



RS-19-018

10 CFR 50.90

February 14, 2019

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

Braidwood Stations, Units 1 and 2
Renewed Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and 50-457

Byron Stations, Units 1 and 2
Renewed Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. STN 50-454 and STN 50-455

Subject: Supplement to Application to Revise Braidwood Station and Byron Station
Technical Specifications to Adopt Risk Informed Completion Times
TSTF-505, Revision 2, "Provide Risk-Informed Extended Completion Times -
RITSTF Initiative 4b"

- References:
- 1) Letter from D. M. Gullott (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Application to Revise Braidwood Station and Byron Station Technical Specifications to Adopt Risk Informed Completion Times TSTF-505, Revision 2, 'Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b'," dated December 13, 2018 (ADAMS Accession No. ML18352B063)
 - 2) Letter from J. S. Wiebe (U.S. Nuclear Regulatory Commission) to B. C. Hanson, (Exelon Generation Company, LLC), "Braidwood Station, Units 1 and 2, and Byron Station, Unit Nos. 1 and 2 – Supplemental Information Needed for Acceptance of Requested Licensing Action Regarding Revision of Technical Specifications to Adopt Risk Informed Completion Times (EPID L-2019-LLA-0757)," dated January 30, 2019 (ADAMS Accession No. ML19024A181)

In Reference 1, Exelon Generation Company, LLC (EGC) requested an amendment to the Renewed Facility Operating License Nos. NPF-72 and NPF-77 for Braidwood Station, Units 1 and 2 (Braidwood), and Renewed Facility Operating License Nos. NPF-37 and NPF-66 for Byron Station, Units 1 and 2 (Byron), respectively.

The proposed amendments would modify Technical Specifications (TS) requirements to permit the use of risk-informed completion times (RICTs) in accordance with the Technical Specifications Task Force (TSTF) Traveler TSTF-505, Revision 2, "Provide Risk-Informed Extended Completion Times – RITSTF [Risk-Informed TSTF] Initiative 4b" (ADAMS Accession No. ML18183A493).

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NRR*

In Reference 2, the NRC requested that EGC provide supplemental information by February 15, 2019 to support the acceptance review of the license amendment request. Attachment 1 to this letter provides a restatement of the NRC's questions followed by EGC's responses. Attachment 2a and 2b provide an update to the Braidwood and Byron TS markup pages. Attachment 3a and 3b provide an update to the TS Bases markup pages (provided for information only). Attachments 2a, 2b, 3a, and 3b supersede the TS and Bases markup pages provided in Reference 1.

EGC has reviewed the information supporting a finding of no significant hazards consideration and the environmental consideration that were previously provided to the NRC in Attachment 1 of Reference 1. EGC has concluded that the information provided in this response does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92. In addition, EGC has concluded that the information in this response does not affect the bases for concluding that neither an environmental impact statement nor an environmental assessment needs to be prepared in connection with the proposed amendment.

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), a copy of this letter, with attachments, is being provided to the State of Illinois.

This letter contains no regulatory commitments.

If you should have any questions regarding this submittal, please contact Ms. Lisa A. Simpson at 630-657-2815.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 14th day of February 2019.

Respectfully,



Patrick R. Simpson
Manager - Licensing
Exelon Generation Company, LLC

Attachments:

1. License Amendment Request Supplement
- 2a. Proposed Technical Specification Changes – Braidwood Station Mark-Ups
- 2b. Proposed Technical Specification Changes – Byron Station Mark-Ups
- 3a. Proposed Technical Specification Bases Changes – Braidwood Station Mark-Ups (For Information Only)
- 3b. Proposed Technical Specification Bases Changes – Byron Station Mark-Ups (For Information Only)

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Braidwood Station
NRC Senior Resident Inspector – Byron Station
Illinois Emergency Management Agency – Division of Nuclear Safety
NRC Project Manager, NRR – Braidwood Station and Byron Station

ATTACHMENT 1

License Amendment Request Supplement

**Braidwood Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457**

**Byron Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. STN 50-454 and STN 50-455**

ATTACHMENT 1
License Amendment Request Supplement

By letter dated December 13, 2018 (Reference 1), Exelon Generation Company, LLC (EGC) requested an amendment to the Renewed Facility Operating License Nos. NPF-72 and NPF-77 for Braidwood Station, Units 1 and 2, and Renewed Facility Operating License Nos. NPF-37 and NPF-66 for Byron Station, Units 1 and 2, respectively (hereafter referred to as Braidwood and Byron). The proposed amendments would modify Technical Specifications (TS) requirements to permit the use of risk-informed completion times (RICTs) in accordance with the Technical Specifications Task Force (TSTF) Traveler TSTF-505, Revision 2, "Provide Risk-Informed Extended Completion Times – RITSTF [Risk-Informed TSTF] Initiative 4b" (ADAMS Accession No. ML18183A493).

In NRC letter dated January 30, 2019 (Reference 2), the NRC requested that EGC provide supplemental information by February 15, 2019, to support the acceptance review of the license amendment request. A restatement of the NRC's questions followed by EGC's responses is provided below.

Regulatory Basis

This LAR would modify TS requirements to permit the use of RICTs in accordance with TSTF-505, Revision 2.

LAR Attachment 1, Section 1, states:

The methodology for using the risk-informed completion time (RICT) program is described in Nuclear Energy Institute (NEI) 06-09-A, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines," Revision 0, which was approved by the NRC on May 17, 2007 [ADAMS Accession No. ML071200238]. Adherence to NEI 06-09-A is required by the RICT program.

