set of operator actions that were evaluated or how the dependence between actions is determined. The process to identify and evaluate HFE dependencies does not seem to provide a thorough means	This F&O will be resolved by developing an updated HFE dependency analysis consistent with SR HR-G7. Upon resolution of this F&O, the SR HR-G7 will be met.

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SR	Topic	F&O Level	Status	Finding	Disposition
				for identifying and accounting for dependent human actions.	
HR-H2	HR-H2-01 (Staffing level assumed in HRA) HR-H2 met	F	Closed	The staffing levels credited in the HRA include personnel not on-site 24-hours, 7-days a week, but are available via call-in – so they should not be credited for shorter term responses. Additionally, minimum Operations staffing levels should be used when evaluating the post-initiator recovery actions.	This F&O has been resolved by a documentation update; no model changes were required. All HFEs were reviewed and updated to reflect actual on-site staffing levels. There were no impacts to the probabilities of existing HFEs.
HR-I2	HR-I2-01 (Documentation)	S	Open	The peer review team identified specific examples of deficiencies in the documentation of HRA which need to be addressed, including assumption of normal instead of minimum staffing levels, use of multiple procedures, editorial corrections, and significant digits in the HEPs.	This F&O will be resolved by a documentation update.
HR-I2	HR-I2-02 (Estimation of HEPs)	S	Closed	A screening value is used for Post-Initiator Event ZHEAS6 (Failure to close Header Cross Tie Valves, FCV-495 and FCV-496.) This HFE is used in many accident sequences, including ISLOCA accident scenarios. The number of these scenarios and their use in ISLOCAs indicate that they are relatively significant events which should not use a screening value.	This F&O has been resolved by additional review; no model changes were required. A review confirmed that Event ZHEAS6 is not a significant HFE from a risk importance standpoint and use of a screening value is therefore consistent with the standard.
DA-C1	DA-C1-01 (Use of the latest industry documentation for SSC failure rate, CCF, and offsite	F	Open	It is not evident that recognized sources are utilized for CCF and off-site power recovery	This F&O will be resolved by additional review and data update if necessary. The generic source of CCF data will be updated to use the

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SR	Topic	F&O Level	Status	Finding	Disposition
	power recovery) DA-C1 not met			data.	NRC "CCF Parameter Estimation, 2010 Update." Offsite power recovery data will be reviewed and updated as necessary. Upon resolution of this F&O, SR DA-C1 will be met.
DA-C4	DA-C4-01 (Basis for identification of an event as a failure) DA-C4 not met Associated SR: DC-C3 not met	F	Open	A clear basis for the identification of events as failures has not been developed. Also, no evidence was found that degraded states were distinguished as being applicable (or not) as failures.	This F&O has no significant impact on the RICT Program. This finding is related to the documented definition of a plant-specific component failure when compiling plant reliability data. The documentation will be updated to define the basis for failures, and a rereview of the plant data and failure events will be conducted to confirm no improperly counted failure events. Based on the maturity of the models and their ongoing application at the plant, it is judged unlikely that significant deficiencies requiring model updates will be identified due to any change in the definition of a failure, and that the current system models reasonably reflect the as-built/as-operated plant condition and configuration. Therefore, resolution of this F&O is not expected to impact the calculations of risk changes for the RICT Program.
DA-C5	DA-C5-01 (Documenting evaluation of failure events) DA-C5 not met	F	Open	Documentation is inadequate to confirm whether component failures occurring close in time are separately counted.	This F&O has no significant impact on the RICT Program. This finding is related to the documented evaluation of failures occurring close in time when compiling plant reliability data. The documentation will be updated to include reference to the Maintenance Rule methodology. Only a single example of such failures has been identified, so it is judged to

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SR	Topic	F&O Level	Status	Finding	Disposition
					not be a significant issue with plant data. Therefore, resolution of this F&O is not expected to impact the calculations of risk changes for the RICT Program.
DA-C6	DA-C6-01 (Removing post-maintenance events from demand counts) DA-C6 met	F	Open	Some post-maintenance tests have been included in the accounting of demands and operating hours for plant-specific data, which conflicts with the standard.	This F&O will be resolved by a model update. Data analysis was reviewed and post-maintenance testing demands were removed from the counts. Updates to the impacted failure probabilities in the model will be made.
DA-C10	DA-C10-01 (Planned coincident unavailability) DA-C10 not met	F	Closed	There was no discussion regarding counting of successful demands when components are decomposed into sub elements.	This F&O has no impact on the RICT Program. The documentation for plant-specific data will be updated to identify any component sub elements which may have unique demand counts. Updating documentation for data collection would not impact the calculations of risk changes for the RICT Program.
DA-C14	DA-C14-01 (Planned coincident unavailability) DA-C14 not met Associated SR: SY-A20 not met	F	Closed	No assessment of routine planned maintenance activities for multiple component unavailabilities, or documentation that Maintenance Rule practices do not allow for routine instances of multiple trains or equipment being unavailable, were identified in the documentation.	Refer to F&O SY-A20-01.
DA-C16	DA-C16-01 (Disposition of plant-specific loss-of-offsite power	F	Open	Plant specific LOOP events are not identified in the documentation.	This F&O has no impact on the RICT Program. The finding is related to gaps in documentation of the disposition of plant-

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SR	Topic	F&O Level	Status	Finding	Disposition
	(LOOP) events) DA-C16 met				specific LOOP events used in determining the initiating event frequency. A review of the LOOP initiator frequency determined that plant-specific LOOP events are properly considered in the determination of initiating event frequency. Therefore resolution of this F&O would not impact the calculations of risk changes for the RICT Program.
DA-D4	DA-D4-01 (Tests and check of data updates) DA-D4 met at Capability Category II/III Associated SR: DA-E1 not met	F	Open	The peer review team identified specific examples of deficiencies in the documentation of data which need to be addressed, related to Bayesian update data checks.	This F&O has no impact on the RICT Program. The finding is related to documentation of various reasonableness checks of data which is subject to Bayesian updating. A review of the data determined that the checks would be satisfactory such that the data is valid. Documentation of these checks would not impact the calculations of risk changes for the RICT Program.
DA-D6	DA-D6-01 (Documenting method and references in data calculation) DA-D6 met at Capability Category III	F	Closed	NUREG/CR-5485 was used for CCF methodology; however this is not listed as a reference or in discussions in the calculation.	This F&O has been resolved by a documentation update to include the applicable reference to NUREG/CR-5485 for the generic data source for CCF.
DA-D8	DA-D8-01 (Documenting evaluation of design changes on impact on data) DA-D8 not met	F	Closed	No documentation of analysis done on impact on data of design changes (such as recirculation sump screen design change notices (DCNs), or new charging pump DCNs) could be found in the data calculation.	This F&O has been resolved with no action taken. The evaluation of the potential impact to PRA data due to DCNs are made as part of the design change process and documented during the design change process. On a routine basis as part of model maintenance, all design changes since the last model update are rereviewed for impacts on the

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SR	Topic	F&O Level	Status	Finding	Disposition
					model. Based on the documented evaluation of DCNs, SR DA-D8 is judged to be met at Capability Category II since plant data is used for significant basic events.
DA-E2	DA-E2-01 (Documentation) DA-E2 not met Associated SR: DA-D5 met at Capability Category III	F	Open	Documentation does not facilitate review. Additional uncontrolled backup materials such as spreadsheets are required for a traceable basis for plant data.	This F&O does not impact the RICT Program. The information provided in the backup documents was accurate and review of these documents did not result in a finding that would impact the PRA model. An update to the formal data documentation to properly incorporate the information will resolve the finding, and would not impact the calculations of risk changes for the RICT Program.
QU-B1	QU-B1-01 (RISKMAN code limitations)	S	Open	The peer review team recommended that the quantification document include a specific section that discusses RISKMAN code limitations.	This suggestion F&O does not impact the RICT Program and will be resolved by a documentation update to include the RISKMAN code limitations. The limitations of the RISKMAN code do not adversely impact its use in the RICT Program.
QU-C2	QU-C2-01 (HFE dependency) QU-C2 not met	F	Open	Human action dependencies are not evaluated with a minimum default value of the HEP to prevent underestimating risk.	Refer to F&O HR-G7-01. There is no requirement in the standard to use any minimum HEP for dependent actions, only to account for such dependencies. Upon resolution of F&O HR-G7-01, QU-C2 is met.
QU-D4	QU-D4-01 (Comparison to other	F	Open	The documentation includes a comparison of results to other similar plants, but causes	This F&O has no impact on the RICT Program. The issue relates to the comparison

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SR	Topic	F&O Level	Status	Finding	Disposition
	similar plants) QU-D4 met at Capability Category I			of significant differences are not identified.	of the results of the internal event PRA with other similar plants and identifying causes for significant differences. Based on the maturity of the DCPP internal events PRA model, it is not anticipated that any significant deficiency would be identified by additional comparisons and evaluations. Therefore, resolution of this F&O would not impact the calculations of risk changes for the RICT Program.
QU-E1	QU-E1-01 (Uncertainty)	S	Closed	A review of generic sources of uncertainty was performed; however, this analysis would be improved by a review of plant-specific sources of uncertainty.	This suggestion F&O has been resolved by a documentation update. The assumptions and uncertainties associated with each technical element of different hazard groups are identified in the documentation. As suggested in this F&O, these documents have been updated by systematically reviewing PRA development documents (e.g., system notebooks, success criteria notebook, event-tree notebooks, etc.)
QU-F2	QU-F2-01 (Documentation) QU-F2 not met Associated SR: QU-F1 not met	F	Open	The peer review team identified specific examples of deficiencies in the documentation of quantification which need to be addressed as specified in the standard.	This F&O has no impact on the RICT Program. The issue is details required to be included in the quantification notebook which are missing and is identified as not meeting a documentation SR (i.e., not a technical SR.) Update of documentation would not impact the calculations of risk changes for the RICT Program.
QU-F6	QU-F6-01 (Documenting definition of significant)	F	Open	There was no definition for significant basic event located in the documentation.	This F&O has no impact on the RICT Program. The issue is relevant to identification of significant elements of the

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SR	Topic	F&O Level	Status	Finding	Disposition
	QU-F6 not met				baseline PRA and is identified as not meeting a documentation SR (i.e., not a technical SR.) The definition of significance does not affect PRA model results, and would not impact the calculations of risk changes for the RICT Program.
LE-C1	LE-C1-01 (Plant-specific level 2 model) LE-C1 met at Capability Category I	S	Closed	Containment challenges in high level requirement LE-B must be compared to the containment structural capability analysis described in high level requirement LE-D.	This suggestion F&O was closed with no action taken. The containment structural capability has been assessed and documented adequately.
LE-C2	LE-C2-01 (Modeling of operator actions following the onset of core damage) LE-C2 not met	F	Open	The LERF analysis states that there are no post-core damage operator actions available or credited. However, a review of plant procedures identified that there are several Severe Accident Mitigation Guidelines (SAMG) procedures available that do include post-core damage actions that need to be reviewed and credited as applicable.	This F&O does not adversely impact the RICT Program and will be resolved by including additional HFEs in the PRA model. The current model conservatively does not credit any post-core damage recovery actions by operators, which results in a conservative estimate of LERF. This conservative treatment is acceptable for the RICT Program.
LE-C3	LE-C3-01 (Crediting repair of SSCs in significant LERF sequences) LE-C3 met at Capability Category I	S	Open	No repair of equipment, other than the potential restoration of alternating current (AC) power following a loss of station power (LOSP) event, is credited in the LERF analysis. The recovery of offsite power is only credited pre-core damage, but could be considered for post-core damage scenarios.	This suggestion F&O does not adversely impact the RICT Program and will be resolved by additional analysis and model changes to include any appropriate equipment repairs for post-core damage large early release mitigation. Excluding mitigating actions from the PRA results in a conservative calculation of LERF. This conservative treatment is acceptable for the RICT Program.

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SR	Topic	F&O Level	Status	Finding	Disposition
LE-C4	LE-C4-01 (Feasibility of scrubbing) LE-C4 met at Capability Category I	S	Open	The LERF model does not credit mitigating actions (e.g., isolate the ruptured SG after core damage, depressurize the RCS and terminate the leak, recover containment integrity). Additional fission product scrubbing provided by the containment sprays is not credited. Because it is assumed that all early releases are large, it is implied that all steam generator tube rupture (SGTR) and ISLOCA core damage sequences remain unscrubbed.	This suggestion F&O does not adversely impact the RICT Program and will be resolved by additional analysis and model changes to include consideration of the potential for fission product scrubbing for large early release mitigation when appropriate. Excluding mitigating actions from the PRA results in a conservative calculation of LERF. This conservative treatment is acceptable for systems in the scope of the RICT Program, except for the Containment Spray (CS) System. For CS, not crediting scrubbing mitigation could underestimate the change in LERF. However, the frequency of core damage sequences which would still have the CS system available is not significant in typical pressurized water reactor (PWR) PRAs, and the operation of CS therefore has limited impact on LERF. A conservative treatment of the CS system function is proposed (see Enclosure 1) to bound the scrubbing mitigation impact.
LE-C9	LE-C9-01 (Equipment survivability or human action under adverse environments) LE-C9 met at Capability Category I	S	Open	No credit is taken for any equipment survivability or human actions under adverse conditions or after containment failure.	This suggestion F&O does not adversely impact the RICT Program and will be resolved by additional analysis and model changes where appropriate to include consideration of equipment survivability and operator actions under adverse conditions or after containment failure for large early release mitigation. Excluding mitigating actions or equipment from the PRA results in a conservative

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SR	Topic	F&O Level	Status	Finding	Disposition
					calculation of LERF. This conservative treatment is acceptable for the RICT Program.
LE-C13	LE-C13-01 (Realistic containment bypass analysis) LE-C13 met at Capability Category I	S	Open	All core damage events involving either a spontaneous SGTR, pressure induced SGTR (PI-SGTR), or a thermally induced SGTR (TI-SGTR) event, as well as ISLOCA, were conservatively assumed to lead to a large early release. In addition, fission product scrubbing provided by the containment sprays is not credited.	This suggestion F&O does not adversely impact the RICT Program. Credit for scrubbing of fission products is addressed by F&O LE-C4-01 (above.) Conservative treatment of ISLOCA and induced SGTR impacts results in a conservative estimate of LERF. However, the ISLOCA contribution is an order of magnitude lower than SGTR, and is a smaller contributor than most Level 2 contributors (such as high pressure melt injection). This conservative treatment is acceptable for the RICT Program.
LE-D7	LE-D7-01 (Realistic containment isolation analysis) LE-D7 met at Capability Category II	F	Open	There is no traceable basis for the list of containment isolation (CI) valves that are present in the model and the systematic disposition of all of the containment penetrations that are not in the model.	This F&O will be resolved by additional review and model updates if required. The F&O is related to the disposition of all containment penetrations for the potential for large releases. A systematic review of all to identify any additional containment penetrations contributing to large releases, and the model will be updated if required.
LE-E2	LE-E2-02 (Definition of LERF with 3-inch opening) LE-E2 met	F	Closed	No actual calculation verifying the 3-inch containment break size which constitutes a large release exists.	This F&O has been resolved by an evaluation which confirms the adequacy of the existing model; no model changes were required. There are existing calculations for 2-inch and 4-inch containment bypass sizes. Using the same methodology as this existing calculation, a 3-inch size was evaluated and determined to be an acceptable size for LERF

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SR	Topic	F&O Level	Status	Finding	Disposition
					purposes.
LE-F2	LE-F2-01 (Review of LERF sequences for reasonableness) LE-F2 met	F	Open	The LERF results documentation does not reflect the latest LERF cutsets. Additionally, the results include an out-of-date assumption on reactor coolant pump (RCP) seal LOCA sizes which needs to be deleted and actual detailed results presented.	This F&O has no impact on the RICT Program. The F&O is related to documentation of the baseline LERF results, and identified outdated results and assumptions. The seal LOCA split fractions were confirmed to not have changed since the Level 2 analysis was performed, so there are no model updates required to address this issue. Reviewing and documenting the most current results and assumptions for LERF would not impact the calculations of risk changes for the RICT Program.
LE-G3	LE-G3-01 (Documenting LERF calculations) LE-G3 not met	F	Open	The relative contribution of contributors is not documented in the LERF calculation, and the information in the quantification calculation does not reflect the latest results, and does not include all the types of contributions discussed in this SR.	This F&O has no impact on the RICT Program. The F&O is related to documentation of all contributors to LERF. Documenting LERF contributors would not impact the calculations of risk changes for the RICT Program.
LE-G5	LE-G5-01 (Limitations in the LERF analysis) LE-G5 not met	F	Open	The limitations in the various portions of the LERF analyses that would impact applications are not identified or discussed.	This F&O has no impact on the RICT Program. The F&O is related to documentation of limitations in the LERF analysis. Documenting the limitations of the LERF analysis would not impact the calculations of risk changes for the RICT Program.