The NEI Topical Report (TR) 06-09-A (ADAMS Package Accession No. ML122860402), provides guidance for implementation of a generic TS improvement that establishes a risk management approach for voluntary extensions of completion times for certain limiting conditions for operation (LCOs). The NRC staff's SE, dated May 17, 2007 (ADAMS Accession No. ML071200238), found the guidance in NEI 06-09-A, to be acceptable, with clarifying NRC staff positions, limitations, and conditions. The NEI issued NEI 06-09-A by including the NRC staff's SE in the front of the NEI 06-09 document, but not incorporating the NRC staff positions, limitations, and conditions into the guidance described in the document. Accordingly, NEI 06-09-A could be acceptable for referencing by licensees proposing to amend their TSs to implement RMTS when the NRC staff positions, limitations, and conditions described in the NRC staff's SE dated May 17, 2007, are met.

ATTACHMENT 1
License Amendment Request Supplement

Limitation and Condition 3 in the NRC staff's SE on NEI 06-09 dated May 17, 2007 states:

The LAR will provide a discussion of the results of peer reviews and self-assessments conducted for the plant-specific PRA models which support the RMTS, including the resolution or disposition of any identified deficiencies (i.e., findings and observations from peer reviews). This will include a comparison of the requirements of RG [Regulatory Guide] 1.200 using the elements of ASME [American Society of Mechanical Engineers] RA-Sb-2005 for capability Category II for internal events PRA models, and for other models for which RG 1.200 endorsed standards exist. If additional standards have been endorsed by revision to RG 1.200, the LAR will also provide similar information for those PRA models used to support the RMTS program.

RG 1.200, Revision 2, was issued in March 2009 (ADAMS Accession No. ML090410014) and endorsed with comments and limitations, the ASME/ANS (ASME/American Nuclear Society) probabilistic risk analysis (PRA) Standard ASME/ANS RA-Sa-2009, "Addenda to ASME/ANS RA S 2008, Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications."

1. Fire PRA supporting requirements that might have been assigned a Capability Category I without any Facts and Observations

LAR Enclosure 2, Section 4, states that a full-scope peer review of the Braidwood and Byron fire PRAs was performed in October 2015, and June 2015, using the NEI 07-12 Fire PRA peer review process, respectively. NEI 07-12 states that, "[i]f the utility chooses to be reviewed against CC [Capability Category] I for a given SR [supporting requirement], an F&O [fact and observation] need not be written for those SRs if assessed as CC I."

RG 1.200, Revision 2, placed internal fires into the internal hazard category, and endorsed ASME/ANS RS-Sa-2009 Part 4, "Technical and Peer Review requirements for At-Power Internal Fires," with comments and limitations.

Therefore, consistent with RG 1.200, Revision 2, and the NRC staff's SE on NEI 06-09, which describe that a LAR should include a comparison of plant-specific risk models against CC II of the ASME/ANS PRA Standard, provide the following:

- i. A statement confirming that the Braidwood and Byron Fire PRA used to support this LAR were peer-reviewed against ASME/ANS PRA Standard CC II SRs, and
- ii. A description of any fire SRs that were assigned a CC I (or not met), but were not provided with an associated peer review F&O, as permitted by NEI 07-12. For each SR assigned only a CC I (or a not met) provide a description of why the SR was not assigned a CC II and disposition the impact of not meeting CC II on this application.

Response

- i. The Braidwood and Byron Fire PRA peer reviews were performed against ASME/ANS PRA Standard CC II SRs.
- ii. N/A, see response to i.

ATTACHMENT 1
License Amendment Request Supplement

2. Additional justification required by TSTF-505, Revision 2, Table 1

Table 1, "Conditions Requiring Additional Technical Justification," of TSTF-505 Revision 2 (ADAMS Accession No. ML18183A493) contains a list of required actions that may be proposed for inclusion in the RICT Program, but requires additional technical justification to be provided by the licensee.

The following six LCOs are proposed to be included in the scope of the RICT program, but are identified in Table 1 as requiring additional justification:

Condition 3.3.1.D.1, "One Power Range Neutron Flux – High channel inoperable"

Condition 3.3.1.P.1, "One [Reactor Trip Breaker] RTB train inoperable"

Condition 3.3.5.B.1, Loss of Power Diesel Generator Start Instrumentation, "One or more functions with two channels on one or more buses inoperable" (additional observation: note 7 from Enclosure 1 is missing)

Condition 3.6.2.C.3, "One or more containment air locks inoperable for reasons other than Condition A or B"

Condition 3.7.2.F.1, "One [Main Steam Isolation Valve] MSIV inoperable in MODE 1"

Condition 3.7.4.B.1, "Two or more [Steam Generator] SG [Power Operated Relief Valve] PORV lines inoperable"

Address the following:

For each of the conditions listed above, provide the justification requested by TSTF-505 Revision 2, Table 1, which includes, among others, justification that the specified LCO condition is not a condition in which all required trains or subsystems of a TS required system are inoperable.

Response

In a draft version of the Braidwood and Byron LAR to adopt risk-informed completion times, Table E1-1 of Enclosure 1 included a Note 7. Note 7 was removed from the final version of Table E1-1 in the LAR dated December 13, 2018; however, the reference to the note was inadvertently retained in the Table.

As some of the TS vary between the TSTF-505 and the site TS, the following table provides a cross-reference between Table 1 of TSTF-505, Revision 2, and the Braidwood and Byron LCOs in Enclosure 1 of Reference 1.

ATTACHMENT 1
License Amendment Request Supplement

Cross-Reference between TSTF-505, Table 1, and Braidwood/Byron LCO

TSTF-505, Rev. 2 Table 1	Braidwood/Byron LCO (Enclosure 1 of LAR)	Description
3.3.1.D	3.3.1.D	One Power Range Neutron Flux – High channel inoperable
3.3.1.U	3.3.1.P	One [Reactor Trip Breaker] RTB train inoperable
3.3.5.B	3.3.5.B	Loss of Power Diesel Generator Start Instrumentation, "One or more Functions with two channels on one or more buses inoperable"
3.6.2.C	3.6.2.C	One or more containment air locks inoperable for reasons other than Condition A or B
3.7.2.A	3.7.2.F	One [Main Steam Isolation Valve] MSIV inoperable in MODE 1
3.7.4.B	3.7.4.B	Two or more [Steam Generator] SG [Power Operated Relief Valve] PORV lines inoperable

EGC's justification for each of the six Conditions (second column above) are provided below.

Condition 3.3.1.D.1, "One Power Range Neutron Flux – High channel inoperable"

As indicated in Table E1-1 of Enclosure 1 of the Braidwood/Byron TSTF-505 LAR, the Power Range Neutron Flux – High channels are explicitly modeled in the Braidwood/Byron PRA. The PRA Success Criterion is two of four channels. There are no non-modeled functions for power range neutron flux high channels.

As described in Section 7.2.2.3.1, "Neutron Flux," of the Braidwood/Byron UFSAR, Revision 17:

Four power range neutron flux channels are provided for overpower protection. For Braidwood Unit 2 and Byron, an isolated auctioneered high signal is derived by auctioneering of the four channels for automatic rod control. For Braidwood Unit 1, an isolated 4-channel validated signal is derived by selecting the second highest of the four channels for automatic rod control. If any channel fails in such a way as to produce a low output, that channel is incapable of proper overpower protection but will not cause control rod movement because of the auctioneer (Braidwood Unit 2 and Byron) or validation algorithm (Braidwood Unit 1). Two-out-of-four overpower trip logic will ensure an overpower trip if needed even with an independent failure in another channel.

In addition, channel deviation signals in the control system will give an alarm if any neutron flux channel deviates significantly from the average of the flux signals. Also, the control system will respond only to rapid changes in indicated neutron flux; slow changes or drifts are compensated by the temperature control signals. Finally, an overpower signal from any nuclear power range channel will block manual and automatic rod withdrawal. The setpoint for this rod stop is below the reactor trip setpoint.

ATTACHMENT 1
License Amendment Request Supplement

These alarms and actions signify periodic monitoring of spatial power distribution and imposition of compensatory limits and reduced power. Therefore, the LCO meets the listed requirements for inclusion in the RICT program.

Condition 3.3.1.P.1, "One [Reactor Trip Breaker] RTB train inoperable"

As indicated in Table E1-1 of Enclosure 1 of the Braidwood/Byron TSTF-505 LAR, the RTB trains are explicitly modeled in the Braidwood/Byron PRA. The PRA Success Criterion is one of two RTBs open. There are no non-modeled functions for the RTB train.

The safety evaluation in NRC letter dated January 29, 2008 (Reference 3), documents the approval of changes to the Braidwood and Byron TS surveillance requirements (SRs). The amendments adopted changes approved by the NRC in topical report WCAP-14333-P-A, Revision 1, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times," issued October 1998, as approved by the NRC on July 15, 1998. Implementation of the changes was in accordance with TSTF Change Traveler TSTF-418, Revision 2, "RPS and ESFAS Test Times and Completion Times (WCAP-14333)." The NRC approved TSTF-418 by letter dated April 2, 2003. In addition, the amendments adopted changes approved by the NRC in WCAP-15376-P-A, Revision 1, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," dated March 2003, as approved by the NRC in a letter dated December 20, 2002. Implementation of the changes was in accordance with TSTF-411, Revision 1, "Surveillance Test Interval Extension for Components of the Reactor Protection System (WCAP-15376)." The NRC approved TSTF-411, Revision 1, by letter dated August 30, 2002.

The Braidwood and Byron LAR submitted January 8, 2007 (Reference 4), supporting the RTS and ESFAS Amendments identified the following regulatory commitments related to AMSAC:

- The licensee will implement administrative controls to ensure that activities that degrade the availability of the RCS pressure relief system, AFW system, AMSAC, or turbine trip will not be scheduled when a logic train or an RTB train is inoperable for maintenance.
- The licensee will implement administrative controls to ensure that activities that result in the inoperability of electrical systems (e.g., alternating current and direct current power) and cooling systems (e.g., essential service water and component cooling water) that support the RCS pressure relief system, AFW system, AMSAC, turbine trip, one complete train of ECCS, and the available reactor trip and ESFAS actuation functions will not be scheduled when a logic train or an RTB train is inoperable for maintenance. That is, one complete train of a function that supports a complete train of a function noted above must be available.

The changes are consistent with the defense-in-depth philosophy. The traditional engineering evaluation addresses key principles 1, 2, 3, and 5 of the NRC's philosophy of risk-informed decision making, which concern compliance with current regulations, evaluation of defense in depth, evaluation of safety margins, and performance measurement strategies. The NRC previously performed a generic evaluation of WCAP-15376. The NRC's review of the changes

ATTACHMENT 1
License Amendment Request Supplement

found that WCAP-15376 was consistent with the accepted guidelines of RG 1.174 and RG 1.177, and NRC guidance as outlined in NUREG-0800, "Standard Review Plan." From traditional engineering insights, the NRC found that the changes in WCAP-15376 continue to meet the regulations, have no impact on the defense-in-depth philosophy, and would not involve a significant reduction in the margin of safety.

RGs 1.174 and 1.177 also establish the need for an implementation and monitoring program to ensure that extensions to TS surveillance test interval, completion time, or bypass test times do not degrade operational safety over time and that no adverse effects occur from unanticipated degradation or common-cause mechanisms. The purpose of an implementation and monitoring program is to ensure that the impact of the TS change continues to reflect the reliability and availability of structures, systems, and components (SSCs) impacted by the change.

Therefore, the LCO meets the listed requirements for inclusion in the RICT program.

Condition 3.3.5.B.1, Loss of Power Diesel Generator Start Instrumentation, "One or more functions with two channels on one or more buses inoperable"

As indicated in Table E1-1 of Enclosure 1 of the Braidwood/Byron TSTF-505 LAR, the Loss of Power Diesel Generator Start Instrumentation is not explicitly modeled in the Braidwood/Byron PRA. Since these components are not modeled, there is no explicit PRA Success Criteria. However, the DG "fail to start" event in the PRA will be used as a conservative surrogate for these non-modeled components. The DG Success Criterion is one of two DGs.