Table A6-2 Diablo Canyon Internal Flood PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
IFSO-A1	IFSO-A1-01 (Applicable external sources)	S	Open	Not all external flooding sources are identified in the documentation, and walkdown information does not identify tank inventories.	This suggestion F&O has no impact on the RICT Program. Updating the documentation to comprehensively identify all external sources and inventories will not impact the calculations of risk changes for the RICT Program.
IFSO-A6	IFSO-A6-01 (Spray protection) IFSO-A6 met	F	Open	The walkdown reports identify equipment which is protected from the effects of spray; however, the documentation does not discuss what is specifically credited as spray protection and the limitations of that protection. This could result in future plant modifications which alter the plant configuration in a manner which impacts the spray protection without being recognized as an impact to the PRA.	This F&O has no impact on the RICT Program. Updating the documentation to include specific details of spray protection in order to ensure configuration control of the model would not impact the calculations of risk changes for the RICT Program.
IFSO-B3	IFSO-B3-01 (Uncertainty)	S	Open	Sources of epistemic uncertainty related to flood sources are not explicitly discussed.	This suggestion F&O has no impact on the RICT Program. Updating the documentation to discuss uncertainty will not impact the calculations of risk changes for the RICT Program.
IFSN-A3	IFSN-A3-01(Automatic and/or operator responses) IFSN-A3 not met	F	Open	Relevant automatic or operator responses to flood events which could terminate or contain flood propagation are not identified in the documentation.	This F&O has no adverse impact on the RICT Program. The issue is identification of all automatic and manual isolation capability which could be credited to terminate flooding from each source. Not crediting such capability increases the internal flood risk contribution which is conservative. Additional credit of

Table A6-2 Diablo Canyon Internal Flood PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
					automatic or manual actions to isolate a flooding source would decrease risk and increase calculated RICTs, so the current PRA model is conservative for the RICT Program.
IFSN-A4	IFSN-A4-01 (Capacity of drains, berm, dikes, etc.) IFSN-A4 not met	S	Open	Details on the capacity of floor drains and sumps, and the impact of berms, dikes, and curbs are not discussed in the documentation. These features in general are not credited, and a more realistic evaluation could be performed.	This suggestion F&O has no adverse impact on the RICT Program. The current model does not credit drains, berms, and other similar design features, which is conservative. Additional credit of these features would decrease risk and increase calculated RICTs, so the current PRA model is conservative for the RICT Program.
IFSN-A6	IFSN-A6-01 (Spray targets)	S	Open	No detailed evaluation of potential spray targets based on the distance from the source with consideration of the maximum potential spray elevation and specific propagation paths has been made.	This suggestion F&O has no impact on the RICT Program. The peer review found the SR IFSN-A6 is met at Capability Category I/II, and the suggestion would further enhance the identification of SSC failure modes due to spray impacts, but the existing PRA model satisfies the standard as required to support the RICT Program.
IFSN-A7	IFSN-A7-01(Flooding impacts on SSCs)	S	Open	For flooding effects to SSCs other than submersion, the documentation does not describe the effects in a manner which is easily verifiable.	This suggestion F&O has no impact on the RICT Program. Enhancing the documentation of flooding impacts on SSCs so that the failure mechanism is easily identified will not impact the calculations of risk changes for the RICT

Table A6-2 Diablo Canyon Internal Flood PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
					Program.
IFSN-A8	IFSN-A8-01 (Drain line and back flow paths) IFSN-A8-01 met at Capability Category II	F	Open	The potential for inter-area propagation through various flowpaths identified in the standard are not identified in the documentation.	This F&O is judged to have no significant impact on the RICT Program. The peer review found the SR IFSN-A6 is met at Capability Category II. Based on the physical configuration of drains and sumps, additional analysis is not expected to identify a significant impact for inter-area propagation. Therefore, resolution of this F&O would enhance the documentation of inter-area propagation, and enhance the model by more rigorous analysis of flooding impacts and mitigation actions, but is not expected to have a significant impact on the calculations of risk changes for the RICT Program.
IFSN-A9	IFSN-A9-01 (Flood depth and propagation) IFSN-A9 not met	F	Open	No calculations determine the flooding rates and the time to equipment damage.	This F&O has no adverse impact on the RICT Program. The current model is conservative since out-leakage is not credited for providing additional time to take mitigating actions to terminate the flood. Additional analysis of the timing of equipment damage and crediting mitigation actions would decrease risk and increase calculated RICTs, so the current PRA model is conservative for the RICT Program.
IFSN-A10	IFSN-A10-01 (Size of flood sources)	F	Open	Evaluations of the flooding scenarios do not include the impact of emptying a source on the flood depth in the areas, or the	This F&O is judged to have no significant impact on the RICT Program. The peer review found the SR IFSN-A10 is met.

Table A6-2 Diablo Canyon Internal Flood PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
	IFSN-A10 met			propagation of infinite water sources without operator action to isolate the flood.	Based on the physical configuration of the plant, significant time is available for mitigating actions. Therefore, resolution of this F&O would enhance the documentation of capacities of flood sources and enhance the model by more rigorous analysis of flooding impacts and mitigation actions, but is not expected to have a significant impact on the calculations of risk changes for the RICT Program.
IFSN-A11	IFSN-A11-01 (Multi-unit effects) IFSN-A11 not met	F	Open	The impact of large flooding sources in areas that could impact both units has not been considered. The potential for a large circulating water or ASW flood event on the common turbine building and intake structure resulting in a dual-unit shutdown was identified.	This F&O has no significant impact on the RICT Program. Large internal floods which impact both units are low frequency events, and there are other more likely scenarios which cause similar impacts. For the turbine building, the impacts of large floods are bounded by a dual-unit LOOP, which has the same failure impacts. For the intake structure, the loss of ASW initiating event has the same impact as the most limiting flood scenario. Thus, the potential dual-unit flood scenarios are bounded by existing initiating events, and therefore there is no significant impact on the calculations of risk changes for the RICT Program.
IFSN-A12	IFSN-A12-01 (Screening of flood scenarios) IFSN-A12 met	F	Open	Flooding scenarios are screened or assumed not to propagate based on drains, curbs and barriers between rooms, and the screening implicitly assumes that the leak is smaller than	This F&O is judged to have no significant impact on the RICT Program. The peer review found the SR IFSN-A12 is met. A review of internal flood scenario screening

Table A6-2 Diablo Canyon Internal Flood PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
				the drain capacity and/or that the operators take action to reduce or stop the flow before water backs up into the room and fails additional equipment or propagates beyond the room. The propagation screening does not look at accumulation on the area where the water is going and whether equipment in that area would be impacted due to flood or whether the flood could propagate beyond the second flood area to another area and damage equipment.	is judged unlikely to identify new significant flood scenarios. Resolution of this F&O will enhance the documentation to properly identify assumptions, but is not expected to have a significant impact on the calculations of risk changes for the RICT Program.
IFPP-A5	IFPP-A5-01 (Walkdown documents) IFPP-A5 met	F	Open	The walkdown documentation has missing information associated with the flooding sources.	This F&O has no impact on the RICT Program. Updating the walkdown documentation to include information on flooding sources not currently included will not impact the calculations of risk changes for the RICT Program.

Table A6-3 Diablo Canyon Seismic PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
The seismic peer review was performed against a draft version of the Diablo Canyon seismic PRA model, which used updated hazard and fragilities analyses. As noted, the current seismic PRA model, which uses the existing hazard analysis and fragilities, is proposed to be used for the RICT Program; therefore, the F&Os for the seismic hazard model (SHA) and seismic fragility model (SFR) elements do not apply to the model proposed to be used.					
SPR-B1	SPR-B1-01 (Basis for delay time in seismic HRA) SPR-B1 met	F	Open	The seismic influence for human actions uses generic delay times which are not clearly defined, and the task analysis for additional workload in response to a seismic event is not documented.	This F&O is judged to have no significant impact on the RICT Program. The seismic HRA is relatively unimportant, and any increase in HEP values would not have a significant impact on seismic risk.
SPR-B1	SPR-B1-02 (DG mission time) SPR-B1 met	F	Open	The assessment for restoration of a DG after a seismic event is based on the internal events analysis which assumes only a 6-hour mission time instead of a 24-hour mission time.	This F&O has no impact on the RICT Program. The DG recovery is only credited for nonseismic failures for lower acceleration earthquakes. No diesel recoveries are credited for scenarios in which the components suffer a seismic failure; therefore, the impacts of the seismic event on the recovery action will be minimized. The failure probability and basis was reviewed and confirmed to be correct for seismic events.
SPR-B1	SPR-B1-03 (Offsite power fragility) SPR-B1 met	F	Open	The fragility for the offsite power does not address external impacts of transmission lines to the site or potential for other failures that would occur beyond the plant boundary. A review indicated that the analysis appears to be under predicting the likelihood of a LOOP.	This F&O will be resolved by additional review and model update if required.
SPR-B2	SPR-B2-01 (Operator	F	Open	The current analyses of seismic HFEs	This F&O has no significant impact on the

Table A6-3 Diablo Canyon Seismic PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
	interviews in HFE basis) SPR-B2 not met			appears to not include any insights from operator interviews related to how the seismic event would impact timing or other stress factors necessary to adjust the internal events HFE. The basis for selecting generic time delays does not appear to consider timing and the complexity of the scenario.	RICT Program. The seismic HRA is relatively unimportant, and any increase in HEP values would not have a significant impact on seismic risk.
SPR-B2	SPR-B2-02 (Seismic HRA dependency) SPR-B2 not met	F	Open	No HFE dependency assessment has been developed for the seismic PRA at this point.	This F&O has no significant impact on the RICT Program. The seismic HRA is relatively unimportant, and any increase in dependent HEP values would not have a significant impact on seismic risk.
SPR-B2	SPR-B2-03 (Lack of operator insights in HRA) SPR-B2 not met	S	Open	The HRA documentation and the HRA Calculator files have no documentation of any insights which will hinder utility update and maintenance. This may also influence acceptance of adjustment factors.	This F&O has no impact on the RICT Program. Enhancing documentation of HRA insights will not impact the calculations of risk changes for the RICT Program.
SPR-B2	SPR-B2-04 (Treatment of stress level in seismic HRA) SPR-B2 not met	S	Open	The influence of the seismic event on stress level is masked due to the existence of high stress for the internal events assessment. (The peer review noted that this may be a limitation in the HRA calculator with regard to addressing seismic and other external events and may require feedback to EPRI.)	This F&O has no adverse impact on the RICT Program. The issue involves a possibly conservative treatment of stress in the internal events HRA such that there is insignificant difference in the calculated HEPs for internal and seismic event mitigation. The relevant seismic HFEs have high stress assumed, so that the HEP values are conservative. Therefore, resolution of this F&O will not adversely impact the calculations of risk changes for

Table A6-3 Diablo Canyon Seismic PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
					the RICT Program.
SPR-B3	SPR-B3-01 (No acceleration screening criteria) SPR-B3 not met	F	Open	There is no description of use of a systematic process for screening SSCs or documentation of screened SSCs.	This F&O has no impact on the RICT Program. Because the original seismic PRA model was developed concurrent with the internal events PRA model, no screening was used. Updating the documentation to better describe this process will not impact the calculations of risk changes for the RICT Program.
SPR-B4	SPR-B4-01 (Correlation between identical SSCs across systems) SPR-B4 met at Capability Category I/II	S	Open	The basis and treatment of correlation between identical SSCs across systems could be improved.	This suggestion F&O is judged to have no significant impact on the RICT Program. Correlation of SSC failures across systems would typically involve significant seismic events which have limited mitigation from plant systems. Therefore, resolution of this F&O would not be expected to have significant impacts on the calculations of risk changes for the RICT Program.
SPR-B4	SPR-B4-02 (Documentation of dependencies and correlations) SPR-B4 met at Capability Category I/II	S	Open	Dependencies and correlations to the seismic PRA in a manner that facilitates the review of their impact on screened out SSCs should be documented.	This suggestion F&O has no impact on the RICT Program. Enhancing the documentation of dependencies and correlations will not impact the calculations of risk changes for the RICT Program.
SPR-B5	SPR-B5-01 (HRA documentation) SPR-B5 met	S	Open	The documentation should address only those actions that are actually utilized in the model and then clarify those that are assumed to be not credited. This will better	This suggestion F&O has no impact on the RICT Program. Enhancing the documentation of the HRA will not impact the calculations of risk changes for the

Table A6-3 Diablo Canyon Seismic PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
				support reviews and updates.	RICT Program.
SPR-B9	SPR-B9-01 (Time-motion study) SPR-B9 met at Capability Category I	F	Open	No time or task analysis seems to be developed or documented to provide the basis on an individual action to demonstrate the ability to perform the action and to estimate not only initial delay but delays in diagnosis and implementation. The current assessment only captures in a very general basis the initial delay and does not provide any delay impact for resources being diverted or delayed to do other activities or problems in implementing the actions. The current assessment is also independent of the location of the action which could also mask action specific considerations.	This F&O has no significant impact on the RICT Program. The seismic HRA is relatively unimportant, and any increase in HEP values would not have a significant impact on seismic risk. The time delay used in the seismic HRA was based on scenario specific interviews with Operations personnel; therefore, it is expected that these values are valid, and therefore additional documentation may be needed to resolve this F&O.
SPR-B11	SPR-B11-01 (Seismically induced floods) SPR-B11 met	F	Open	There are seismic failure modes involving loss of inventory with the potential for flood impacts that go beyond the local seismic failure where the flood effects are not considered.	This F&O has is judged to have no significant impact on the RICT Program. The unconditional seismic failure probability for SSCs that could result flooding was reviewed to estimate the impact of this issue. In all cases, the total unconditional failure probability for these types of SSCs (piping, tanks, etc.) was less than 1E-06. Therefore, the potential impact of additional seismically induced flooding is not significant. Therefore, resolution of this F&O is judged not to significantly impact the calculations of risk changes for the RICT Program.

Table A6-3 Diablo Canyon Seismic PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
SPR-C1	SPR-C1-01 (Chattering of solid state relays) SPR-C1 met	F	Open	There are conservative assumptions related to the solid state protective relays on the 4 kV breakers and the updated charging pump.	This F&O has no adverse impact on the RICT Program. Conservatisms in the seismic response of components will not adversely impact the calculations of risk changes for the RICT Program.
SPR-E1	SPR-E1-01 (Expand number of bins to allow for a better fragility representation) SPR-E1 met	F	Open	The discrete bins for offsite power fragility do not provide a good representation of the offsite power fragility curve. While RISKMAN properly handles this in the fragility calculation with the use of 100-bin representation of the fragility curve in each initiator bin, the use of the mid-point may not accurately reflect the range of plant conditions for HRA and recovery. Due to the range of the first bin compared to the change in fragility for offsite power, it is possible that the first bin is nonconservative for the upper portion of that bin.	This F&O has no adverse impact on the RICT Program. The issue is how the initiator binning is used to credit operator recovery actions. Because the upper bin boundary was used in developing operator actions and not bin midpoint values, the operator actions are conservative for a given range of acceleration. If additional binning is added, it is possible that more credit could be taken for a recovery action at lower accelerations. Therefore, resolution of this F&O would not to adversely impact the calculations of risk changes for the RICT Program.
SPR-E1	SPR-E1-02 (Expand bins covering hazard above 4.0g) SPR-E1 met	F	Open	The definition of the hazard bins results in loss of information regarding the relative importance of LERF contributors because the conditional probability is not close to 1.0 in the last bin.	This F&O has no impact on the RICT Program. Redefining the hazard bin to ensure LERF importance can be assessed has no impact on the calculations of risk changes for the RICT Program.
SPR-E1	SPR-E1-03 (Fragility curve truncation) SPR-E1 met	S	Open	Fragility curve truncation values are not consistently applied within RISKMAN, apparently due to an issue where the point	This suggestion F&O has no adverse impact on the RICT Program. Because the Monte Carlo quantification does not

Table A6-3 Diablo Canyon Seismic PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
				estimate quantification appropriately applies the truncation values but the Monte Carlo quantification does not.	truncate the fragility at the specified values, very low probabilities of failure are used where it is appropriate to use a failure probability of zero. This results in an insignificantly (conservative) higher seismic CDF.
SPR-E1	SPR-E1-04, MET, fragility truncation	S	Open	The peer review identified some inconsistencies in the fragility truncation values which add unnecessary complication to the model. The peer review noted that these issues did not impact the model.	This suggestion F&O has no impact on the RICT Program. Simplification of the modeling will not impact the results of the seismic PRA, and will not impact the calculations of risk changes for the RICT Program.
SPR-E1	SPR-E1-05 (Error in event tree ELECPWR) SPR-E1 met	F	Open	The event tree ELECPWR appears to have an error in the rules for one top event. This error will likely not be important to the results because it represents the lower acceleration bins. In addition, this was the only error identified in the seismic-related rules that were rereviewed.	This F&O will have no significant impact on the RICT Program. A review of the error concluded that it will not impact the results of the seismic PRA, and therefore will not impact the calculations of risk changes for the RICT Program.
SPR-E5	SPR-E5-01 (No uncertainty distribution provided) SPR-E5 not met	F	Open	Point estimates for CDF and LERF are documented, but uncertainty distributions are not provided as required.	This F&O has no impact on the RICT Program. Seismic parametric uncertainty analysis does not impact the quantitative results and will not impact the calculations of risk changes for the RICT Program.
SPR-E6	SPR-E6-01 (Sensitivity analysis for operation actions) SPR-E6 met	S	Open	Additional sensitivities that explore the uncertainties and assumptions, especially the importance of operator actions, should be considered.	This suggestion F&O has no impact on the RICT Program. Sensitivity analyses do not impact the quantitative results and will not impact the calculations of risk

Table A6-3 Diablo Canyon Seismic PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
					changes for the RICT Program.
SPR-F1	SPR-F1-01 (Modeling of cross ties between units) SPR-F1 not met	F	Open	The seismic PRA documentation identifies that no credit is taken for cross ties between units following a seismic event. However, the RISKMAN event tree model does not guarantee failure of all cross-tie options for seismic events. As a result, it is not clear that the model is consistent with the documentation.	This F&O has no impact on the RICT Program. The issue was reviewed and it was determined that the model appropriately addresses availability for opposite unit equipment. Therefore, resolution of this F&O will not impact the calculations of risk changes for the RICT Program.
SPR-F1	SPR-F1-02 (Roadmap between current documents and PLG-0637) SPR-F1 not met	F	Open	The current documentation includes references to PLG-0637, but it is not clear how much of that 1988 document is still valid and relied on.	This F&O has no impact on the RICT Program. Clarification of documentation will not impact the calculations of risk changes for the RICT Program.
SPR-F1	SPR-F1-03 (Document top event SEL and SSG leading to LERF) SPR-F1 not met	S	Open	The assumption that failures of top events SEL (excessive LOCA) and SSG (impact on SGs) are assumed to lead directly to LERF should be better documented because of their significance.	This suggestion F&O has no impact on the RICT Program. Improving the documentation of an assumption will not impact the calculations of risk changes for the RICT Program.
SPR-F1	SPR-F1-04 (Order of split fraction rules not matching with the event tree) SPR-F1 not met	S	Open	The logic rules for event tree SGENTRN are included in a different order list of top events in the tree structure. While RISKMAN has no difficulty with rule order, it does add another level of complexity in trying to review the rules. In addition, RISKMAN event tree logic provides a comment line for each rule, but generally these are blank. This is an opportunity to provide documentation for the reviewer directly in the model.	This suggestion F&O has no impact on the RICT Program. Improving the documentation of logic rules will not impact the calculations of risk changes for the RICT Program.