As described in Section 3.9.1.1 of the Braidwood/Byron UFSAR, Revision 17, this transient applies to a loss of nonemergency a-c power situation involving the loss of offsite electrical power to the station, assumed to be operating initially at 100% power, followed by reactor and turbine trips.

As described in Section 8.3.1.1.2.2 of the Braidwood/Byron UFSAR, Revision 17, in the event of a loss of all offsite power to the Class 1E power system, each diesel-generator set is automatically started. Controls and circuitry for starting and loading each redundant diesel generator set are electrically and physically independent. Automatic starting and loading of the diesel generator is as follows:

- a. A diesel generator is automatically started by any one of the following:
 - 1. automatic safety injection signal,
 - 2. manual safety injection actuation by push buttons, or
 - 3. undervoltage on the 4160-volt ESF bus served by the diesel generator.

Based on this design configuration, the TS markup for Condition 3.3.5.B are revised to include a NOTE described in Table 1 (i.e., Not applicable when the same Function is inoperable on more than one bus.). The TS Bases are revised to describe the Note and other editorial changes. Revised TS and Bases pages are provided in Attachments 2a, 2b, 3a, and 3b.

ATTACHMENT 1
License Amendment Request Supplement

Condition 3.6.2.C.3, "One or more containment air locks inoperable for reasons other than Condition A or B"

As indicated in Table E1-1 of Enclosure 1 of the Braidwood/Byron TSTF-505 LAR, the containment air locks are not explicitly modeled in the Braidwood/Byron PRA. Since the containment airlocks are not modeled, there are no explicit PRA Success Criteria. However, this condition will be modeled as early containment bypass as a conservative surrogate in the PRA.

Compliance with the remaining portions of LCO Condition 3.6.2 ensure that there is a physical barrier (i.e., closed door) and an acceptable overall leakage from containment. Thus, the function is still maintained. Required Action C.1 of LCO Condition 3.6.2 requires the condition to be assessed in accordance with TS 3.6.1, "Containment Integrity" (i.e., "Initiate action to evaluate overall containment leakage rate per LCO 3.6.1" with a Completion Time of Immediately.)

Therefore, the LCO meets the listed requirements for inclusion in the RICT program.

Condition 3.7.2.F.1, "One [Main Steam Isolation Valve] MSIV inoperable in MODE 1"

As indicated in Table E1-1 of Enclosure 1 of the Braidwood/Byron TSTF-505 LAR, the MSIVs are explicitly modeled in the Braidwood/Byron PRA. The PRA Success Criteria depend on the accident scenario. Steam Generator Tube Rupture (SGTR) scenarios require MSIV closure to isolate the affected SG. There are no non-modeled functions for the MSIVs.

As described in Section 10.3.1 of the Braidwood/Byron UFSAR, Revision 17, there is one MSIV on each of the four loops to the SGs. Section 15.1.5.2 of the UFSAR provides information regarding an alternate method of preventing blowdown of more than one steam generator:

Steam release from more than one steam generator will be prevented by automatic trip of the fast acting isolation valves in the steamlines by low steamline pressure signals, high containment pressure signals, or high negative steamline pressure rate signals. Even with the failure of one valve, release is limited to no more than 10 seconds for the other steam generators while the one generator blows down.

Therefore, the LCO meets the listed requirements for inclusion in the RICT program.

Condition 3.7.4.B.1, "Two or more [Steam Generator] SG [Power Operated Relief Valve] PORV lines inoperable"

As indicated in Table E1-1 of Enclosure 1 of the Braidwood/Byron TSTF-505 LAR, the SG PORV lines are explicitly modeled in the Braidwood/Byron PRA. The PRA Success Criterion is two of four SG PORVs for Steam Generator Tube Rupture (SGTR) scenarios and one of four SG PORVs for all other scenarios. There are no non-modeled functions for the SG PORV lines.

ATTACHMENT 1

License Amendment Request Supplement

As described in the Braidwood and Byron TS Bases 3.7.4, with two or more SG PORV lines inoperable, action must be taken to restore all but one SG PORV line to operable status. Since the block valve can be closed to isolate a SG PORV, some repairs may be possible with the unit at power.

Based on this design configuration, the TS markup for Condition 3.7.4.B.1 are revised to include a NOTE described in Table 1 (i.e., Not applicable when more than two required SG PORV lines are inoperable.). The TS Bases are revised to describe the Note and other editorial changes. Revised TS and Bases pages are provided in Attachments 2a, 2b, 3a, and 3b.

Other

As discussed with the NRR Project Manager for Braidwood and Byron on January 23, 2019, an error was identified within Enclosure 8 of the Braidwood and Byron LAR to adopt risk-informed completion times dated December 13, 2018.

Specifically, there is a statement at the end the second bullet of Enclosure 8, Section 2, of the Byron and Braidwood LAR regarding the translation of the base PRA model for use in the real-time risk model, that states:

There are no changes in success criteria based on the time in the core operating cycle

This bullet should be revised to state:

Changes in success criteria based on the time in the core operating cycle (i.e., impact on ATWS pressure relief) will be addressed in the Real Time Risk Model.

This change is made to ensure compliance with NEI 06-09 guidance for Risk Informed Completion Times.

References

- 1) Letter from D. M. Gullott (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Application to Revise Braidwood Station and Byron Station Technical Specifications to Adopt Risk Informed Completion Times TSTF-505, Revision 2, 'Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b'," dated December 13, 2018 (ADAMS Accession No. ML18352B063)
- 2) Letter from J. S. Wiebe (U.S. Nuclear Regulatory Commission) to B. C. Hanson, (Exelon Generation Company, LLC), "Braidwood Station, Units 1 and 2, and Byron Station, Unit Nos. 1 and 2 – Supplemental Information Needed for Acceptance of Requested Licensing Action Regarding Revision of Technical Specifications To Adopt Risk Informed Completion Times (EPID L-2019-LLA-0757)," dated January 30, 2019 (ADAMS Accession No. ML19024A181)

ATTACHMENT 1
License Amendment Request Supplement

- 3) Letter from M. M. Thorpe-Kavanaugh (U.S. Nuclear Regulatory Commission) to C. Pardee, "Byron Station, Unit Nos. 1 and 2, and Braidwood Station, Units 1 and 2 – Issuance of Amendments Re: Technical Specification Request to Extend Reactor Trip System and Engineered Safety Features Actuation System Completion Times, Bypass Test Times, and Surveillance Test Intervals (TAC Nos. MD4009, MD4010, MD4011, and MD4012)," dated January 29, 2008
- 4) Letter from D. Benyak (Exelon Nuclear) to U.S. Nuclear Regulatory Commission, "Application for License Amendment: Implementation of WCAP-14333 and WCAP-15376, Reactor Trip System Instrumentation and Engineered Safety Feature Actuation System Instrumentation Test Times, Completion Times and Surveillance Test Intervals," dated January 8, 2007

ATTACHMENT 2a

Proposed Technical Specification Changes – Braidwood Station Mark-Ups

**Braidwood Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457**

1.3 Completion Times

EXAMPLES (continued)

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.

EXAMPLE 1.3-8

ACTIONS

<u>CONDITION</u>	<u>REQUIRED ACTION</u>	<u>COMPLETION TIME</u>
<u>A. One subsystem inoperable.</u>	<u>A.1 Restore subsystem to OPERABLE status.</u>	<u>7 days</u> <u>OR</u> <u>In accordance with the Risk Informed Completion Time Program</u>
<u>B. Required Action and associated Completion Time not met.</u>	<u>B.1 Be in MODE 3.</u> <u>AND</u> <u>B.2 Be in MODE 5.</u>	<u>6 hours</u> <u>36 hours</u>

1.3 Completion Times

EXAMPLES (continued)

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 B must also be entered.

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 has 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 B is also entered and the Completion Time clocks for Required Actions B.1 and B.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 B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start. If the inoperable subsystems are restored to OPERABLE status after Condition B is entered, Condition A is exited, and therefore, the Required Actions of Condition B 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

LC0 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 train(s).	Immediately
B. One Manual Reactor Trip channel inoperable.	B.1 Restore channel to OPERABLE status.	48 hours
	OR	← RICT INSERT
	B.2 Be in MODE 3.	54 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One Power Range Neutron Flux-High channel inoperable.	-----NOTE----- One channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment. -----	
	D.1 Place channel in trip.	72 hours
	OR	← RICT INSERT
	D.2 Be in MODE 3.	78 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One channel inoperable.	-----NOTE----- One channel may be bypassed for up to 12 hours for surveillance testing. -----	
	E.1 Place channel in trip.	72 hours
	<u>OR</u>	← RICT INSERT
	E.2 Be in MODE 3.	78 hours









(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
K. One channel inoperable.	<p>-----NOTES-----</p> <p>1. For Functions with installed bypass test capability (Functions 8a, 9, 10), one channel may be bypassed for up to 12 hours for surveillance testing.</p> <p>2. For Functions with no installed bypass test capability (Functions 12 and 13), the inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels.</p> <p>-----</p> <p>K.1 Place channel in trip.</p> <p>OR</p> <p>K.2 Reduce THERMAL POWER to \leq P-7.</p>	<p>72 hours</p> <p>← RICT INSERT</p> <p>78 hours</p>
<p>← INSERT TS 3.3.1 Condition L</p> <p>M t. One Turbine Trip channel inoperable.</p>	<p>-----NOTE-----</p> <p>The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels.</p> <p>-----</p> <p>M t.1 Place channel in trip.</p> <p>OR</p> <p>M t.2 Reduce THERMAL POWER to \leq P-8.</p>	<p>72 hours</p> <p>← RICT INSERT</p> <p>78 hours</p>
<p>← INSERT TS 3.3.1 Condition N</p>		

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
 M. One train inoperable.	<p>-----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. -----</p> <p>  M.1 Restore train to OPERABLE status. OR M.2 Be in MODE 3. </p>	<p>24 hours  RICT INSERT</p> <p>30 hours</p>
 N. One RTB train inoperable.	<p>-----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE. -----</p> <p>  N.1 Restore train to OPERABLE status. OR N.2 Be in MODE 3. </p>	<p>24 hours  RICT INSERT</p> <p>30 hours</p>
 O. One or more channels inoperable.	<p>  O.1 Verify interlock is in required state for existing unit conditions. OR O.2 Be in MODE 3. </p>	<p>1 hour</p> <p>7 hours</p>

(continued)

ACTIONS (continued)












CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>P. One or more channels inoperable.</p> <p></p> <p></p> <p> INSERT TS 3.3.1 Condition S</p>	<p>P.1 Verify interlock is in required state for existing unit conditions.</p> <p>OR</p> <p>P.2 Be in MODE 2.</p>	<p>1 hour</p> <p>7 hours</p>
<p>Q. One trip mechanism inoperable for one RTB.</p> <p></p> <p></p> <p> INSERT TS 3.3.1 Condition U</p>	<p>Q.1 Restore inoperable trip mechanism to OPERABLE status.</p> <p>OR</p> <p>Q.2 Be in MODE 3.</p>	<p>48 hours</p> <p></p> <p>54 hours</p>
<p>R. One Reactor Coolant Pump (RCP) Breaker Position channel (per train) inoperable.</p> <p></p> <p></p> <p> INSERT TS 3.3.1 Condition W</p>	<p>-----NOTE----- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. -----</p> <p>R.1 Place channel in trip.</p> <p>OR</p> <p>R.2 Reduce THERMAL POWER to < P 7.</p>	<p>6 hours</p> <p>12 hours</p>