Table A6-3 Diablo Canyon Seismic PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
SPR-F1	SPF-F1-05 (Document split fraction rule comments) SPR-F1 not met	S	Open	RISKMAN event tree logic provides a comment line for each split fraction rule, but generally, these are blank.	This F&O has no impact on the RICT Program. The documentation issue identified by this F&O does not impact the calculations of risk changes for the RICT Program.
SPR-F1	SPR-F1-06 (Document future plant modifications) SPR-F1 not met	F	Open	The documentation is not clear on whether RCP shutdown seals are credited.	This F&O has no impact on the RICT Program. The current seismic PRA model does not include credit for these seals. The documentation issue identified by this F&O does not impact the calculations of risk changes for the RICT Program.
SPR-F1	SPR-F1-07 (Conservative modeling of Solid State Protection System (SSPS)) SPR-F1 not met	S	Open	A dominant sequence is failure of both trains of SSPS, with guaranteed failure of the operator action to manually trip the reactor. This appears to be an overly conservative assumption with regard to operator failure for a dominant sequence.	This suggestion F&O does not adversely impact the RICT Program. The assumption of no manual reactor trip would conservatively estimate the risk impact of SSCs which mitigate ATWT events, which is acceptable for the calculations of risk changes for the RICT Program.
SPR-F3	SPR-F3-01 (Complete sources of model uncertainty and assumptions) SPR-F3 not met	F	Open	There is no complete documentation of sources of model uncertainty and assumptions identified for the plant response model.	This F&O has no impact on the RICT Program. Improving the documentation of model uncertainty and assumptions will not impact the calculations of risk changes for the RICT Program.

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
PP-B1	PP-B1-01 (2008 - Partitioning of battery room and battery charger room)	S	Closed	There are compartments comprised of two rooms separated by a rated fire barrier that could be treated as separate compartments. The current treatment is not unacceptable, but further partitioning could lead to more realistic treatment of the scenarios. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been closed without action. Further partitioning of the areas in question could slightly impact the fire frequencies (i.e., plant-wide areas as well as the areas of concern), but the current treatment is acceptable (as noted by the 2008 peer review, and confirmed by the 2010 peer review.)
PP-C2	PP-C2-01 (2008 - Exclusion of areas) PP-C2 not met	F	Closed	There is no documented justification for the exclusion of locations within the licensee-controlled area. The peer review identified this as a documentation issue and not a technical issue. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by a documentation update. The documentation has been revised to include all of the permanent buildings on the site and the potential fire effects have been identified in order to justify inclusion or exclusion of locations from the global plant analysis boundary. The 2010 peer review concluded that SR PP-C2 is met.
ES-A1	ES-A1-01 (2008 - Basis for removing ATWT)	S	Closed	The basis for not considering ATWT is not well established. As stated in supporting guidance (NUREG/CR-6850) it is expected a fire-induced ATWT event is probably not likely. A plant specific review and justification should be provided. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been closed with no action taken. The documentation identifies the plant-specific design features of the Reactor Protection System which support the justification for removal of ATWT from consideration.

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
ES-B1	ES-B1-01 (2008 - Basis for not including low importance SSCs)	S	Closed	Some low importance SSCs (i.e., Instrument Air, Main Feed Water) from the internal event PRA are documented as being excluded from the fire PRA model based on cable routing information being unknown rather than the SSCs not being risk significant. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been resolved by a documentation update. The documentation has been revised to identify exclusion of specific equipment based on low risk significance to the internal events PRA model, and sensitivity analyses are also provided to support exclusion from the fire PRA.
ES-B1	ES-B1-02 (2008 - Verify the basis of excluding low importance SSC remains valid) ES-B1 met at Capability Category I	F	Closed	The equipment selection analysis does not demonstrate that excluded components are re-evaluated for their fire risk importance. An iterative approach to validate the assumptions made in the initial review of components is required based on Note 2 of the standard. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by additional analysis. The risk significance of excluded systems and equipment has been documented in the uncertainty and sensitivity analysis to justify the final set of SSCs credited in the fire PRA. With this F&O resolved, along with additional F&Os ES-B1-03 (2008) and ES-B1-01 (2010), SR ES-B1 is judged to be met at Capability Category II based on the verification of low risk importance of excluded SSCs. The 2010 peer review identified a similar finding (see ES-B1-01 (2010) below), but concluded that SR ES-B1 is met at Capability Category II.
ES-B1	ES-B1-03 (2008 - Recovery action for potentially significant scenario, drain-down of the refueling water storage tank (RWST))	F	Closed	Recovery actions for potentially significant multiple spurious operations (MSOs) are not applied, and an example of RWST drain down was identified. (This F&O was	This F&O has been resolved by additional analysis and model updates. A sensitivity analysis was performed and documented to evaluate the risk significance of EOP and post-fire recovery actions. Important

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
	ES-B1 met at Capability Category I			generated during the January 2008 review.)	actions have been added to the fire PRA model. With this F&O resolved, along with additional F&Os ES-B1-02 (2008) and ES-B1-01 (2010), SR ES-B1 is judged to be met at Capability Category II. The 2010 peer review concluded that SR ES-B1 is met at Capability Category II.
ES-B1	ES-B1-01 (2010 - Basis of excluding low importance SSCs) ES-B1 met at Capability Category II	F	Closed	Refer to ES-B1-02 from 2008 peer review (above.) (This F&O was generated during the December 2010 review.)	See F&O ES-B1-02 from 2008 peer review (above.)
ES-B2	ES-B2-01 (2008 - MSO effect on success criteria) ES-B2 met at Capability Category I	F	Closed	The MSO review does not appear to evaluate and disposition the effects of multiple spurious operations on calculations to support the success criteria in the fire probabilistic risk assessment (FPRA). (This F&O was generated during the January 2008 review.)	This F&O has been resolved by additional reviews and model updates. The qualitative screening criteria used to evaluate the impact of MSOs on the function success criteria was supplemented by additional reviews to confirm there were no situations in which the effects of coincident MSOs would impact system success criteria. As a result, MSO of pressurizer power-operated relief valves (PORVs) was considered as requiring mitigation as a medium-break instead of a small-break LOCA. The 2010 peer review concluded that SR ES-B2 is met at Capability

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
					Category III. (A new suggestion-level F&O ES-B2-01 was identified - see below.)
ES-B2	ES-B2-01 (2010 - Inconsistencies and errors in MSO documentation)	S	Closed	F&O: Several documentation inconsistencies and errors in the documentation of MSO evaluations and resolutions were noted during the peer review. (This F&O was generated during the December 2010 review.)	This suggestion F&O has been resolved by a documentation update. The MSO report was completely rereviewed and revised to correct all identified inconsistencies and errors.
CS-A1	CS-A1-01 (2008 - Remove Appendix R assumption from the circuit analysis calculation)	S	Closed	The circuit analysis documentation includes an assumption referencing the Appendix R analysis which should be removed. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been resolved by a documentation update. The circuit analysis documentation was revised to remove the assumption.
CS-A2	CS-A2-01 (2008 - Lack of documentation specifying the number of hot shorts considered)	S	Closed	The cable selection task documentation does not specify the number of hot shorts considered in the analysis. The actual analysis indicates in most cases the number of hot shorts for individual components is not limited. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been closed with no action taken. The documentation does not identify any limit on the number of hot shorts to be considered.
CS-A2	CS-A2-03 (2008 - (Circuit analysis for the bypass of motor-operated valve (MOV) torque and limit	F	Closed	A review of has not been completed to identify potential circuit failures that could bypass MOV torque and limit switches.	Refer to F&O CS-A2-01 from the 2010 peer review (below).

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
	switches) CS-A2 met at Capability Category III			Where damage to the MOV is possible, manual action to operate the MOV should not be credited. (This F&O was generated during the January 2008 review.)	
CS-A2	CS-A2-01 (2010 - Evaluation of MOVs required to support the manual actions in the FPRA) CS-A2 met at Capability Category II	F	Closed	The scope of MOVs reviewed to identify circuit failures that could bypass MOV torque and limit switches and damage the MOV such that manual operation is not possible does not include all MOVs in the fire PRA. (This F&O was generated during the December 2010 review.)	This F&O has been resolved by additional analyses. Action request (AR) A0414724 documented the review of MOVs credited in the Appendix R analysis to address NRC Information Notice 92-18. Additional review of the fire PRA identified additional MOVs not in the scope of AR A0414724. These MOVs have been evaluated for this failure mode to ensure that manual operation of the MOV is not improperly credited, and the documentation has been revised to reflect the additional evaluations. With this F&O resolved, SR CS-A2 is judged to be met at Capability Category II. (The 2010 peer review concluded that SR CS-A2 is met at Capability Category II.)
CS-A6	CS-A6-01 (2008 - Associated circuit common enclosures)	S	Closed	The potential for a secondary fire due to a common enclosure concern related to a load center transformer fault has not been addressed. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been resolved by additional analysis. Additional reviews considering a secondary fire and additional targets concluded that none of the potential common enclosure associated circuits resulted in risk-significant scenarios. Therefore these

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
					scenarios were not modeled in the fire PRA.
CS-A7	CS-A7-01 (2008 - Three-phase hot shorts) CS-A7 not met	F	Closed	The ISLOCA analysis does not three-phase hot short consideration for isolation valves, and specific valves were identified as not included. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by a model update. Cables associated with isolation valves where spurious actuation due to three-phase hot shorts could result in an ISLOCA have been verified in the model, and additional cables for valves identified have been added. The 2010 peer review concluded that SR CS-A7 is met.
CS-A8	CS-A8-01 (2008 - Incomplete treatment of thermoset and thermoplastic cable failures)	S	Closed	The methodology documented for Thermo-set and Thermo-plastic inter-cable failures is not complete. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been resolved by a model update and completion of documentation. The fire modeling of all areas containing thermoplastic cables have been updated, using a procedure which incorporates the NUREG/CR-6850 guidelines for various material properties for thermoset and thermoplastic cables.
CS-A10	CS-A10-01 (2008 - Potential impact of the assumptions of guaranteed failure of non-traced SSCs) CS-A10 not met	F	Closed	The assumptions regarding equipment guaranteed to fail due to not identifying cable routing may be causing a significant conservative impact on the results. (This F&O was generated during the January 2008 review.)	See F&O ES-B1-02 from the 2008 peer review (above.) The 2010 peer review concluded that SR CS-A10 is met at Capability Category III.

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
CS-A10	CS-A10-02 (2008 - Description of the impact of the guaranteed failure assumption)	S	Closed	The documentation of guaranteed failed SSCs does not adequately describe the impact of this assumption. Some SSCs guaranteed failed are credited in most areas, or the model is modified to address the known information. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been closed with no action taken. The documentation was reviewed and judged to adequately describe the impact of the guaranteed failure assumption, and for each fire area undergoing detailed fire analysis, a detailed fire risk workbook is provided which identifies the cable impacts.
CS-A11	CS-A11-01 (2008 - Basis for assumed cable routing) CS-A11 not met Associated SRs: CS-C3 FSS-E4	F	Closed	Several components use Appendix R as the basis for cable routing without specific cable/circuit review and routing, including some cables associated with risk significant scenarios. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by a documentation update. The cables associated with the 480 V switchgear HVAC and damper were analyzed and traced. The remaining assumed cable routing were reviewed and the documentation updated to document the basis for the routing assumptions The 2010 peer review concluded that SRs CS-A11 and CS-C3 are not applicable.
CS-B1	CS-B1-01 (2008 - Documentation of resolution of findings from the associated circuit review report) Associated SRs: CS-C4	S	Closed	Only two (the two more significant items) of 30 findings from a documented review of the associated circuit analysis have been formally addressed and documented. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been resolved by a documentation update. The report has been revised to provide a resolution for all 30 observations.
CS-B1	CS-B1-02 (2008 - Potential new scenario from associated circuits	S	Closed	The peer review recommended making the associated circuits review for new PRA	This suggestion F&O has been resolved by a documentation update. The

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
	review) Associated SRs: CS-C4			components part of the PRA documentation. (This F&O was generated during the January 2008 review.)	associated circuits review and resolution of issues has been completed and included in the documentation. Refer to the resolution of F&O CS-B1-01 for additional discussion.
CS-C1	CS-C1-01 (2008 - Cable Selection calculation in draft form) Associated SRs: CS-C2	S	Closed	Documentation for cable selection and locations was in draft and needs to be finalized. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been resolved by completion of the documentation associated with cable selection and location.
PRM-A1	PRM-A1-01 (2008 - Binning of level 1 conditional core damage probability (CCDP) and level 2 conditional large early release probability (CLERP) resulting their total greater than 1.0) Associated SRs: PRM-A2 FQ-A1	S	Closed	The total CCDP and CLERP may exceed 1.0 apparently because the containment event tree (CET) success logic for both level 1 CCDP and level 2 CLERP were binned together. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been resolved by a change to the quantification method. The core melt and damage states bins are separate, and, CCDP and CLERP can use different quantification cutoffs.
PRM-A4	PRM-A4-01 (2008 - Uncertainty and sensitivity analyses incomplete) PRM-A4 not met	F	Closed	The uncertainty and sensitivity analyses have not been performed. This item could not be verified. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by development and documentation of uncertainty and sensitivity analyses. SR PRM-A4 in the 2007 PRA Standard has been deleted from 2009 PRA Standard.

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SR	Topic	F&O Level	Status	Finding	Disposition
PRM-B2	PRM-B2-01 (2010 - Remaining open internal event PRA self-assessment items)	S	Closed	The peer review identified open items from the internal event PRA review with negligible or conservative impact on the fire PRA results, and no discussion in the fire PRA documentation regarding their impact. (This F&O was generated during the December 2010 review.)	This suggestion F&O has been resolved by model updates and documentation updates. The internal event and internal flood PRAs were peer-reviewed in December 2012. Each F&O identified has been reviewed for impact on the fire PRA and either resolved by a model update or dispositioned for impact to the fire PRA.
PRM-B14	PRM-B13-01 (2008 - Quantification of LERF model) PRM-B14 not met Associated SRs: PRM-B15 (Note that PRM-B13 and PRM-B14 are now PRM-B14 and PRM-B15 in the current standard.)	F	Closed	The fire PRA has not completed analysis of fire-induced containment failure (LERF) accident progression. (This F&O was generated during the January 2008 review.)	This F&O has been resolved a model update. The LERF model for fires has been completed and documented. The 2010 peer review team concluded that SR PRM-B14 is met.
PRM-B15	PRM-B15-01 (2010 - Documenting low probability of multiple open pathways leading to greater than 3-inch opening in containment) PRM-B15 met Associated SRs: PRM-C1	F	Closed	The documentation of containment isolation does not include multiple small openings, which combined would exceed the 3-inch criteria for large releases. The peer review concluded that these could be screened on low probability. (This F&O was generated during the December 2010 review.)	This F&O has been resolved with a documentation update. The documentation has been revised to disposition all potential large release pathways including consideration of multiple containment penetrations.
PRM-C1	PRM-C1-01 (2010 - Documenting future plant modifications credited)	S	Closed	The documentation of plant modifications credited in the fire PRA is not clear. (This F&O was generated during the December	This suggestion F&O has been resolved by a documentation update. The documentation was revised to include

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
				2010 review.)	identification of credited modifications.
PRM-C1	PRM-C1-02 (2010 - Modeling of new low leakage RCP seals) PRM-C1 met	F	Closed	The current model assumes RCP seal LOCAs cannot occur due to the type of seals used; however, random seal failures can occur as well as failure due to continued operation of the RCP after a loss of seal cooling. (This F&O was generated during the December 2010 review.)	This F&O has been resolved by a model update. The RCP seal model was modified based on the vendor guidance documents to include both human error and random failure modes.
PRM-C1	PRM-D1-01 (2008 - PRM report in draft form) PRM-D1 not met (Note that PRM-D1 is now PRM-C1 in the current standard.)	F	Closed	Documentation for the plant response model has portions in draft and other portions not complete. This is due to the current status of the project with the plant response model undergoing updates. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by completion of the plant response model documentation. The 2010 peer review concluded SR PRM-C1 is met. (See F&O PRM-C1-02 above.)
FSS-A1	FSS-A1-01 (2010), justification for screening low voltage distribution panels.	S	Closed	Electrical distribution panels are screened from fire modeling because fires in these panels are not expected to propagate beyond the ignition source. The referenced basis for this screening in the detailed fire modeling procedure applies to small control panels rather than distribution panels. (This F&O was generated during the December 2010 review.)	This suggestion F&O has been resolved by a documentation update. Screening of electrical cabinets was performed consistent with NUREG/CR-6850, and the procedure has been revised to provide an appropriate justification which does not refer to control panels.
FSS-A5	FSS-A5-01 (2008 - Incomplete development of detailed fire	F	Closed	For many compartments, ignition sources and target sets associated with high risk	This F&O has been resolved by a model update. Since the initial peer review in

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
	scenarios) FSS-A5 not met			compartments has not been completed. A review of one example fire compartment identified that the scenario selection method was not consistent with the intent of the standard, and therefore high risk compartments are not evaluated in a level of depth sufficient to understand the results. (This F&O was generated during the January 2008 review.)	2008, the fire PRA scenarios have been completed and documented. The 2010 peer review identified an industry best practice for this element. The 2010 peer review concluded SR FSS-A5 is met at Capability Category III.
FSS-A6	FSS-A6-01 (2008 - Incomplete the fire modeling of the Main Control Room (MCR)) FSS-A6 not met	F	Closed	The MCR analysis is not complete; this item could not be verified. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by completion of the MCR analysis. The fire modeling of the MCR has been performed and documented. The 2010 peer review concluded SR FSS-A6 is met at Capability Category I/II.
FSS-B1	FSS-B1-01 (2008 - MCR abandonment analysis) FSS-B1 not met Associated SRs: FSS-B2	F	Closed	Scenarios that require MCR abandonment or reliance on ex-control room operator actions have not been developed, and the criteria used for abandonment are identified but not justified in the documentation. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by a documentation update. The control room abandonment criteria are consistent with NUREG/CR-6850, and this is documented. With this F&O resolved, FSS-B1 is judged to be met.
FSS-C1	FSS-C1-01 (2008 - Use of nonqualified cable heat release rate (HRR) value, in general, for electrical cabinets)	S	Closed	The HRR value for cabinets was based upon nonqualified cable. It is likely that most cabinets contain qualified cable so that this is a conservative assumption. (This F&O was	This suggestion F&O has been closed with no changes made. Electrical cabinets are assumed to have non-qualified cables, unless the cables are