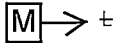
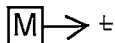
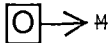
Table 3.3.1-1 (page 2 of 6)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
6. Overtemperature ΔT	1,2	4	E	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 3.3.1.15	Refer to Note 1
7. Overpower ΔT	1,2	4	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.15	Refer to Note 2
8. Pressurizer Pressure					
a. Low	1(e)	4	K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.15	≥ 1875 psig
b. High	1,2	4	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.15	≤ 2393 psig
9. Pressurizer Water Level-High	1(e)	3	K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	$\leq 93.5\%$ of instrument span
10. Reactor Coolant Flow-Low (per loop)	1(e)	3	K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.15	$\geq 89.3\%$ of loop minimum measured flow
11. Reactor Coolant Pump (RCP) Breaker Position (per train)	1(e)	4	 R	SR 3.3.1.13	NA

(continued)

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

Table 3.3.1-1 (page 3 of 6)
Reactor Trip System Instrumentation

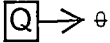
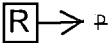
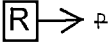
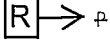
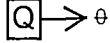
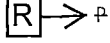
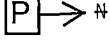
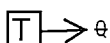
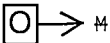
FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
12. Undervoltage RCPs (per train)	1 ^(e)	4	K	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.15	≥ 4920 V
13. Underfrequency RCPs (per train)	1 ^(e)	4	K	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.15	≥ 56.08 Hz
14. Steam Generator (SG) Water Level-Low Low (per SG)					
a. Unit 1	1,2	4	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.15	≥ 16.1% of narrow range instrument span
b. Unit 2	1,2	4	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.15	≥ 34.8% of narrow range instrument span
15. Turbine Trip					
a. Emergency Trip Header Pressure (per train)	1 ^(f)	3		SR 3.3.1.10 SR 3.3.1.14	≥ 910 psig
b. Turbine Throttle Valve Closure (per train)	1 ^(f)	4		SR 3.3.1.10 SR 3.3.1.14	≥ 1% open
16. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1,2	2 trains		SR 3.3.1.13	NA

(continued)

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

(f) Above the P-8 (Power Range Neutron Flux) interlock.

Table 3.3.1-1 (page 4 of 6)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
17. Reactor Trip System Interlocks					
a. Source Range Block Permissive, P-6	2 ^(d)	2		SR 3.3.1.11 SR 3.3.1.12	≥ 6E-11 amp
b. Low Power Reactor Trips Block, P-7					
(1) P-10 Input	1	3		SR 3.3.1.11 SR 3.3.1.12	NA
(2) P-13 Input	1	2		SR 3.3.1.10 SR 3.3.1.12	NA
c. Power Range Neutron Flux, P-8	1	3		SR 3.3.1.11 SR 3.3.1.12	≤ 32.1% RTP
d. Power Range Neutron Flux, P-10	1,2	3		SR 3.3.1.11 SR 3.3.1.12	≥ 7.9% RTP and ≤ 12.1% RTP
e. Turbine Impulse Pressure, P-13	1	2		SR 3.3.1.10 SR 3.3.1.12	≤ 12.1% turbine power
18. Reactor Trip Breakers (RTBs) ^(g)	1,2 3 ^(a) , 4 ^(a) , 5 ^(a)	2 trains 2 trains	 C	SR 3.3.1.4 SR 3.3.1.4	NA NA
19. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms	1,2 3 ^(a) , 4 ^(a) , 5 ^(a)	1 each per RTB 1 each per RTB	 C	SR 3.3.1.4 SR 3.3.1.4	NA NA
20. Automatic Trip Logic	1,2 3 ^(a) , 4 ^(a) , 5 ^(a)	2 trains 2 trains	 C	SR 3.3.1.5 SR 3.3.1.5	NA NA

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

(d) Below the P-6 (Source Range Block Permissive) interlock.

(g) 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

LC0 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 inoperable.	B.1 Restore channel 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

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One train inoperable.	C.1 -----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. -----	
	Restore train to OPERABLE status.	24 hours
	OR	← RICT INSERT
	C.2.1 Be in MODE 3.	30 hours
	AND	
	C.2.2 Be in MODE 5.	60 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One channel inoperable.	D.1 -----NOTE----- One channel may be bypassed for up to 12 hours for surveillance testing. -----	
	Place channel in trip.	72 hours
	<u>OR</u>	
	D.2.1 Be in MODE 3.	78 hours
	AND	
	D.2.2 Be in MODE 4.	84 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One Containment Pressure channel inoperable.	E.1 -----NOTE----- One additional channel may be bypassed for up to 12 hours for surveillance testing. -----	
	Place channel in bypass.	72 hours
	<u>OR</u>	
	E.2.1 Be in MODE 3.	78 hours
	<u>AND</u>	
	E.2.2 Be in MODE 4.	84 hours
F. One channel or train inoperable.	F.1 Restore channel or train to OPERABLE status.	48 hours
	<u>OR</u>	
	F.2.1 Be in MODE 3.	54 hours
	<u>AND</u>	
	F.2.2 Be in MODE 4.	60 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. One train inoperable.	G.1 -----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. -----	
	Restore train to OPERABLE status.	24 hours
	<u>OR</u>	
	G.2.1 Be in MODE 3.	30 hours
	<u>AND</u> G.2.2 Be in MODE 4.	36 hours
H. One channel inoperable.	H.1 -----NOTE----- One channel may be bypassed for up to 2 hours for surveillance testing provided the other channel is OPERABLE. -----	
	Place channel in trip.	1 hour
	<u>OR</u>	
	H.2.1 Be in MODE 3.	7 hours
	<u>AND</u> H.2.2 Be in MODE 4.	13 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. One channel inoperable.	I.1 -----NOTE----- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. -----	
	Place channel in trip.	72 hours
	<u>OR</u>	
	I.2 Be in MODE 3.	78 hours
J. One or more trains inoperable.	J.1 Declare associated auxiliary feedwater pump inoperable.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
K. One channel inoperable.	K.1 -----NOTE----- One channel may be bypassed for up to 12 hours for surveillance testing. -----	
	Place channel in trip.	72 hours
	<u>OR</u>	
	K.2.1 Be in MODE 3.	78 hours
	<u>AND</u>	
	K.2.2 Be in MODE 5.	108 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
L. One or more channels inoperable.	L.1 Verify interlock is in required state for existing unit condition.	1 hour
	<u>OR</u>	
	L.2.1 Be in MODE 3.	7 hours
	<u>AND</u>	
	L.2.2 Be in MODE 4.	13 hours