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
				generated during the January 2008 review.)	known to be qualified, such as the electrical cabinets in the Cable Spreading Room and the 4 kV Bus Switchgear Rooms. This potential conservatism affecting HRR values is acceptable for calculations of risk changes for the RICT Program.
FSS-C2	FSS-C2-01 (2008 - Lack of time-dependent HRR) FSS-C2 not met	F	Closed	A constant HRR was used for scenarios which are significant contributors; the standard for Capability Category II/III requires a time-dependent HRR. (This F&O was generated during the January 2008 review.)	This F&O has been resolved with a model update. Time dependent HRRs have been developed and implemented using the t^2 fire growth, peak, and decay per NUREG/CR-6850. The 2010 peer review concluded SR FSS-A6 is met at Capability Category II/III.
FSS-C4	FSS-C4-01 (2008 - Conservative treatment of the location of fires in the fire modeling)	S	Closed	The assumed location of a fire in the fire modeling is conservatively chosen as the top of the component/cabinet. This results in a conservative treatment of damage, and is recommended to be reconsidered for risk-significant scenarios. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been resolved by a model change. The approach has been modified to follow FAQ-08-0043, such that the point-of-origin is at the top of combustibles if visible, otherwise at the door/vent level.
FSS-C5	FSS-C5-01 (2008 - Justification for the use of damage criteria of qualified cable for nonqualified cable)	F	Closed	A technical basis is needed to justify the use of damage temperatures for qualified cable when a limited amount of nonqualified cable is installed in the plant. Use of damage	The F&O has been resolved with a model update. The fire modeling of all fire areas containing thermoplastic cables (or cables of unknown material which are assumed

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SR	Topic	F&O Level	Status	Finding	Disposition
	FSS-C5 met at Capability Category I/II			temperatures for qualified cables may be nonconservative for targets that include nonqualified cables. (This F&O was generated during the January 2008 review.)	to be thermoplastic) were updated, and now considers appropriate damage criteria for unqualified cables.
FSS-C5	FSS-C5-01 (2010 - Treatment of thermoplastic cables) FSS-C5 met at Capability Category I/II	F	Closed	A very limited set of nonqualified cables exist in the plant which should be evaluated using lower damage/ignition temperatures. If these cables are present in a fire scenario for which fire modeling was performed, use of damage criteria for qualified cable may be nonconservative. (This F&O was generated during the December 2010 review.)	The F&O has been resolved with a model update. See F&O FSS-C5-01 (2008) above.
FSS-C8	FSS-C8-01 (2008 - Treatment of fire wrap) FSS-C8 not met	F	Closed	The treatment of fire wrap is not adequately identified or it effectiveness justified in the documentation. (This F&O was generated during the January 2008 review.)	This F&O has been resolved with a model update and documentation update. Credited fire wrap in each fire area and fire scenario is documented in its risk modeling workbook. The 2010 peer review concluded SR FSS-C8 is met.
FSS-D3	FSS-D3-01 (2008 - Fire modeling not completed for all screened areas) FSS-D3 met at Capability Category I	F	Closed	The fire modeling task is not complete. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by completion of fire modeling and documentation. The 2010 peer review concluded SR FSS-D3 is met at Capability Category III.

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SR	Topic	F&O Level	Status	Finding	Disposition
FSS-D5	FSS-D5-01 (2008 - Fire propagation between cable trays beyond two stacks)	S	Closed	The tray propagation model in NUREG/CR-6850 was not intended to be used for propagation to horizontal trays beyond one or two stacks. This is not considered a finding since this interpretation of the NUREG/CR-6850 method is a standard interpretation, and alternate guidance is not yet provided. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been resolved by a model update. The detailed fire modeling has been adjusted to align with Supplement 1 of NUREG/CR-6850, which includes "Cable Tray Propagation" (FAQ 08-0049.)
FSS-D7	FSS-D7-01 (2010 - Use of plant specific data for suppression and detection systems) FSS-D7 met at Capability Category I	F	Closed	A review of the plant suppression and detection systems to confirm it has not experienced outlier behavior relative to system unavailability has not been performed for the heat detectors or the fire suppression systems. (This F&O was generated during the December 2010 review.)	This F&O has been resolved by additional review with no model change required. A review of plant-specific maintenance and testing data for fire suppression and detection systems was performed and results documented. It was concluded that these systems have not experienced outlier behavior compared to the generic data applied in the fire PRA. With this F&O resolved, SR FSS-D7 is judged to be met at Capability Category II.
FSS-D8	FSS-D8-01 (2008 - Suitability of detection and suppression systems) FSS-D8 met	F	Closed	The effectiveness of the fire detection and suppression systems is included in the fire modeling spreadsheets; however evidence of an evaluation of the suitability of detection and suppression systems and specific features that may impact these systems was	This F&O has been resolved by a documentation update. The effectiveness of the automatic detection and suppression systems has been evaluated during walkdowns and inspections, and has been included in revised

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
				not identified in documentation. This information is contained to some degree in the fire hazard analysis (FHA) but specific discussion in the fire modeling calculations should be included. (This F&O was generated during the January 2008 review.)	documentation.
FSS-D9	FSS-D9-01 (2008 - Incomplete smoke damage analysis) FSS-D9 met at Capability Category I	F	Closed	The smoke damage analysis needs to be completed for all affected compartments. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by completion of the smoke damage analysis; no model change was required. The smoke damage analysis was completed with no new risk-significant scenarios identified. Smoke damage was evaluated based on the guidance in Appendix T of NUREG/CR-6850. The 2010 peer review concluded that SR FSS-D9 is met at Capability Category II/III.
FSS-D10	FSS-D10-01 (2008 - Confirmatory walkdowns of detection and suppression system not done) FSS-D10 not met	F	Closed	Confirmatory walkdowns have not been performed to verify that as-built plant conditions of detection, suppression, etc. have been characterized appropriately for each analyzed fire scenario. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by a documentation update. Confirmatory walkdowns have been performed for fire scenarios per the fire modeling procedure and documented in the fire modeling workbooks. The 2010 peer review concluded that SR FSS-D10 is met at Capability Category II/III.

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SR	Topic	F&O Level	Status	Finding	Disposition
FSS-D11	FSS-D11-01 (2008 - Confirmatory walkdowns of fire sources and targets not done) FSS-D11 not met	F	Closed	Confirmatory walkdowns have not been performed to confirm that the combinations of fire sources and target sets appropriately represent the as-built plant conditions. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by a documentation update. Confirmatory walkdowns have been performed for fire scenarios per the fire modeling procedure as documented in the fire modeling workbooks. The 2010 peer review concluded that SR FSS-D11 is met with a new finding - refer to F&O FSS-D11-01 (below).
FSS-D11	FSS-D11-01 (2010 - Crediting the incipient detection system for electrical cabinets in the Cable Spreading Room) FSS-D11 met	F	Closed	Fire modeling for some of the electrical cabinets includes credit for incipient detection which is not yet installed. (This F&O was generated during the December 2010 review.)	This F&O is not applicable to the RICT Program. For the use of the fire PRA in the RICT Program, the status of committed plant changes will be properly reflected in the CRMP, or other compensatory measures will be in place as applicable.
FSS-E1	FSS-E1-01 (2008 - Use of damage criteria of qualified cables for unqualified cables)	S	Closed	Damage temperatures for qualified cable are used exclusively although sampling indicates that limited amounts of nonqualified cable are installed in the plant. (This F&O was generated during the January 2008 review.)	The suggestion F&O has been resolved with a model update. See F&O FSS-C5-01 (2008) above.
FSS-E1	FSS-E1-01 (2010 - Validating type of detection system (smoke or heat) credited in the Cable Spreading Room)	F	Closed	The documentation of the CO_2 suppression system in the Cable Spreading Room does not address how the system is actuated to ensure the fire modeling assumptions are valid. The fire modeling is based on	This F&O has been resolved with no action taken. The fire modeling assumption of a single heat detector to actuate the suppression system was confirmed by review of plant drawings and

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SR	Topic	F&O Level	Status	Finding	Disposition
	FSS-E1 met			activation by a single heat detector which is likely accurate for this system; however, the system function should be validated and accurate modeling of system response should be documented. (This F&O was generated during the December 2010 review.)	procedures.
FSS-E2	FSS-E2-01 (2010 - Use of generic unavailability for the suppression system) FSS-E2 met	F	Closed	The basis for the fire suppression system unavailability factor of 0.01 is not clear. Documentation of the fire modeling reports indicates that this value was adopted based on a lack of plant-specific information and that this value equates to 80 hours of exposure per year. The report indicates that the value is based on an estimate of maintenance activities; however, no additional detail is provided. (Note: This F&O was generated during the December 2010 review.)	See F&O FSS-D7-01 (2010) above.
FSS-E3	FSS-E3-01 (2008 - Fire modeling uncertainty) FSS-E3 not met	F	Closed	The fire modeling and accident sequence analysis does not include a characterization of uncertainty, either qualitative or quantitative. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by a documentation update. The uncertainty associated with fire modeling has been identified and characterized in the documentation. The 2010 peer review concluded that SR FSS-E3 is met at Capability Category III.

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SR	Topic	F&O Level	Status	Finding	Disposition
FSS-F1	FSS-F1-01 (2008 - Exposed structure steel analysis not done) FSS-F1 not met	F	Closed	An analysis of exposed structural steel has not been performed. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by a documentation update. The exposed structural steel analysis has been completed and documented. The 2010 peer review concluded that SR FSS-F1 is met at Capability Category I/II.
FSS-G1	FSS-G1-01 (2008 - Multi-compartment analysis not done) FSS-G1 not met	F	Closed	Multi-Compartment Analysis has not be performed. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by a documentation update. The multi-compartment analysis has been completed and documented. The 2010 peer review concluded that SR FSS-G1 is met.
FSS-G5	FSS-G5-01 (2010 - use of plant-specific fire door failure probability)	S	Closed	When developing the fire barrier failure probabilities for the multi-compartment analysis plant-specific data was used to determine the unavailability for fire dampers and penetration seals; however, the generic unavailability factor for doors provided in NUREG/CR-6850 was used. (This F&O was generated during the December 2010 review.)	This suggestion F&O has been resolved by a model update. The multi-compartment analysis has been updated to account for plant-specific fire door unavailability, and the scenario frequencies have been updated accordingly.
FSS-H1	FSS-H1-01 (2008 - Documentation of the detailed fire modeling not complete) FSS-H1 not met	F	Closed	Documentation is not completed; fire modeling is currently in-process; the detailed fire modeling analyses have not been fully documented. Documentation of uncertainty analysis, multi-compartment analysis and fire	This F&O has been resolved by completing the analysis and documentation. Fire modeling has been completed and documented in detailed

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SR	Topic	F&O Level	Status	Finding	Disposition
	Associated F&Os: SR FSS-H2 through H10.			scenario confirmatory walkdowns is required. (This F&O was generated during the January 2008 review.)	fire modeling workbooks. See F&O FSS-E3-01 (2008) (above) for completion of the uncertainty analysis. See F&O FSS-G1-01 (2008) (above) for completion of the multi-compartment analysis. The 2010 peer review concluded that SR FSS-H1 is met.
FSS-H4	FSS-H4-01 (2008 - Incomplete detailed fire modeling and documentation of fire modeling inputs) FSS-H4 met	F	Closed	The detailed fire modeling task has not been completed to permit completion of the documentation. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by completing the analysis and documentation. Fire modeling has been completed and documented in detailed fire modeling workbooks.
FSS-H5	FSS-H5-01 (2008 - Incomplete detailed fire modeling and parametric uncertainty) FSS-H5 met at Capability Category I	F	Closed	No evidence of uncertainty evaluations was identified in the draft fire modeling results documentation. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by completing the analysis and documentation. Fire modeling has been completed and documented in detailed fire modeling workbooks. The results of the parameter uncertainty was performed and documented. The 2010 peer review concluded that SR FSS-H5 is met at Capability Category II, with a new finding; see FSS-H5-01 (2010) below.

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SR	Topic	F&O Level	Status	Finding	Disposition
FSS-H5	FSS-H5-01 (2010 - Lack of documenting the cause of the target damage) FSS-H5 met at Capability Category II Associated SRs: FSS-D9	F	Closed	The documentation does not clearly identify the cause of the target damage (i.e., heat effects, smoke.) Smoke damage is a consideration and can be the cause of target damage. However, the analysis results documentation do not differentiate between smoke and heat damage. (This F&O was generated during the December 2010 review.)	This F&O has been resolved by a documentation update. The risk modeling workbooks have been revised to identify the cause of target damage.
IGN-A4	IGN-A4-01 (2008 - Possible Bayesian update for DG fire frequency or provide justification) IGN-A4 met at Capability Category II Associated SRs: IGN-B4	F	Closed	There have been two DG fires at DCPP documented in the plant-specific fire experience. A Bayesian update for the DG fire frequency should be performed, or a more detailed justification of the basis for not performing the Bayesian update should be documented, and this issue identified as an epistemic sources of uncertainty. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by a documentation update. The two DG fires have been further reviewed and additional justification for not using the plant-specific experience has been documented. The use of generic fire frequency data without a Bayesian update has been specifically addressed as a source of uncertainty.
IGN-A9	IGN-A9-01 (2008 - Ranking or weighing of transient fire for some fire areas)	S	Closed	The transient fire ranking for several areas should be reviewed and possibly modified to account for the as-operated condition. The peer review identified example areas where occupancy and maintenance or testing activities could occur. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been resolved by additional review and model updates. The influence factors have been rereviewed and adjusted as necessary, and the results and basis documented. The specific areas identified by the peer review team were updated.

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SR	Topic	F&O Level	Status	Finding	Disposition
IGN-B5	IGN-B5-01 (2008 - "Zero" cable loading)	S	Closed	For several physical analysis units there is a comment "no data, assumed to be zero" pertaining to evaluating the weight of cable. While this appears to be a reasonable assumption, it is not captured as an assumption in the documentation. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been resolved by a documentation update, validating and documenting the "zero" cable loading assumption.
QNS-A1	QNS-A1-01 (2008 - Need to iterate the screening process again the criteria once the model is finalized)	S	Closed	Quantitative screening criteria include two criteria for a single scenario, a fire area screening criteria (1E-07/year CDF, 1E-08/year LERF), and a cumulative screening criteria (10% of the risk). Process should include a possible iteration of the Fire Area screening criteria in order to ensure the cumulative criteria are met. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been resolved by update of screening of scenarios to ensure that both screening criteria are satisfied.
QNS-B1	QNS-B1-01 (2008 - Lack of documenting the screened fire areas) QNS-B1 not met Associated SRs: QNS-D1	F	Closed	Compartments with risk below the screening criteria and the risk results are not documented. It is not possible to verify that all fire areas and compartments identified in the plant partitioning have been analyzed. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by a documentation update. The documentation was confirmed to list the fire compartments with risk below the screening criteria, including both CDF and LERF. The 2010 peer review concluded that SR QNS-B1 is met.
QNS-B1	QNS-B1-02 (2008 - Lack of LERF	F	Closed	LERF results are part of the screening	See F&O QNS-B1-01 (2008) above.

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SR	Topic	F&O Level	Status	Finding	Disposition
	screening results) QNS-B1 not met Associated SRs: QNS-D1			criteria but are not documented. (This F&O was generated during the January 2008 review.)	
CF-A1	CF-A1-01 (2008 - Clarify the use of the loss of power (LOP) for the fault condition)	S	Closed	The calculation of spurious operation probability includes LOP as a failure mode for numerous components. LOP as a fault condition is confusing, unless LOP causes a spurious operation. (This F&O was generated during the January 2008 review.)	This suggestion F&O was closed with no action taken. After review, PG&E judged that additional clarification to LOP consequence in the circuit analysis is unnecessary.
CF-A1	CF-A1-02 (2008 - Circuit failure probability estimate involving dependent/independent circuits (e.g., off-scheme or interlock circuits)) CF-A1 not met	F	Closed	Circuit failure probabilities are incorrectly combined when there are multiple cables in a fire area. As a result, the spurious operation probabilities used are conservative by a factor of two. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by a model update. The circuit failure mode probability calculations have been revised to properly combine multiple cable failure probabilities. The 2010 peer review concluded that this SR was met at Capability Category I with a new finding F&O CF-A1-01 (2010).
CF-A1	CF-A1-03 (2008 - Three-phase hot shorts)	S	Closed	Three-phase hot shorts are not addressed in the circuit failure probability analysis, and the peer review team identified one example. (This F&O was generated during the January 2008 review.)	See F&O CS-A7-01 (above).

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SR	Topic	F&O Level	Status	Finding	Disposition
CF-A1	CF-A1-04 (2008 - Component type not identified in documentation)	S	Closed	The component type is not included in the documentation of spurious operation probability. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been resolved with no action taken. The description of each component is judged adequate to identify the component type.
CF-A1	CF-A1-05 (2008 - Mismatch between documents)	S	Closed	The hot short probability analysis does not match the component selection and impact matrix results. The peer review team provided specific examples. (This F&O was generated during the January 2008 review.)	This suggestion F&O was closed with no action taken. The examples of apparent documentation mismatches were reviewed and dispositioned as correct as is. No document updates or other model changes were required.
CF-A1	CF-A1-06 (2008 - Fault clearing of fail-safe valves)	S	Closed	Air-operated valves (AOVs), PORVs, solenoid-operated valves (SOVs), etc., that will return to their fail-safe position on loss of power should be considered for application of a recovery factor considering spurious actuation duration, using industry guidance. (This F&O was generated during the January 2008 review.)	This suggestion F&O was closed with no action taken. The current industry guidance has not yet fully resolved this issue. The existing assumption that hot shorts do not clear is conservative and acceptable.
CF-A1	CF-A1-01 (2010 - Detailed circuit failure calculations for risk significant components using appropriate method (e.g., FAQ 08-047))	F	Closed	A substantial number of risk significant components need to have circuit failure probabilities updated to make use of the methodology provided in FAQ 08-0047, since the current calculations are conservative. (This F&O was generated	This F&O has been resolved with a model update. The circuit failure probabilities were updated for basic events with risk reduction worth (RRW) values greater than 1.05 for fire CDF and LERF employing the FAQ 08-0047

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
	CF-A1 met at Capability Category I			during the December 2010 review.)	methodology. With this F&O resolved, PG&E judges that SR CF-A1 is now met at Capability Category II/III, based on consideration of the specific circuit configuration for risk-significant components.
CF-A2	CF-A2-01 (2008 - Uncertainty values and distribution types for the circuit failure probabilities not provided) CF-A2 not met	F	Closed	Uncertainty values and distribution types for the circuit failure probabilities was not provided in the analysis files, CF tables or in RISKMAN. (This F&O was generated during the January 2008 review.)	This F&O has been resolved with a documentation update. The documentation was revised to add a discussion on distribution types and uncertainty values for the circuit failure probabilities. The 2010 peer review concluded that SR CF-A2 is met.
CF-B1	CF-B1-01 (2010 - Inconsistencies in documentation of circuit failure calculations)	S	Closed	A spot check of circuit failure calculations identified several inconsistencies in the values presented in different parts of the report. This was characterized as a documentation issue by the peer review team. (This F&O was generated during the December 2010 review.)	This suggestion F&O has been resolved by a documentation update. The documentation has been revised to correct inconsistencies.
HRA-A3	HRA-A3-01 (2010 - Basis for screening undesired actions in response to spurious annunciators) HR-A3 met at Capability Category II	F	Closed	The basis for screening undesired actions in response to spurious annunciators [and indications] is either inadequate or not provided in the documentation. The peer review team provided specific examples.	This F&O has been resolved by additional review and update of the documentation. The screening basis for all annunciators and indications was reviewed and confirmed to be acceptable. The specific

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
				(This F&O was generated during the December 2010 review.)	examples identified were corrected in the documentation.
HRA-B1	HRA-B1-01 (2008 - Additional instrumentation beyond that explicitly addressed in the internal events PRA (e.g., RCS pressure and temperature indications in support of bleed-and-feed operation) HRA-B1 met	F	Closed	The instrumentation required for implementation of feed-and-bleed cooling includes RCS pressure and temperature indications for ensuring adequate, but not excessive, heat removal. The fire PRA does not assess potential fire-induced failure of these instruments. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by additional evaluations and model updates. A review was conducted of operator actions to identify additional equipment or cables to be evaluated; this included the feed-and-bleed action.
HRA-B3	HRA-B3-01 (2008 - Basis for screening undesired operator actions in response to spurious annunciator indications)	S	Closed	There are cases where a single spurious operation could lead to an indication calling for operator action without first verifying the validity of the indication. These are not in the fire PRA model, and are only required to be considered to meet Capability Category III of the SR HRA-B3. Since the review has already identified these actions, it would be prudent to incorporate these into the model.	This suggestion F&O has been closed with no action taken. Actions taken in response to spurious annunciators are component protection actions to trip the piece of equipment. As such, the component is actually available for subsequent use. Since these scenarios are inconsequential, they have not been incorporated into the fire PRA.
HRA-C1	HRA-C1-01 (2008 - Open F&Os from the focused peer review of HRA in 2007) HRA-C1 not met	F	Closed	The F&Os from a focused-scope peer review of HRA for the internal event PRA model, conducted in 2007, have not yet been resolved, and could impact the fire PRA. (This F&O was generated during the January 2008 review.)	The internal events HRA was updated in 2012 and included review and resolution of the previous F&Os. Results of the updated internal event HRA were incorporated into the fire HRA. The 2010 peer review concluded that SR HRA-C1 is met at Capability

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
					Category II with a new finding F&O HRA-C1-01 (2010).
HRA-C1	HRA-C1-02 (2008 - No detailed analyses addressing conditions associated with a specific fire scenario) HRA-C1 not met	F	Closed	HFEs for actions identified from the fire response procedure have not yet been assessed in detail due to the current status of the fire HRA, and a screening assessment only has been performed. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by completion of the detailed analyses for the important operator actions modeled in the fire PRA. The 2010 peer review concluded that SR HRA-C1 is met at Capability Category II with a new finding F&O HRA-C1-01 (2010).
HRA-C1	HRA-C1-01 (2010 - HRA dependency analysis) HRA-C1 met at Capability Category II	F	Closed	The final check for dependent operator actions has not been completed. (This F&O was generated during the December 2010 review.)	This F&O has been resolved by completion of the fire PRA HRA dependency analysis.
HRA-D1	HRA-D1-01 (2008 - Recovery actions for risk significant fire scenarios) HRA-D1 not met	F	Closed	No recovery analysis beyond the HFEs included initially in the model has yet been performed based on the status of the fire PRA. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by a model update. A review of the dominant scenarios and areas was conducted, and appropriate recovery actions were added to the model. Screening analyses were initially incorporated followed by detailed analyses for the important operator actions modeled. The 2010 peer review concluded that SR HRA-D1 is met at Capability Category II.

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
HRA-E1	HRA-E1-01 (2008 - Open F&Os from the focused peer review of HRA in 2007) HRA-E1 not met	F	Closed	See F&O HRA-C1-01 (2008) above.	See F&O HRA-C1-01 (2008) above.
HRA-E1	HRA-E1-02 (2008 - Uncertainty analysis) HRA-E1 not met	F	Closed	Detailed HRA assessments are not yet performed and documented. Documentation of assumptions and sources of uncertainty has also not yet been done. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by completion of the detailed HRA analyses and documentation of uncertainty considerations The 2010 peer review concluded that SR HRA-E1 is met.
SF-A1	SF-A1-01 (2010 - Clarify which areas were considered in the Individual Plant Examination for External Events (IPEEE) walkdown) SF-A1 met	F	Closed	The seismic-fire interaction review relies in part on the IPEEE conclusions based on previously conducted walkdowns. While the analysis appears to be adequate, the IPEEE does not provide sufficient documentation to determine areas considered and areas screened. (This F&O was generated during the December 2010 review.)	This F&O has been resolved by a documentation update. The documentation was revised to demonstrate the areas considered in the IPEEE walkdown were consistent with the global plant analysis boundary (GPAB) considered in the current fire PRA, and that the conclusions adequately support the seismic-fire interaction analysis.
SF-A3	SF-A3-01 (2010 - Clear conclusion on CCF of suppression systems) SF-A3 met	F	Closed	The assessment of the potential for CCF of multiple fire suppression systems due to the seismically-induced failure of supporting systems is not conclusive. This was characterized by the peer review team as a documentation issue. (This F&O was generated during the December 2010	This F&O has been resolved by a documentation update. The documentation was revised to disposition CCF of fire protection systems due to a seismic event as not credible.

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
				review.)	
SF-A5	SF-A5-01 (2010 - Document needed to be revised) SF-A5 met	F	Open	The seismic-fire interaction analysis identified a recommendation to include fire brigade training to cope with a seismically-induced fires and associated system, equipment, communications, and brigade access logistics. This update to training has not yet been implemented. (This F&O was generated during the December 2010 review.)	This F&O has no impact on the RICT Program. Update to training programs is being tracked by a plant action item, and will be closed when SAP Notification 50294777, Task #23 is implemented fully. The status of training has no impact on calculations of risk changes associated with the RICT Program.
SF-B1	SF-B1-01 (2010 - Editorial changes to documentation)	S	Closed	The documentation of the seismic-fire interaction can benefit from a technical editing. A number of typographical errors were noted, and examples provided. (This F&O was generated during the December 2010 review.)	This suggestion F&O has been resolved by a documentation update to correct editorial errors in the seismic-fire interaction documentation.
FQ-A1	FQ-A1-01 (2008 - Mapping between circuit failure analysis and the basic events) Associated SRs: PRM-A1-01.	S	Closed	It is difficult to verify the circuit failure analysis impact vs. the fire PRA component without the PRA basic event in the fire impact matrix. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been closed with no action taken. A review of the documentation confirmed that a complete mapping from cables to raceways to fire PRA components to PRA basic events is provided.
FQ-B1	FQ-B1-01 (2008 - Complete quantification and document the	F	Closed	The sequence quantification and documentation is in process, but is not yet completed. (This F&O was generated during	This F&O has been resolved by completion of quantification of the fire PRA model and the associated

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
	results) FQ-B1 not met Associated SRs: FQ-C1, FQ-D1, FQ-E1, and FQ-F1.			the January 2008 review.)	documentation. The 2010 peer review concluded that SR FQ-B1 is met with one new F&O FQ-B1-01(2010).
FQ-B1	FQ-B1-01 (2010 - Truncation analysis) FQ-B1 met Associated F&Os: FQ-F1	F	Closed	The fire PRA does not achieve convergence at the current truncation level. Establishing a proper truncation level is required by QU-B2 and QU-B3, referenced in FQ-B1. A proper truncation level is required to ensure that quantification results properly reflect the risk contributors, and that significant sequences and/or contributors are not eliminated. The increases in CDF and LERF by lowering the truncation frequency by one order of magnitude are greater than 5% (QU-B3 requirement.) (This F&O was generated during the December 2010 review.)	This F&O has been resolved by a model update. The truncation level in the fire PRA model is documented to demonstrate convergence.
FQ-E1	FQ-E1-01 (2010 - Reasonableness and consistency check of modeling, sequences, and importance measures)	S	Closed	The peer review team identified recommendations to address additional items not apparent in the fire modeling document. (This F&O was generated during the December 2010 review.)	This suggestion F&O has been resolved by a documentation update. A discussion of the review of non-risk significant core damage sequences and of the reasonableness of the results of the importance measures was added to the documentation.
FQ-F1	FQ-F1-01 (2010 - Documentation of asymmetries modeling, mutually	S	Closed	The peer review team identified recommendations to address additional	This suggestion F&O has resolved by a documentation update. The items

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
	exclusive events, and modeling convergence)			items not apparent in the quantification document. (This F&O was generated during the December 2010 review.)	identified have been included in the documentation.
UNC-A1	UNC-A1-01 (2008 - Uncertainty analysis not done) UNC-A1 not met Associated SRs: UNC-A2, UNC-A3	F	Closed	The uncertainty and sensitivity analyses have not yet been completed. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by completion of the uncertainty and sensitivity analyses and documentation. The 2010 peer review concluded that SR UNC-A1 is met with one new F&O UNC-A1-01(2010).
UNC-A1	UNC-A1-01 (2010 - Editorial changes)	S	Closed	A more specific identification of the physical modeling aspect related to each source of uncertainty could be identified. (This F&O was generated during the December 2010 review.)	This suggestion F&O has been closed with no action taken. A review of the uncertainty documentation identified that the impact of uncertainties on modeling assumptions are addressed.
MU-A1	MU-A1-01 (2008 - Update PRA administrative procedures to include fire considerations) MU-A1 met Associated SRs: MU-A2, MU-B1 through MU-B4, MU-C1, MU-E1, MU-F1	F	Closed	Administrative procedures for control of the PRA model should be modified to address fire-specific issues. (This F&O was generated during the January 2008 review.)	This F&O has been resolved by updating the administrative procedures to address fire PRA issues. The 2010 peer review concluded that SR MU-A1 is met.
MU-A2	MU-A2-01 (2008 - Include monitoring, reviewing changes in PRA technology and industry	F	Closed	Administrative procedures for control of the PRA model do not explicitly require monitoring changes in PRA technology and	This F&O has been resolved by updating the administrative procedures to address changes in PRA technology and industry

Table A6-4 Diablo Canyon Fire PRA Peer Review F&Os and Disposition

SR	Topic	F&O Level	Status	Finding	Disposition
	operating experience (OE)) MU-A2 not met			industry OE. (This F&O was generated during the January 2008 review.)	OE. The 2010 peer review concluded that SR MU-A2 is met.
MU-B3	MU-B3-01 (2008 - PRA staff training)	S	Closed	There are no formal PRA training documents, but formal PRA training and a qualification program that involves on-the-job training for new PRA engineers under the guidance of qualified, experienced PRA engineers does exist. Fire PRA qualifications are not yet included in the formal process. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been closed with no action taken. Diablo Canyon Power Plant's (DCPP's) PRA staff participate various in-house and industry sponsored (e.g., EPRI, NEI, vendors) seminar and training program including fire modeling, circuit analysis, FPRA modeling. DCPP PRA also uses the mentoring program to train its new PRA.
MU-C1	MU-C1-01 (2008 - Cumulative effect of outstanding model changes)	S	Closed	The update process does not ensure a review of the significance of all outstanding changes. (This F&O was generated during the January 2008 review.)	This suggestion F&O has been resolved by updating the administrative procedures to consider the significance of outstanding changes.

References

1. NEI 06-09, *Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines, Industry Guidance Document*, Nuclear Energy Institute, Revision 0, November 2006.

2. Regulatory Guide 1.200, *An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities*, Revision 0, February 2004.

3. ML071200238, *Final Safety Evaluation for Nuclear Energy Institute (NEI) Topical Report (TR) NEI 06-09, "Risk-Informed Technical Specifications Initiative 4B, Risk-Managed Technical Specifications (RMTS) Guidelines (TAC No. MD4995),"* Letter from Jennifer M. Golder (NRR) to Biff Bradley (NEI), May 17, 2007.

4. Westinghouse Letter LTR-RAM-II-13-002, "RG 1.200 PRA Peer Review Against the ASME/ANS PRA Standard Requirements for the Diablo Canyon Nuclear Plant Probabilistic Risk Assessment," March 20, 2013.

5. ASME/ANS RA-Sa-2009, *Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications, Addendum A to RA-S-2008*, ASME, New York, NY, American Nuclear Society, La Grange Park, Illinois, February 2009.

6. Westinghouse Letter LTR-RAM-13-04, "Peer Review of Diablo Canyon Power Plant Probabilistic Risk Assessment Against the Seismic PRA Standard SRs of the ASME/ANS Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessments for Nuclear Power Plant Applications," May 1, 2013.

7. Westinghouse Letter LTR-RAM-II-08-019, "Pilot Application of the Fire PRA Peer Review Process for the Diablo Canyon Power Plant Fire Probabilistic Risk Assessment," October 17, 2008.

8. American Nuclear Society (ANS) Standard, *FPRA Methodology*, ANSI/ANS-58.23-2007.

9. Westinghouse Letter LTR-RAM-II-11-004, "Fire PRA Peer Review Against the Fire PRA Standard SRs From Section 4 of the ASME/ANS Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessments for Nuclear Power Plant Applications for the Diablo Canyon Plant Fire Probabilistic Risk Assessment," May 24, 2011.

10. Rood, H., et. al., "Safety Evaluation Report Related to the Operation of Diablo Canyon Nuclear Power Plant, Units 1 and 2," NUREG-0675, Supplement No. 34, U.S. Nuclear Regulatory Commission, Washington, DC, June 1991.

11. U.S. NRC to G. M. Rueger, "Transmittal of Safety Evaluation Closing Out Diablo Canyon Long-Term Seismic Program (TAC Nos. M80670 and M80671)," April 17, 1992.

12. Regulatory Guide 1.200, "*An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities*," Revision 2, March 2009.

Attachment 7

Information Supporting Technical Adequacy of Probabilistic Risk Assessment (PRA) Models without PRA Standards Endorsed by Regulatory Guide (RG) 1.200, Revision 2

Information Supporting Technical Adequacy of Probabilistic Risk Assessment (PRA) Models without PRA Standards Endorsed by Regulatory Guide 1.200, Revision 2

This attachment is not applicable to the Diablo Canyon submittal. PG&E is not proposing to use any PRA models in its Risk-Informed Completion Time Program for which a PRA standard, endorsed by the NRC in RG 1.200, does not exist.

Attachment 8

Information Supporting Justification of Excluding Sources of Risk Not Addressed by the Diablo Canyon Probabilistic Risk Assessment Models

Information Supporting Justification of Excluding Sources of Risk
Not Addressed by the Diablo Canyon Probabilistic Risk Assessment Models

Introduction

Section 4.0, Item 5 of the Nuclear Regulatory Commission's (NRC) Final Safety Evaluation (Reference 1) for NEI 06-09, Revision 0, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," (Reference 2) requires that the license amendment request (LAR) provide a justification for excluding any risk sources determined to be insignificant to the calculation of configuration-specific risk, and will provide a discussion of any conservative or bounding analyses to be applied to the calculation of risk-informed completion times (RICTs) for sources of risk not addressed by the probabilistic risk assessment (PRA) models.

Scope

NEI 06-09 and the associated Pressurized Water Reactor (PWR) Owners Group (PWROG) guidance (Reference 3) do not provide a specific list of hazards to be considered in an RICT Program. However, NUREG-1855 (Reference 4) provides regulatory guidance on risk-informed decision-making relative to hazards that are not considered in the PRA model. Specifically, Section 6 of NUREG-1855 provides the following list of external hazards that should be addressed either via a bounding analysis or included in a PRA calculation:

- Aircraft Impacts
- External Flooding
- Extreme Winds and Tornados (including generated missiles)
- External Fires
- Accidents From Nearby Facilities
- Pipeline Accidents (e.g., natural gas)
- Release of Chemicals Stored at the Site
- Seismic Events
- Transportation Accidents
- Turbine-Generated Missiles

The scope of this enclosure is consideration of the above hazards for Diablo Canyon, except for seismic events which are addressed by a PRA model.

Technical Approach

The guidance contained in NEI 06-09 states that all hazards that contribute significantly to incremental risk of a configuration must be quantitatively addressed in the implementation of RMTS. Consistent with NUREG-1855, the process includes the ability to address external hazards by:

- Screening the hazard based on a low frequency of occurrence,
- Bounding the potential impact and including it in the decision-making, or
- Developing a PRA model to be used in the risk management action time (RMAT)/RICT calculation.

The ASME/ANS PRA Standard (Reference 5) has endorsed the following set of five external hazard screening criteria:

(1) The hazard would result in equal or lesser damage than the events for which the plant has been designed. This requires an evaluation of plant design bases to estimate the resistance of plant structures and systems to a particular external hazard.

(2) The hazard has a significantly lower mean frequency of occurrence than another event (taking into account the uncertainties in the estimates of both frequencies), and the hazard could not result in worse consequences than the other event.

(3) The hazard cannot occur close enough to the plant to affect it. Application of this criterion needs to take into account the range of magnitudes of the hazard for the recurrence frequencies of interest.