INSERT TS 3.3.2
Conditions
M, N, and O

SURVEILLANCE REQUIREMENTS

-----NOTE-----
Refer to Table 3.3.2-1 to determine which SRs apply for each ESFAS Function.

SURVEILLANCE	FREQUENCY
SR 3.3.2.1 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.2 Perform COT.	In accordance with the Surveillance Frequency Control Program

(continued)

3.3 INSTRUMENTATION

3.3.5 Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation

LCO 3.3.5 Two channels per bus of the loss of voltage Function, two channels per bus of the degraded voltage Function and two channels per bus of the low degraded voltage Function shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4;
When associated DG is required to be OPERABLE by LCO 3.8.2, "AC Sources-Shutdown."

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one channel on one or more buses inoperable.	<p>A.1 -----NOTE----- For loss of voltage Function, the inoperable channel may be bypassed for up to 2 hours for surveillance testing of the other channel. -----</p> <p>Place channel in trip.</p>	<p>1 hour</p> <p>← RICT INSERT</p>
B. One or more Functions with two channels on one or more buses inoperable.	<p>B.1 Restore one channel for the Function on the affected bus to OPERABLE status.</p>	<p>1 hour</p> <p>→ RICT INSERT</p>

(continued)

-----NOTE-----
Not applicable when the same Function is inoperable on more than one bus.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.11 Pressurizer Power Operated Relief Valves (PORVs)

LC0 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 and each block valve.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more PORVs inoperable and capable of being manually cycled.	A.1 Close and maintain power to associated block valve.	1 hour
B. One PORV inoperable and not capable of being manually cycled.	B.1 Close associated block valve.	1 hour
	<u>AND</u>	
	B.2 Remove power from associated block valve.	1 hour
	<u>AND</u>	
	B.3 Restore PORV to OPERABLE status.	72 hours
		← RICT INSERT

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One block valve inoperable.	C.1 Place associated PORV in manual control.	1 hour
	<u>AND</u> C.2 Restore block valve to OPERABLE status.	72 hours ← RICT INSERT
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Be in MODE 3.	6 hours
	<u>AND</u> D.2 Be in MODE 4.	12 hours
E. Two PORVs inoperable and not capable of being manually cycled.	E.1 Be in MODE 3.	6 hours
	<u>AND</u> E.2 Be in MODE 4.	12 hours
F. Two block valves inoperable.	F.1 Restore one block valve to OPERABLE status.	2 hours
G. Required Action and associated Completion Time of Condition F not met.	G.1 Be in MODE 3.	6 hours
	<u>AND</u> G.2 Be in MODE 4.	12 hours

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS-Operating

LC0 3.5.2 Two ECCS trains shall be OPERABLE.

- NOTES-----
1. In MODE 3, both Safety Injection (SI) pump flow paths and a portion of both Residual Heat Removal (RHR) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1.
 2. In MODE 3, a portion of both Residual Heat Removal (RHR) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1, provided an alternate means of cold leg injection is available for each isolated flow path.
-

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One train inoperable.	A.1 Restore train to OPERABLE status.	7 days ← RICT INSERT
B. Two trains inoperable. <u>AND</u> At least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.	B.1 Restore one train to OPERABLE status.	72 hours

(continued)

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
	<u>AND</u>	
	C.2 Verify a door is closed in the affected air lock.	1 hour
	<u>AND</u>	
	C.3 Restore air lock to OPERABLE status.	24 hours
		← RICT INSERT
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

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 for 48 inch purge valve flow paths may be unisolated intermittently under administrative controls.
 2. Separate Condition entry is allowed for each penetration flow path.
 3. Enter applicable Conditions and Required Actions for systems made inoperable by 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
<p>A. -----NOTE----- Only applicable to penetration flow paths with two containment isolation valves. -----</p> <p>One or more penetration flow paths with one containment isolation valve inoperable except for purge valve leakage not within limit.</p>	<p>A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic or remote manual valve, closed manual valve, blind flange, or check valve with flow through the valve secured.</p> <p><u>AND</u></p>	<p>4 hours</p> <p>← RICT INSERT</p> <p>(continued)</p>

Containment Isolation Valves
3.6.3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	<p>A.2</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 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 use of administrative means. <p>-----</p> <p>Verify the affected penetration flow path is isolated.</p>	<p>Once per 31 days for isolation devices outside containment</p> <p><u>AND</u></p> <p>Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment</p>

following
isolation

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. -----NOTE----- Only applicable to penetration flow paths with only one containment isolation valve and a closed system. -----</p> <p>One or more penetration flow paths with one containment isolation valve inoperable.</p>	<p>C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic or remote manual valve, closed manual valve, or blind flange.</p> <p><u>AND</u></p> <p>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 use of administrative means. ----- Verify the affected penetration flow path is isolated.</p>	<p>72 hours</p> <p>← RICT INSERT</p> <p>Once per 31 days</p>
<p>D. One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits.</p>	<p>D.1 Restore purge valve leakage to within limits.</p>	<p>24 hours</p> <p>following isolation</p>

(continued)