(4) The hazard is included in the definition of another event.

(5) The hazard is slow in developing, and it can be demonstrated that sufficient time exists to eliminate the source of the threat or to provide an adequate response.

The review of external hazards considers two aspects of the contribution to risk. The first is the contribution from the occurrence of beyond design basis conditions (i.e., winds greater than design). These beyond design basis conditions challenge the functionality of the systems, structures, and components (SSCs) to support safe shutdown of the plant. The second aspect addressed are the challenges caused by external conditions that are within the design basis, but still require some plant response to assure safe shutdown (i.e., high winds causing loss of offsite power). While the plant design basis assures that the safety-related equipment necessary to respond to these challenges are protected, the occurrence of these conditions nevertheless cause a demand on these systems and can impact configuration risk.

Note that when the effect of a particular hazard is not mitigatable using the plant SSCs, then there is no impact on the changes in risk calculated to support the RICT Program, and so these hazards can be screened as well. Only events which create a demand for mitigation equipment are potentially relevant to the RICT Program.

The review and disposition of each external hazard is addressed in Table A8-1. Unless otherwise specified, all information is based on the Individual Plant Examination of External Events (IPEEE) (Reference 6).

Table A8-1
Evaluation of Risks from External Hazards

External Hazard	Evaluation	Disposition for RICT Program
Aircraft Impacts	There is one airport at San Luis Obispo and there are several airways in the vicinity of Diablo Canyon. The airport is located approximately 12.5 miles east-northeast of the plant. The airport is a general aviation county airport with some scheduled commercial service. The airways include low-level federal airways used by small general aviation type aircraft, high level jet routes used by large air carriers, and military training routes used by fighter-type aircraft. Impacts which were evaluated to cause structural failures result in direct core damage; the bounding core damage frequency (CDF) is less than 1E-6 per year. Other effects of impacts which do not result in direct core damage would be bounded by a loss of offsite power (LOOP).	Projected air traffic from the small airport and airways does not pose a significant safety impact to Diablo Canyon based on the design of the facility and the low frequency of core damage due to such events. Impacts which were evaluated to cause structural failures result in direct core damage, and therefore have no impact on the RICT Program calculations. The consequences of a lesser impact are bounded by a LOOP, are the same as any LOOP initiating event. It is therefore concluded that no unique PRA model for aircraft impacts is required in order to assess configuration risk for the RICT Program.
External Flooding	The external flooding hazard is discussed in the Final Safety Analysis Report (FSAR), Sections 2.4 and 3.4, and includes flooding from a maximum probable hurricane, tsunami, high tide, storm waves, probable maximum precipitation, and a severely degraded breakwater. A review of these hazards concluded that Diablo Canyon conforms to the Standard Review Plan (SRP), (NUREG 800) criteria (Reference 7); therefore, there are no vulnerabilities. Another possible flooding source considered in Reference 6 is the raw water reservoirs located on	External flooding scenarios do not pose a significant safety impact to Diablo Canyon based on the design of the facility and conformance to the SRP. A loss of all ASW pumps due to external flooding can be screened based on bounding analysis that shows a CDF of less than 1E-6 per year. It is therefore concluded that no unique PRA model for external flooding scenarios is required in order to assess configuration risk for the RICT Program.

Table A8-1
Evaluation of Risks from External Hazards

External Hazard	Evaluation	Disposition for RICT Program
	the hill behind the plant at elevation 310 feet. There are two reservoirs, each holding about 2.25 million gallons. It is unlikely that the reservoirs can fail in such a way to pose a threat to the plant. However, a worst case scenario was evaluated in and the study concluded that the depth of flooding is not expected to cause serious damage to the plant. In addition, the flood will only be temporary and not sustained. The Auxiliary Salt Water (ASW) pumps are subject to damage due to external flooding. An evaluation in Reference 6 concluded that the total frequency of losing all four ASW pumps was 5.7E-5 per year, and the CDF was 7.2E-7 per year. However, this evaluation does not consider the currently installed reactor coolant pump (RCP) high temperature seals, or the planned installation of passive shutdown seals. These modifications would significantly reduce the CDF such that this event would not be quantitatively significant.	
Extreme Winds and Tornados (including generated missiles)	A review of the analysis in the FSAR shows that the critical concrete structures at Diablo Canyon can withstand at least a 200-mph wind without major damage (such as collapse of a wall or overturning of a structure). The annual frequency of excessive tornado wind (greater than or equal to 200 mph) on the structures was calculated to be less than 3.2E-7 per year. The annual frequency of excessive	Extreme winds and tornadoes within the design basis do not pose a significant safety impact to Diablo Canyon based on the design of the structures, low frequency of occurrence of the events, and conformance to the SRP. Beyond design basis events have extremely low frequencies, and can be screened. It is therefore concluded that no unique PRA model for extreme winds and tornadoes is

Table A8-1
Evaluation of Risks from External Hazards

External Hazard	Evaluation	Disposition for RICT Program
	hurricane wind (greater than or equal to 150 mph) on the structures was calculated to be 3.2E-12 per year. The site design basis for high winds and tornadoes was reviewed, and conform to the appropriate SRP criteria for high winds and tornadoes.	required in order to assess configuration risk for the RICT Program.
External Fires	A review of the plant layout shows that the hazard to the plant from external fires is not significant except for the hillside area to the east of the plant (Reference 6). There was one instance in 1982 (prior to commercial operation) where nearby brush fire caused a partial LOOP. If an external fire of the 1982 type and magnitude were to reoccur at the site, the most likely impact would be limited to a partial or total LOOP.	The impact of an external fire is bounded by the existing LOOP initiating event. It is therefore concluded that no unique PRA model for external fires is required in order to assess configuration risk for the RICT Program.
Accidents From Nearby Facilities	Industry in the vicinity of the plant site is mainly light and of a local nature serving the needs of agriculture in the area. The largest industrial complex is Vandenberg Air Force Base, located about 35 miles south-southeast of the site. The Point San Luis lighthouse and Coast Guard Reservation are approximately 6-1/2 miles east-southeast of the site. A review of nearby facilities was conducted and concluded that Diablo Canyon conformed to the appropriate SRP criteria.	Nearby facility accidents do not pose a significant safety impact to Diablo Canyon based on conformance to the SRP. It is therefore concluded that no unique PRA model for facility accidents is required in order to assess configuration risk for the RICT Program.

Table A8-1
Evaluation of Risks from External Hazards

External Hazard	Evaluation	Disposition for RICT Program
Pipeline Accidents (e.g., natural gas)	No natural gas or other pipelines pass within five miles of Diablo Canyon.	There are no pipelines in sufficient proximity to the plant site to cause a significant hazard. It is therefore concluded that no unique PRA model for pipeline accidents is required in order to assess configuration risk for the RICT Program.
Release of Chemicals Stored at the Site	The hazard from chemicals stored onsite is dominated by the potential effect of a spill on control room habitability. The initiating event would be a chemical spill or tank rupture caused, for example, by a handling accident, container failure, or some other accident. After the material is released, to contribute significantly to risk, it must be carried by some mechanism to the control room air intake. The only hazardous chemical on site that may pose a hazard to the control room operators is ammonium hydroxide. This chemical has since been replaced by ethanolamine (ETA); analysis of the effects of an ETA spill on site demonstrated that it does not create any hazard to the control room operators under either normal or emergency control room ventilation operation.	There are no chemicals on site which can cause a significant safety hazard. It is therefore concluded that no unique PRA model for chemical releases is required in order to assess configuration risk for the RICT Program.
Transportation Accidents	The plant intake structure, which houses the safety-related ASW pumps, is located on the coastline. The potential hazard to the intake structure and the ASW system from maritime vessels was analyzed, and scenarios involving ship breakthrough of the breakwater in its normal state (not degraded by	Transportation accidents involving ships cannot cause damage to the plant under normal conditions, and are shown to have a bounding CDF of less than 1E-6 per year for degraded conditions. It is therefore concluded that no unique PRA model for transportation accidents is required in order to assess

Table A8-1
Evaluation of Risks from External Hazards

External Hazard	Evaluation	Disposition for RICT Program
	heavy wave action) were shown to be not possible due to the speed required to generate the kinetic energy needed to physically force a passage. Scenarios involving oil spills and other floating debris were also concluded to have no consequence. Analysis scenarios involving a degraded breakwater, therefore increasing the possibility of a ship arriving in the intake cove, resulted in a core damage frequency of 2E-8 per year. Scenarios involving a ship blocking the flow of water into the intake cove result in a core damage frequency of 5E-9 per year.	configuration risk for the RICT Program.
Turbine-Generated Missiles	A plant-specific evaluation (Reference 8) of turbine missile generation, targets, and potential effects concluded that there is a low frequency of core damage due to these events. The Containment and Fuel Handling buildings are the most significant targets; a hypothetical turbine missile penetration is assumed to cause direct fuel damage. The CDF due to turbine missile damage to the Auxiliary or Turbine buildings (which house mitigation equipment) or outdoor water storage tanks are less than 1E-6 per year.	Turbine missile damage to the Containment or Fuel Handling buildings is not mitigatable and therefore has no impact to configuration risk calculations. The frequency of missile damage to the Auxiliary and Turbine buildings or outdoor storage tanks is very small compared to the failure probabilities of equipment from other modeled failure modes, and would have negligible impact on the RICT Program calculations. It is therefore concluded that no unique PRA model for turbine missile accidents is required in order to assess configuration risk for the RICT Program.

References

1. ML071200238, *Final Safety Evaluation for Nuclear Energy Institute (NEI) Topical Report (TR) NEI 06-09, "Risk-Informed Technical Specifications Initiative 4B, Risk-Managed Technical Specifications (RMTS) Guidelines (TAC No. MD4995)*," Letter from Jennifer M. Golder (NRR) to Biff Bradley (NEI), May 17, 2007.

2. NEI 06-09, *Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines*, Revision 0, November 2006.

3. WCAP-16952-NP, *Supplemental Implementation Guidance for the Calculation of Risk Informed Completion Time and Risk Managed Action Time for RITSTF Initiative 4B*, August 2010.

4. NUREG-1855, *Guidance on the Treatment of Uncertainties Associated with PRAs in Risk-Informed Decision Making*, Volume 1, March 2009.

5. American Society of Mechanical Engineers and American Nuclear Society, *Addenda to ASME/ANS RA-S-2008 Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications*, ASME/ANS RA-Sa-2009, New York (NY), February 2009.

6. PG&E Letter DCL-94-133, "*Response to Generic Letter 88-20, Supplement 4, Individual Plant Examination of External Events for Severe Accident Vulnerabilities*," June 27, 1994.

7. NUREG-75/087, *Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants, LWR Edition*, 1975.

8. U.S. NRC to G. M. Rueger, "Transmittal of Safety Evaluation Closing Out Diablo Canyon Long-Term Seismic Program (TAC Nos. M80670 and M80671)," April 17, 1992.

Attachment 9

Baseline Core Damage Frequency (CDF) and Large Early Release Frequency (LERF)

Baseline Core Damage Frequency (CDF) and Large Early Release Frequency (LERF)

Section 4.0, Item 6 of the Nuclear Regulatory Commission's (NRC) Final Safety Evaluation (Reference 1) for NEI 06-09, Revision 0, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," (Reference 2) requires that the license amendment request (LAR) provide the plant-specific total CDF and LERF to confirm applicability of the limits of Regulatory Guide (RG) 1.174, Revision 1 (Reference 3). (Note that RG 1.174, Revision 2 (Reference 6), issued by the NRC in May 2011, did not revise these limits.)

This attachment demonstrates that the total CDF and total LERF are below the guidance of RG 1.174, specifically, 1E-4/year CDF and 1E-5/year LERF, such that the risk metrics of NEI 06-09 may be applied to Diablo Canyon Risk-Informed Completion Time (RICT) Program.

Table A9-1 provides the CDF and LERF values that resulted from a quantification of the baseline average annual models (References 4 and 5), which include contributions from internal events (including internal flooding), fire, and seismic hazards. Other external hazards are below accepted screening criteria and therefore do not contribute significantly to the totals.

Table A9-1: Total Baseline Average Annual CDF/ LERF

	Unit 1		Unit 2	
Hazard	**CDF (per rx-yr)**	**LERF (per rx-yr)**	**CDF (per rx-yr)**	**LERF (per rx-yr)**
Internal Events	1.35E-05	1.59E-06	1.35E-05	1.59E-06
Internal Flooding	1.42E-06	8.85E-08	6.79E-07	4.38E-08
Seismic	2.74E-05	1.58E-06	2.74E-05	1.58E-06
Fire	5.24E-05	4.73E-06	4.90E-05	5.62E-06
Total	**9.47E-05**	**7.99E-06**	**9.06E-05**	**8.83E-06**

(Note that these values reflect the anticipated configuration of the plant upon full implementation of NFPA 805 and related plant modifications to resolve fire protection issues. At the time of implementation of the RICT Program, the PRA model used will reflect the existing configuration of the plant.)

As demonstrated in the table, the total CDF and total LERF are within the guidance of RG 1.174 to permit small changes in risk which may occur during RICT Program implementation of extended Completion Times. Therefore, the Diablo Canyon RICT Program is consistent with NEI 06-09 guidance.

References

1. ML071200238, *Final Safety Evaluation for Nuclear Energy Institute (NEI) Topical Report (TR) NEI 06-09, "Risk-Informed Technical Specifications Initiative 4B, Risk-Managed Technical Specifications (RMTS) Guidelines (TAC No. MD4995)*," Letter from Jennifer M. Golder (NRR) to Biff Bradley (NEI), May 17, 2007.

2. NEI 06-09, *Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines*, Revision 0, November 2006.

3. Regulatory Guide 1.174, *An Approach For Using Probabilistic Risk Assessment In Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis*, Revision 1, November 2002.

4. PRA Calculation File C.9, *Quantification of CDF and LERF for the DCPP PRA Model*, Revision 11a.

5. PRA Calculation File F.3.5, *Development of Fire-Induced Risk Model*, Revision 1.

6. Regulatory Guide 1.174, *An Approach For Using Probabilistic Risk Assessment In Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis*, Revision 2, May 2011.

Attachment 10

Justification of Application of At-Power Probabilistic Risk Assessment Models to Shutdown Modes

Justification of Application of At-Power
Probabilistic Risk Assessment Models to Shutdown Modes

This attachment is not applicable to the Diablo Canyon submittal. PG&E is not proposing to apply the Risk-Informed Completion Time Program in shutdown modes, but only in Modes 1 and 2.

Attachment 11

Probabilistic Risk Assessment (PRA) Model Update Process

Probabilistic Risk Assessment (PRA) Model Update Process

Summary

Section 4.0, Item 8 of the Nuclear Regulatory Commission's (NRC) Final Safety Evaluation (Reference 1) for NEI 06-09, Revision 0, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," (Reference 2) requires that the license amendment request (LAR) provide a discussion of the licensee's programs and procedures which assure the PRA models which support the RMTS are maintained consistent with the as-built/as-operated plant.

This attachment describes the administrative controls and procedural processes applicable to the configuration control of PRA models used to support the Risk-Informed Completion Time (RICT) Program, which will be in place to ensure that these models reflect the as-built/as-operated plant. Plant changes, including physical modifications and procedure revisions, will be identified and reviewed prior to implementation to determine if they could impact the PRA models per TS3.NR1, Diablo Canyon Power Plant, Departmental Administrative Procedure, *Probabilistic Risk Assessment* (Reference 3), and AWP E-028, Diablo Canyon Power Plant, Administrative Work Procedure, PRA Maintenance and Upgrades (Reference 4). The configuration control program will ensure these plant changes are incorporated into the PRA models as appropriate. The process will include discovered conditions associated with the PRA models, which will be addressed by the Diablo Canyon Corrective Action Program.

Should a plant change or a discovered condition be identified that has a significant impact to the RICT Program calculations as defined by the Configuration Control Program, an interim update of the PRA model will be implemented. Otherwise, the PRA model change is incorporated into a subsequent periodic model update. Such pending changes are considered when evaluating other changes until they are fully implemented into the PRA models. Periodic updates are performed no less frequently than every two refueling cycles, consistent with the guidance of NEI 06-09.

PRA Model Update Process

Internal Event, Internal Flood, Fire, and Seismic Event PRA Maintenance and Update

The Diablo Canyon risk management process ensures that the applicable PRA model used for the RICT Program reflects the as-built/as-operated plant for each of the two Diablo Canyon units. The PRA configuration control process delineates the responsibilities and guidelines for updating the full power internal event, internal flood, fire, and seismic PRA models, and includes both periodic and interim PRA model updates. The process includes provisions for monitoring potential impact areas affecting the technical elements of the Diablo Canyon PRA models (e.g., due to plant

changes, plant/industry operational experience, or errors or limitations identified in the model), assessing the individual and cumulative risk impact of unincorporated changes, and controlling the model and necessary computer files, including those associated with the configuration risk management program (CRMP) model.

Review of Plant Changes for Incorporation into the PRA Model

(1) Plant changes or discovered conditions, as defined in the PRA Configuration Control Program, are reviewed for potential impact to the PRA models and including the CRMP model and the subsequent risk calculations which support the RICT Program (Section 2.3.4, Items 7.2 and 7.3, and 2.3.5, Items 9.2 and 9.3).

(2) Plant changes that meet the criteria defined in the PRA configuration control program (including consideration of the cumulative impact of other pending changes) will be immediately incorporated in the applicable PRA model(s), consistent with the NEI 06-09 guidance. Otherwise, the change is assigned a priority and is incorporated at a subsequent periodic update consistent with procedural requirements. (Section 2.3.5, Item 9.2)

(3) PRA updates for plant changes are performed at least once every two refueling cycles, consistent with the guidance of NEI 06-09 (Section 2.3.4, Item 7.1, and 2.3.5, Item 9.1).

(4) If a PRA model change is required for the CRMP model, but cannot be immediately implemented for a significant plant change or discovered condition, either:

A. Alternative analyses to conservatively bound the expected risk impact of the change will be performed. In such a case, these alternative analyses become part of the RICT Program calculation process until the plant changes are incorporated into the PRA model during the next update. The use of such bounding analyses is consistent with the guidance of NEI 06-09.

B. Appropriate administrative restrictions on the use of the RICT Program for extended Completion Times are put in place until the model changes are completed, consistent with the guidance of NEI 06-09.

These actions satisfy NEI 06-09 Section 2.3.5, Item 9.3.

<u>References</u>

1. ML071200238, *Final Safety Evaluation for Nuclear Energy Institute (NEI) Topical Report (TR) NEI 06-09, "Risk-Informed Technical Specifications Initiative 4B, Risk-Managed Technical Specifications (RMTS) Guidelines (TAC No. MD4995),"* Letter from Jennifer M. Golder (NRR) to Biff Bradley (NEI), May 17, 2007.

2. NEI 06-09, *Risk-Informed Technical Specifications Initiative 4B: Risk-Managed Technical Specifications (RMTS) Guidelines*, Nuclear Energy Institute, Revision 0-A, November 2006.

3. TS3.NR1, Diablo Canyon Power Plant Departmental Administrative Procedure, *Probabilistic Risk Assessment.*

4. AWP E-028, Diablo Canyon Power Plant, Administrative Work Procedure, *PRA Maintenance and Upgrades*.

Attachment 12

Attributes of the Configuration Risk Management Program (CRMP) Model

Attributes of the Configuration Risk Management Program (CRMP) Model

Introduction:

Section 4.0, Item 9 of the Nuclear Regulatory Commission's (NRC) Final Safety Evaluation (Reference 1) for NEI 06-09, Revision 0, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," (Reference 2) requires that the license amendment request (LAR) provide a description of PRA models and tools, including identification of how the baseline probabilistic risk assessment (PRA) model is modified for use in the CRMP tools, quality requirements applied to the PRA models and CRMP tools, consistency of calculated results from the PRA model and the CRMP tools, and training and qualification programs applicable to personnel responsible for development and use of the CRMP tools. The scope of structures, systems, and components (SSCs) within the CRMP will be provided. This item should also confirm that the CRMP tools can be readily applied for each Technical Specification (TS) limiting condition for operation (LCO) within the scope of the plant-specific submittal.

This attachment describes the necessary changes to the peer-reviewed baseline PRA models for use in the CRMP software to support the Risk-Informed Completion Time (RICT) Program. The process employed to adapt the baseline models for CRMP use is demonstrated: (1) to preserve the core damage frequency (CDF) and large early release frequency (LERF) quantitative results; (2) to maintain the quality of the peer-reviewed PRA models; and (3) to correctly accommodate changes in risk due to time-of-year, time-of-cycle, and configuration-specific considerations. Quality controls and training programs applicable for the CRMP are also discussed in this enclosure. Additional considerations regarding the fire PRA model to address implementation of National Fire Protection Association (NFPA)-805 as the licensing basis for the fire protection program is also discussed at the end of this attachment.

Translation of Baseline PRA Model for Use in CRMP:

The baseline PRA models for internal events including: internal floods, internal fires, and seismic events, are the peer-reviewed models, updated when necessary to incorporate plant changes to reflect the as-built/as-operated plant. These models are modified to include changes which are needed to facilitate configuration-specific risk calculations to support the RICT Program implementation. The baseline models, and the changes made to create the CRMP model used in the RICT Program, are controlled using plant calculations, which include all necessary quality controls and reviews.

The changes which are currently needed for the existing baseline PRA models to provide a complete scope for RICT Program calculations are described in Table A12-1.

TABLE A12-1
CRMP MODEL CHANGES FOR ADDITIONAL RICT PROGRAM SSCs

DESCRIPTION	BASIS FOR CHANGE
Reactor Trip System (RTS) Instrumentation	The reactor trip system (RTS) instrumentation for automactic reactor trip is addressed by LCO 3.3.1. A surrogate model, which assesses the failure probability of two generic RTS functions, is incorporated into the CRMP to permit assessing risk changes in a bounding manner, as permitted by NEI 06-09, when one or more RTS functions have inoperable channels. The model is bounding because each function is considered unavailable if any one or more associated instrument channels are inoperable, and only two RTS functions are modeled for automatic reactor trip for all initiating events. This conservatively bounds the failure probability of the automatic reactor trip function for any initiating event.
Pressurizer Heaters	The pressurizer heaters are addressed by LCO 3.4.9. The heaters are not included in the baseline PRA models, but are added to the CRMP to permit assessing risk changes in a bounding manner, as permitted by NEI 06-09, when one or more pressurizer heaters are inoperable. The model is bounding because it is assumed that without pressurizer heaters, secondary cooling will be unavailable.

The changes to the models to account for variations in system success criteria based on time of year or time in operating cycle, and other specific changes needed to properly account for configuration-specific issues, which are either not evaluated in the baseline average annual model or are evaluated based on average conditions encountered during a typical operating cycle, are described in Table A12-2.

TABLE A12-2
CHANGES MADE FOR CONFIGURATION-SPECIFIC RISK

DESCRIPTION	BASIS FOR CHANGE
Plant Availability	The baseline PRA models account for the time the reactor operates at power by using a plant availability factor. This is appropriate for determining the average annual (time based) risk, but the factor is not applicable to configuration-specific risk calculated for the RICT Program. In order to account for the assumption that the plant is always operating in the RICT Program, the frequency of initiating events which include an availability factor are adjusted. This change is necessary to adjust the modeled initiating event frequencies from a per year to per reactor year basis for use in the CRMP.

TABLE A12-2
CHANGES MADE FOR CONFIGURATION-SPECIFIC RISK

DESCRIPTION	BASIS FOR CHANGE
Maintenance Alignment Probabilities	Maintenance alignment probabilities in the baseline PRA models have probabilities based on the fraction of the year the equipment is unavailable. For the CRMP model, the actual configuration of equipment is evaluated, so the maintenance alignment probabilities are set to zero. This is also done for the system initiating events which include maintenance contributions.
Excluded Maintenance Combinations	The PRA models do not remove excluded maintenance combinations (i.e., both trains of single safety system being simultaneoulsy unavailable), therefore no change to the CRMP model is required.
Room Cooling Success Criteria	The baseline PRA models include conservative success criteria for room cooling and do not use average annual criteria; therefore, no changes to the CRMP model for room cooling success criteria are required.
Unfavorable Exposure Time (UET) for anticipated transient without trip (ATWT) Events	The current Diablo Canyon core design reflected in the baseline PRA model for ATWT events includes a UET for variable success criteria based on time of core life (i.e., moderator temperature coefficient early in cycle life). The event is set to the fraction of the year for which the UET applies, and will be changed to a probability of 1 or 0 based on operator input using the CRMP tool, depending on the actual time in the operating cycle.

Scope of Systems, Structures, and Components within the CRMP

In addition to the SSCs modeled for each TS LCO in the scope of the RICT Program (described in Attachment 5), the additional SSCs and/or corresponding functions which are in the PRA models but not in plant TS are listed in Table A12-3.

TABLE A12-3
SSC FUNCTIONS NOT IN TS THAT IMPACT RICT CALCULATIONS

- Third centrifugal charging pump providing seal cooling
- Feed and bleed using emergency core cooling system (ECCS) pumps and power operated oelief oalves (PORVs)
- Backup firewater cooling to the charging pumps
- Instrument air system
- Main feedwater and condensate systems pumps and valves
- Class I vital switchgear ventilation
- Firewater storage tank and raw water reservoir as alternate sources to AFW supply

- Class II power-operated relief vavle providing pressure relief and feed-and-bleed
- Auxiliary Saltwater Unit Crosstie Valve FCV-601

Quality Requirements and Consistency of PRA Model and CRMP Tools

The approach for establishing and maintaining the quality of the PRA models, including the CRMP model, includes both a PRA maintenance and update process (described in Attachment 11), and the use of self-assessments and independent peer reviews (described in Attachment 6).

The information provided in Attachment 6 demonstrates that the Diablo Canyon internal event, internal flood, fire, and seismic PRA models reasonably conform to the associated industry standards endorsed by Regulatory Guide 1.200. This information provides a robust basis for concluding that the PRA models are of sufficient quality for use in risk-informed licensing actions.

For maintenance of an existing CRMP model, changes made to the baseline PRA model in translation to the CRMP model will be controlled and documented. An acceptance test is performed after every CRMP model update to verify proper translation of the baseline PRA models and acceptance of all changes made to the baseline PRA models pursuant to translation to the CRMP model. This testing also verifies correct mapping of plant components to the basic events in the CRMP model.

Training and Qualification

Diablo Canyon PRA staff is responsible for development and maintenance of the CRMP model. The PRA staff is trained in accordance with the site Engineering personnel training program. Operations and Work Control staffs will use the CRMP tool under the RICT Program and staffs are trained in accordance with a program using National Academy for Nuclear Training (ACAD) documents, which is also accredited by INPO.

Application of the CRMP Tool to the RICT Program Scope

Diablo Canyon will use the EPRI software program *Phoenix* as its CRMP platform. This program is specifically designed by EPRI to support implementation of RMTS, and is compatible with the PRA model software used at Diablo Canyon. *Phoenix* will permit the user to evaluate all configurations within the scope of the RICT Program at Diablo Canyon using appropriate mapping of equipment to PRA model elements.

Additional Considerations for NFPA-805 Modifications

The existing fire PRA model includes credit for committed plant modifications to be implemented as part of the transition of the fire protection licensing basis to NFPA-805 (as described in commitment 3 contained in Enclosure 5 of Reference 6). At the

expected time of implementation of the RICT Program, not all of these committed modifications will be implemented. PG&E proposes to use the risk insights from the post-transition fire PRA model and commits as part of the RICT Program implementation to maintain compensatory measures in place until the associated plant modifications are implemented, as follows:

- At any time when a RICT is in effect, a continuous fire watch will be established in the Cable Spreading and solid state protection system (SSPS) rooms until incipient detection and hot shutdown panel modifications, described in Reference 6, are implemented.
- At any time when a RICT is in effect, welding and cutting activities will be prohibited in the following fire areas until fire wrap and circuit rerouting modifications in these areas are implemented:
    - Unit 1 Fire Area 3-BB, Elevation 115
    - Unit 2 Fire Area 5-B-4

In addition, the fire and internal events PRA models include credit for a committed plant modification (described in Reference 6), to install a passive shutdown seal for each of the reactor coolant pumps (RCPs). For RICT Program calculations, the PRA models will reflect the actual configuration of the RCP seals.

References

1. ML071200238, *Final Safety Evaluation for Nuclear Energy Institute (NEI) Topical Report (TR) NEI 06-09, "Risk-Informed Technical Specifications Initiative 4B, Risk-Managed Technical Specifications (RMTS) Guidelines (TAC No. MD4995)*," Letter from Jennifer M. Golder (NRR) to Biff Bradley (NEI), May 17, 2007.

2. NEI 06-09, *Risk-Informed Technical Specifications Initiative 4B: Risk-Managed Technical Specifications (RMTS) Guidelines*, Nuclear Energy Institute, Revision 0-A, November 2006.

3. TS3.NR1, Diablo Canyon Power Plant Departmental Administrative Procedure, *Probabilistic Risk Assessment*.

4. Regulatory Guide 1.200, *An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities*, Revision 2, March 2009.

5. ASME/ANS RA-Sa-2009, *Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications, Addendum A to RA-S-2008*, ASME, New York, NY, American Nuclear Society, La Grange Park, Illinois, February 2009.

6. PG&E Letter DCL-13-065, "*License Amendment Request 13-03, License Amendment Request to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants (2001 Edition)*," June 26, 2013.

Attachment 13

Key Assumptions and Sources of Uncertainty

Key Assumptions and Sources of Uncertainty

Introduction:

Section 4.0, Item 10 of the Nuclear Regulatory Commission's (NRC) Final Safety Evaluation (Reference 1) for NEI 06-09, Revision 0, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," (Reference 2) requires that the license amendment request (LAR) provide a discussion of how the key assumptions and sources of uncertainty were identified, and how their impact was assessed and dispositioned.

This attachment provides a discussion of how the key assumptions and sources of uncertainty were identified, and how their impact on the Risk-Informed Completion Time (RICT) Program was assessed and dispositioned.

Process for Identification of Key Assumptions and Sources of Uncertainty:

Sources of model uncertainty and related assumptions, defined consistent with Regulatory Guide 1.200, Revision 2, (Reference 3) and the American Society of Mechanical Engineers (ASME)/American Nuclear Society (ANS) Probabilistic Risk Assessment (PRA) Standard (Reference 4), have been identified for the Diablo Canyon baseline PRA models using the guidance of NUREG-1855 (Reference 5) and EPRI TR-1016737 *Treatment of Parameter and Model Uncertainty for Probabilistic Risk Assessment* (Reference 6).

The detailed process of identifying, characterizing and qualitative screening of model uncertainties is found in Section 5.3 of NUREG-1855 and Section 3.1.1 of EPRI TR-1016737. The process in these references was mostly developed to evaluate the uncertainties associated with the internal events PRA model; however, the approach can be applied to other types of hazard groups.

Disposition of Key Assumptions and Sources of Uncertainty

The list of assumptions and sources of uncertainty were reviewed to identify those which would be significant for the evaluation of configuration-specific changes in risk. If the Diablo Canyon model uses a nonconservative treatment, or methods which are not commonly accepted, the underlying assumption or source of uncertainty was reviewed to determine the impact on RICT Program calculations. Only those assumptions or sources of uncertainty which could significantly impact the configuration risk calculations were considered key for this application.

The internal events PRA models are used to support the fire and seismic PRA, and so the assumptions and uncertainties evaluated would apply to these PRA models as well.

Key assumptions and sources of uncertainty for the RICT Program application are identified and dispositioned in Table A13-1.

Table A13-1

Disposition of Key Assumptions/Sources of Uncertainty Impacting Configuration Risk Calculations		
Assumption/Uncertainty	Discussion	Disposition for RICT Program
Dual unit trips are not considered in the single unit model and cross-tie to the other unit's resources may be unavailable.	The effects of dual unit trips and events may not be considered in accident sequences. This approach is nonconservative because the plant equipment credited may be required by the second unit and be unavailable for cross-tie.	Shared systems and equipment between the units will be identified in procedures for RICT Program implementation so that consideration of additional risk management actions will be made.
The pressure setpoint for Containment Spray actuation is assumed to be reached for all small loss-of-coolant accident (LOCA) events unless the fan coolers operate successfully. This decreases the time window for swap over to the containment sump for recirculation and thus increases the failure probability.	This is a reasonable assumption and possibly conservative for very small breaks in which the containment pressure never exceeds the Containment Spray actuation pressure setpoint, regardless of the success of the fan coolers.	There was a modeling error discovered in the PRA model for swap over to the recirculation sump. Containment Spray actuation is never considered to impact the time window for swap over to the containment sump for recirculation. This results in using the longer time window and shorter failure probability for swap over when the Contain Fan Cooler Unit system fails. The error in the PRA model related to not modeling shorter containment sump recirculation time window for small LOCAs when the containment fan cooling system fails will be corrected in the CRMP model before the RICT Program is implemented.

Table A13-1

Disposition of Key Assumptions/Sources of Uncertainty Impacting Configuration Risk Calculations		
Assumption/Uncertainty	Discussion	Disposition for RICT Program
The RHR pumps are assumed to be unavailable and unrecoverable for an interfacing system LOCA because of exposure to temperature and pressure conditions well beyond the design basis.	The assumption that the residual heat removal (RHR) pumps would be unavailable during all interfacing system LOCA sequences is overly conservative compared to the modeling at similar power plants in the industry.	It is a realistic assumption that the RHR pumps would be unavailable for interfacing system LOCAs involving the RHR system. The interfacing system LOCA initiating events in the PRA model involve the suction and discharge RHR piping, which would most likely fail the system itself. In addition, water quality and pressure conditions at both the suction and discharge of the RHR pumps are beyond the design basis and difficult to predict. This would not have a significant impact on the RICT Program.

Table A13-1

Disposition of Key Assumptions/Sources of Uncertainty Impacting Configuration Risk Calculations		
Assumption/Uncertainty	Discussion	Disposition for RICT Program
Charging and Safety Injection (SI) pumps are credited for inventory make-up in case of a medium LOCA. It is assumed that 2 out of 4 high pressure injection pumps (charging or SI) are required for success; this was conservatively modeled as 1 out of 2 charging pumps and 1 out of 2 SI pumps. To eliminate this modeling conservatism when all support is available and when 2 out of 2 charging pumps are required, a conservative estimate of the charging system failure fraction is to multiply the split fraction value for 1 of 1 pump train unavailability (CH2) by a factor of 2. Thus, the recovery factor (or conservatism reduction factor) for these conditions is 2*CH2.	The impact should be minimal for the baseline PRA model as the conservatism in the scenario of 1 out of 1 pump available is compensated with a factor of 2 when 2 out of 2 pumps are required.	This is a conservative approach and should not have a significant impact on the baseline PRA model. However, whenever a charging pump is unavailable and the SI system fails this recovery factor becomes nonconservative since the required 2 out of 2 high head injection pump criteria is not met. Accordingly, the emergency core cooling system charging pump recovery factor will not be credited in the RICT Program whenever an emergency core cooling system charging pump is made unavailable.

Table A13-1

Disposition of Key Assumptions/Sources of Uncertainty Impacting Configuration Risk Calculations		
Assumption/Uncertainty	Discussion	Disposition for RICT Program
A 6-hour mission time for emergency diesel generators (EDGs) and fuel oil transfer pumps is assumed sufficient for non-seismic initiators rather than the standard 24-hour mission time.	An EDG mission time of 6 hours is used for initiating events for which the probability of non-recovery of offsite power after 6 hours is sufficiently small. The probability of non-recovery values are much larger than the fail to run values of the EDGs and fuel oil transfer pumps for the remaining 18 hours of the mission time, and definitely not negligible.	The 6-hour mission time of the EDGs does not have a significant impact on the baseline PRA model. However, whenever the 230 kV offsite power system is unavailable and cannot reasonably be recovered within the mission time, the 6-hour mission time of the EDGs in nonconservative. Accordingly, the 24-hour mission time will be applied to the EDGs and fuel oil transfer pumps in the RICT Program whenever the offsite power 230 kV system is made unavailable.
Containment penetrations which would require failure of three or more valves are screened from the containment isolation analysis.	Lines that require failure of three or more valves to cause failure of containment isolation have a negligible contribution to containment isolation failure frequency.	Screening these penetrations from the baseline model is conservative for RICT calculations. The CRMP model used for the RICT Program will include the capability to evaluate such screened penetrations using a bounding surrogate model which assumes the containment boundary is failed, even when redundant isolation valves are available.
Vacuum breakers cannot fail in a manner to impact the Auxiliary Salt Water (ASW) function within the mission time.	The magnitude of the uncertainty attributable to this nonconservative assumption is not known. Although the magnitude of the nonconservatism is expected to be small, this has not been demonstrated.	There are two vacuum relief valves per ASW header. These are mechanical components with a relatively high reliability, thus the random failure of an ASW header due to failing both vacuum relief valves should not be significant. The RICT Program will assume inoperability of the ASW train if one or more vacuum breakers are nonfunctional.

Table A13-1

Disposition of Key Assumptions/Sources of Uncertainty Impacting Configuration Risk Calculations		
Assumption/Uncertainty	Discussion	Disposition for RICT Program
Common cause failures (CCFs) in the Solid State Protection System (SSPS) across separate functions are not modeled.	The model assumes that common cause between parameter signal sensing channels is limited to common cause events between bi-stables and input relays for a particular function. This is a nonconservative assumption.	Given that failure of one function fails the entire SSPS system and CCFs are modeled for single functions, there is not any additional significant impact from modeling CCFs across functions. The additional failure probability from CCFs across functions is dominated by the SSPS logic and power supply failure basic events.
SI minimum flow valves are not modeled.	Failure of the minimum flow valves could result in flow diversion and impact success criteria nonconservatively.	SI Recirculation Valves 8974A and 8974B are in series, thus both valves must be impacted, which has a low probability. The operator action to close these valves is also evaluated in the human reliability analysis (HRA) for switchover to cold leg recirculation. Accordingly, no significant impact is expected to the RICT Program.
Automatic or manual reactor trip is assumed successful such that no anticipated transient without trip (ATWT) event occurs for fire initiating events.	Failure of reactor scram coincident with a fire is considered to present an insignificant risk.	Fire-induced failures will almost certainly remove power from the control rods (resulting in a trip), rather than cause a “failure-to-scram” condition. Also, the low frequency of a fire occurring together with the low probability of independent failure to scram makes a negligible contribution to the risk.

Table A13-1

Disposition of Key Assumptions/Sources of Uncertainty Impacting Configuration Risk Calculations		
Assumption/Uncertainty	Discussion	Disposition for RICT Program
Designation of systems/components as guaranteed failure in the fire PRA model.	Assuming certain systems and components are guaranteed failed for all fires is conservative.	This conservative assumption is acceptable for the RICT Program. Those systems that are within the RICT Program and guaranteed failed in the fire model are assumed 100% successful in the baseline PRA model used to calculate the RICT.

References

1. ML071200238, *Final Safety Evaluation for Nuclear Energy Institute (NEI) Topical Report (TR) NEI 06-09, "Risk-Informed Technical Specifications Initiative 4B, Risk-Managed Technical Specifications (RMTS) Guidelines (TAC No. MD4995),"* Letter from Jennifer M. Golder (NRR) to Biff Bradley (NEI), May 17, 2007.
2. NEI 06-09, *Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines, Industry Guidance Document*, Nuclear Energy Institute, Revision 0, November 2006.
3. Regulatory Guide 1.200, *An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities*, Revision 2, March 2009.
4. ASME/ANS RA-Sa-2009, *Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications, Addendum A to RA-S-2008*, ASME, New York, NY, American Nuclear Society, La Grange Park, Illinois, February 2009.
5. NUREG-1855, Volume 1, *Guidance on the Treatment of Uncertainties Associated with PRAs in Risk-Informed Decision Making.*
6. EPRI TR-1016737, *Treatment of Parameter and Model Uncertainty for Probabilistic Risk Assessments*, December 2008.

Attachment 14

Program Implementation

Program Implementation

Introduction

Section 4.0, Item 11 of the Nuclear Regulatory Commission's (NRC) Final Safety Evaluation (Reference 1) for NEI 06-09, Revision 0, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," (Reference 2) requires that the license amendment request (LAR) provide a description of the implementing programs and procedures regarding the plant staff responsibilities for the RMTS implementation, and specifically discuss the decision process for risk management action (RMA) implementation.

This attachment provides a description of the implementing programs and procedures regarding the plant staff responsibilities for the Risk-Informed Completion Time (RICT) Program including training of the personnel required for implementation of the RICT Program.

RICT Program Procedures

A procedure will be developed to outline the requirements and responsibilities for the RICT Program. It will provide guidance on departmental responsibilities and management authority for RICT Program application, and for required training, implementation, and monitoring of the RICT Program, including development and maintenance of the Configuration Risk Management Program (CRMP) software tool and model.

The RICT Program will be implemented by site procedures which will fully address all aspects of the guidance of NEI 06-09. Operations, specifically the control room staff, are responsible for compliance with Technical Specification (TS) requirements, and will be responsible for implementation of a RICT and any RMAs determined to be appropriate for the plant configuration. Any use of a RICT and associated RMAs will be approved by the Operations Manager prior to entering an extended completion time (CT) for pre-planned activities, and as soon as practicable for an emergent extended CT.

PG&E Procedure OP1.DC17, "Control of Equip Required by Technical Specifications or Designated Programs," (Reference 3) addresses existing site controls for TS entry and exit and risk management during equipment outages. This procedure will be supplemented to address the additional guidance of NEI 06-09 for detailed implementation of the RICT Program. It will provide guidance to the appropriate Diablo Canyon personnel on the following topics:

- Plant conditions for which the RICT Program is applicable

- Conditions under which a RICT may not be used, or may not be voluntarily entered
- Implementation of the RICT Program 30-day back stop limit
- Guidance on plant configuration changes, i.e., recalculating the RICT and risk management action time (RMAT) within 12 hours of any change
- Conditions for exiting a RICT
- Requirements to identify and implement RMAs when the RMAT is exceeded or is anticipated to be exceeded
- Guidance on the use of RMAs, including the conditions under which they may be credited in RICT calculations
- Guidance on crediting PRA functionality
- Plant management approval for use of a RICT

RICT Program Training

The scope of the training for the RICT Program will include training on rules for the new TS program, CRMP software, TS Actions included in the program, and procedures. This training will be conducted for the following Diablo Canyon personnel:

- Operations Manager
- Operations Planning Managers
- Operations Personnel (Licensed and Non-Licensed)
- Work Control Manager
- Work Control Personnel
- Work Week Managers
- Operations Training
- Nuclear Licensing Personnel
- Selected Maintenance Personnel
- Site Engineering
- Probabilistic Risk Assessment (PRA) Engineers
- Other Management

Training will be carried out in accordance with Diablo Canyon training procedures and processes. These procedures were written based on the Institute of Nuclear Power Operations (INPO) Accreditation (ACAD) requirements, as developed and maintained by the National Academy for Nuclear Training. PG&E has planned three levels of training for implementation of the RICT Program. They are described below:

Level 1 Training

This is the most detailed training. It is intended for the individuals who will be directly involved in the implementation of the RICT Program. This level of training includes the following attributes:

- Specific training on the revised TS
- Record Keeping Requirements
- Case Studies
- Hands-on time with the CRMP tool calculating a RMAT and RICT
- Identifying appropriate RMAs
- Determining PRA Functionality
- Common Cause Failure Considerations
- Other detailed aspects of the RICT Program

Level 2 Training

This training is applicable for supervisors, managers, and other personnel who need a broad understanding of the RICT Program. It is significantly more detailed than Level 3 Training (described below), but it is different from Level 1 Training in that hands-on time with the CRMP tool and case studies are not included. The concepts of the RICT Program will be taught, but this group of personnel will not be qualified to perform the tasks for actual implementation of the RICT Program.

Level 3 Training

This training is intended for the remaining personnel who require an awareness of the RICT Program. These employees need basic knowledge of RICT Program requirements and procedures. This training will cover RICT Program concepts that are important to disseminate throughout the organization.

References

1. ML071200238, *Final Safety Evaluation for Nuclear Energy Institute (NEI) Topical Report (TR) NEI 06-09, "Risk-Informed Technical Specifications Initiative 4B, Risk-Managed Technical Specifications (RMTS) Guidelines (TAC No. MD4995)*, Letter from Jennifer M. Golder (NRR) to Biff Bradley (NEI), May 17, 2007.
2. NEI 06-09, *Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines, Industry Guidance Document*, Nuclear Energy Institute, Revision 0, November 2006.
3. PG&E Procedure OP1.DC17, "*Control of Equip Required by Technical Specifications or Designated Programs.*"

Attachment 15

Monitoring Program

Monitoring Program

Section 4.0, Item 12 of the Nuclear Regulatory Commission's (NRC) Final Safety Evaluation (Reference 1) for NEI 06-09, Revision 0, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," (Reference 2) requires that the license amendment request (LAR) provide a description of the implementation and monitoring program as described in Regulatory Guide (RG) 1.174, "An Approach For Using Probabilistic Risk Assessment In Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis, Revision 1," (Reference 3) and NEI 06-09. (Note that RG 1.174, Revision 2 (Reference 5), issued by the NRC in May 2011, made editorial changes to the applicable section referenced in the NRC safety evaluation for Item 12.)

This attachment provides a description of the process applied to monitor the cumulative risk impact of implementation of the Risk-Informed Completion Time (RICT) Program, specifically the calculation of cumulative risk of extended Completion Times (CTs). Calculation of the cumulative risk for the RICT Program is discussed in Step 14 of Section 2.3.1 and Step 7.1 of Section 2.3.2 of NEI 06-09, "Risk Informed Technical Specifications Initiative 4b" (Reference 1). General requirements for a Performance Monitoring Program for risk-informed applications are discussed in RG 1.174, Element 3.

The calculation of cumulative risk impact is required by the RICT Program at least every refueling cycle, not to exceed 24 months, consistent with the guidance in NEI 06-09, Revision 0. For the assessment period evaluated, data is collected for the risk increases associated with each application of an extended CT for both core damage frequency (CDF) and large early release frequency (LERF), and the total risk calculated by summing all risk associated with each RICT application. This is the change in CDF or LERF above the zero maintenance baseline levels during the time of operation in the extended CT (i.e., beyond the front-stop CT). The change in risk is converted to average annual values.

The total average annual change in risk for extended CTs is compared to the guidance of RG 1.174, Figures 4 and 5 for CDF and LERF changes, respectively. If the actual annual risk increase is acceptable (i.e., not in Region I of the figures), then RICT Program implementation is acceptable for the assessment period. Otherwise, further assessment of the cause of exceeding the RG 1.174 guidance and implementation of any necessary corrective actions to ensure future plant operation is within the guidance is conducted under the site Corrective Action Program.

The assessment will identify areas for consideration during the evaluation, including as examples:

- RICT applications which dominated the risk increase
- Contributions from planned vs. emergent RICT applications
- Risk management actions (RMAs) implemented but not credited in the risk calculations
- Offset risk due to RICT application by avoiding multiple shorter outages

Based on the evaluation, any necessary corrective actions are developed and approved by the Operations Manager. These may include:

- Administrative restrictions on the use of RICTs for specific high-risk configurations
- Additional RMAs for specific high-risk configurations
- Rescheduling planned maintenance activities
- Deferring planned maintenance to shutdown conditions
- Use of temporary equipment to replace out-of-service systems, structures or components (SSCs)
- Plant modifications to reduce risk impact of expected future maintenance configurations

In addition to the cumulative impact of RICT Program implementation, the unavailability of SSCs is also potentially impacted. The existing Maintenance Rule (MR) monitoring programs under 10 CFR 50.65(a)(1) and (a)(2) provide for evaluation and disposition of unavailability impacts which may be incurred by implementation of the RICT Program. The SSCs in the scope of the RICT Program are also in the scope of the MR, which allows the use of the MR Program. Using the existing MR monitoring for this program is explicitly discussed in RG 1.177, "An Approach for Plant-Specific, Risk-Informed Decision Making: Technical Specifications," (Reference 4), Section 3.2, "Maintenance Rule Control."

The monitoring program for the MR, along with the specific assessment of cumulative risk impact described above, serves as the "Implementation and Monitoring Program," defined as Element 3 of RG 1.174 for the RICT Program.

References

1. ML071200238, *Final Safety Evaluation for Nuclear Energy Institute (NEI) Topical Report (TR) NEI 06-09, "Risk-Informed Technical Specifications Initiative 4B, Risk-Managed Technical Specifications (RMTS) Guidelines (TAC No. MD4995),"* Letter from Jennifer M. Golder (NRR) to Biff Bradley (NEI), May 17, 2007.

2. NEI 06-09, *Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines, Industry Guidance Document*, Nuclear Energy Institute, Revision 0, November 2006.

3. Regulatory Guide 1.174, *An Approach For Using Probabilistic Risk Assessment In Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis*, Revision 1, November 2002.
4. Regulatory Guide 1.177, *An Approach for Plant-Specific, Risk-Informed Decision Making: Technical Specifications*, Revision 1, May 2011.
5. Regulatory Guide 1.174, *An Approach For Using Probabilistic Risk Assessment In Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis*, Revision 2, May 2011.

Attachment 16

Risk Management Action Examples

Risk Management Action Examples

Introduction

Section 4.0, Item 13 of the Nuclear Regulatory Commission's (NRC) Final Safety Evaluation (Reference 1) for NEI 06-09, Revision 0, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," (Reference 2) requires that the license amendment request (LAR) provide a description of the process to identify and provide compensatory measures and risk management actions (RMAs) during extended Completion Times (CTs), including specific examples.

This attachment describes the process for identification of RMAs applicable during extended CTs and provides examples of RMAs. RMAs will be governed by plant procedures for planning and scheduling maintenance activities. This procedure will provide guidance for the determination and implementation of RMAs when entering the Risk-Informed Completion Time (RICT) Program and is consistent with the guidance provided in NEI 06-09, Revision 0 (Reference 1).

Responsibilities

Work Control is responsible for developing the RMAs with assistance from Operations. Operations is responsible for the approval and implementation of approved RMAs. For emergent entry into extended CTs, Operations is also responsible for developing RMAs.

Procedural Guidance

For planned maintenance activities, implementation of RMAs will be required if it is anticipated that the risk management action time (RMAT) will be exceeded. The RMAs are implemented at the earliest possible time, without waiting for the actual RMAT to be exceeded. For emergent activities, RMAs must be implemented if the RMAT is reached. Also, if an emergent event occurs requiring recalculation of a RMAT already in place, the procedure requires a re-evaluation of the existing RMAs for the new plant configuration to see if new RMAs are appropriate. These requirements of the RICT Program are consistent with the guidance of NEI 06-09, Revision 0.

RMAs are put in place no later than the point at which an incremental core damage probability (ICDP) of 1E-6 is reached, or no later than the point at which an incremental large early release probability (ILERP) of 1E-7 is reached. If as the result of an emergent event the instantaneous core damage frequency (CDF) or the instantaneous large early release frequency (LERF) exceeds 1E-3 or 1E-4 per year, respectively, RMAs are also required to be implemented. These requirements are consistent with the guidelines of NEI 06-09, Revision 0.

By determining which structures, systems, or components (SSCs) are most important from a CDF and/or LERF perspective for a specific plant configuration, RMAs may be created to protect these SSCs. Similarly, knowledge of the initiating event or sequence contribution to the configuration-specific CDF and/or LERF allows development of RMAs which enhance the capability to mitigate such events.

It is possible to credit RMAs in the RICT calculations. However, such quantification of RMAs is not required by NEI 06-09, Revision 0. Crediting RMAs in the RICT calculations is only done consistent with the guidance of NEI 06-09, Revision 0.

NEI 06-09 classifies RMAs into three categories, described below:

1) Actions to increase awareness and control.

- Shift brief
- Pre-job brief
- Training (formal or informal)
- Presence of system engineer or other expertise related to maintenance activity
- Special purpose procedure to identify risk sources and contingency plans

2) Actions to reduce the duration of maintenance activities.

- Pre-staging materials
- Conducting training on mock-ups
- Performing the activity around the clock
- Performing walk-downs on the actual system(s) to be worked on prior to beginning work

3) Actions to minimize the magnitude of the risk increase.

- Suspend/minimize activities on redundant systems
- Suspend/minimize activities on other systems that adversely affect the CDF and/or LERF
- Suspend/minimize activities on systems that may cause a trip or transient to minimize the likelihood of an initiating event that the out-of-service component is meant to mitigate
- Use temporary equipment for backup power
- Use temporary equipment for backup ventilation
- Reschedule other maintenance activities

Examples

Example RMAs that may be considered during a RICT Program entry for a diesel generator (DG) or a battery to reduce the risk impact and ensure adequate defense-in-depth are:

A. Diesel Generator:

(1) The condition of the offsite power supply, switchyard, and the grid is evaluated prior to entering a RICT, and RMAs as identified below are implemented, particularly during times of high grid stress conditions, such as during high demand conditions.
(2) Deferral of switchyard maintenance, such as deferral of discretionary maintenance on the main, auxiliary, or startup transformers associated with the unit.
(3) Deferral of maintenance that affects the reliability of the trains associated with the operable DGs.
(4) Deferral of planned maintenance activities on station blackout mitigating systems, and treating those systems as protected equipment.
(5) Contacting the dispatcher on a periodic basis to provide information on the DG status and the power needs of the facility.

B. Battery:

(1) Limit the immediate discharge of the affected battery, if possible.
(2) Recharge the affected battery to float voltage conditions using a spare battery charger, if possible.
(3) Evaluate the remaining battery capacity and protect its ability to perform its safety function.
(4) Periodically verify battery float voltage is equal to or greater than the minimum required float voltage for remaining batteries.

References

1. ML071200238, *Final Safety Evaluation for Nuclear Energy Institute (NEI) Topical Report (TR) NEI 06-09, "Risk-Informed Technical Specifications Initiative 4B, Risk-Managed Technical Specifications (RMTS) Guidelines (TAC No. MD4995),"* Letter from Jennifer M. Golder (NRR) to Biff Bradley (NEI), May 17, 2007.

2. NEI 06-09, *Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines, Industry Guidance Document*, Nuclear Energy Institute, Revision 0, November 2006.