3.7 PLANT SYSTEMS

3.7.2 Main Steam Isolation Valves (MSIVs)

LCO 3.7.2 Four MSIVs and their associated actuator trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MSIV actuator train inoperable.	A.1 Restore MSIV actuator train to OPERABLE status.	7 days ← RICT INSERT
B. Two MSIVs each with one actuator train inoperable such that the inoperable actuator trains are in different ESF Divisions.	B.1 Restore one MSIV actuator train to OPERABLE status.	72 hours ← RICT INSERT
C. Two MSIVs each with one actuator train inoperable and both inoperable actuator trains are in the same ESF Division.	C.1 Restore one MSIV actuator train to OPERABLE status.	24 hours
D. Two MSIV actuator trains inoperable on the same MSIV.	D.1 Declare the affected MSIV inoperable.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Three or more MSIV actuator trains inoperable. <u>OR</u> Required Action and associated Completion Time of Condition A, B, or C not met.	E.1 Declare each affected MSIV inoperable.	Immediately
F. One MSIV inoperable in MODE 1.	F.1 Restore MSIV to OPERABLE status.	8 hours
		← RICT INSERT
G. Required Action and associated Completion Time of Condition F not met.	G.1 Be in MODE 2.	6 hours
H. -----NOTE----- Separate Condition entry is allowed for each MSIV. ----- One or more MSIV inoperable in MODE 2 or 3.	H.1 Close MSIV. <u>AND</u> H.2 Verify MSIV is closed.	8 hours Once per 7 days
I. Required Action and associated Completion Time of Condition H not met.	I.1 Be in MODE 3. <u>AND</u> I.2 Be in MODE 4.	6 hours 12 hours

3.7 PLANT SYSTEMS

3.7.4 Steam Generator (SG) Power Operated Relief Valves (PORVs)

LC0 3.7.4 Four SG PORV lines shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SG PORV line inoperable.	A.1 Restore SG PORV line to OPERABLE status.	30 days ← RICT INSERT
B. Two or more SG PORV lines inoperable.	B.1 Restore all but one SG PORV line to OPERABLE status.	24 hours ← RICT INSERT
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours
	C.2 Be in MODE 4.	12 hours

-----NOTE-----
Not applicable when more than two required SG PORV lines are inoperable.

3.7 PLANT SYSTEMS

3.7.5 Auxiliary Feedwater (AF) System

LCO 3.7.5 Two AF trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

-----NOTE-----
LCO 3.0.4.b is not applicable when entering MODE 1.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One AF train inoperable.	A.1 Restore AF train to OPERABLE status.	72 hours ← RICT INSERT
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3.	6 hours
	AND B.2 Be in MODE 4.	12 hours
C. Two AF trains inoperable.	C.1 -----NOTE----- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AF train is restored to OPERABLE status. ----- Initiate action to restore one AF train to OPERABLE status.	Immediately

3.7 PLANT SYSTEMS

3.7.7 Component Cooling Water (CC) System

LC0 3.7.7 The CC System shall be OPERABLE.

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

ACTIONS

-----NOTE-----
Enter applicable Conditions and Required Actions of LC0 3.4.6, "RCS
Loops-MODE 4," for Residual Heat Removal loops made inoperable by CC.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CC flow path inoperable.	A.1 Restore CC flow path to OPERABLE status.	7 days ← RICT INSERT
B. One required CC pump inoperable.	B.1 Restore required CC pump to OPERABLE status.	7 days ← RICT INSERT
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3.	6 hours
	<u>AND</u> C.2 Be in MODE 5.	36 hours

3.7 PLANT SYSTEMS

3.7.8 Essential Service Water (SX) System

LCO 3.7.8 The following SX trains shall be OPERABLE:

- a. Two unit-specific SX trains; and
- b. One opposite-unit SX train for unit-specific support.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One unit-specific SX train inoperable.	<p>A.1</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. Enter applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources-Operating," for Emergency Diesel Generator made inoperable by SX. 2. Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops-MODE 4," for Residual Heat Removal loops made inoperable by SX. <p>-----</p> <p>Restore unit-specific SX train to OPERABLE status.</p>	<p>72 hours</p> <p>← RICT INSERT</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Opposite-unit SX train inoperable.	B.1 Restore opposite-unit SX train to OPERABLE status.	7 days ← RICT INSERT
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3.	6 hours
	<u>AND</u> C.2 Be in MODE 5.	36 hours

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 per bus between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System; and
 - b. Two Diesel Generators (DGs) capable of supplying the onsite Class 1E AC Electrical Power Distribution System.

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

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more buses with one required qualified circuit inoperable.	A.1 Perform SR 3.8.1.1 for the required OPERABLE qualified circuits.	1 hour <u>AND</u> Once per 8 hours thereafter
	<u>AND</u> A.2 Restore required qualified circuit(s) to OPERABLE status.	72 hours ← RICT INSERT <u>AND</u> 17 days from discovery of failure to meet LCO

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.5 Restore DG to OPERABLE status.	14 days ← RICT INSERT AND 17 days from discovery of failure to meet LCO
C. Required Action and associated Completion Time of Required Action B.1 not met.	C.1 Restore DG to OPERABLE status.	72 hours
D. One or more buses with two required qualified circuits inoperable.	D.1 Restore one required qualified circuit per bus to OPERABLE status.	24 hours ← RICT INSERT
E. One DG inoperable and one or more buses with one required qualified circuit inoperable. <u>OR</u> One DG inoperable and one bus with two required qualified circuits inoperable.	-----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems-Operating," when Condition E is entered with no AC power source to a division. ----- E.1 Restore required qualified circuit(s) to OPERABLE status. <u>OR</u> E.2 Restore DG to OPERABLE status.	 12 hours ← RICT INSERT 12 hours ← RICT INSERT

(continued)

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources-Operating

LC0 3.8.4 Division 11(21) and Division 12(22) DC electrical power subsystems shall be OPERABLE and not crosstied to the opposite unit.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One battery charger inoperable.	A.1 Crosstie opposite-unit bus with associated OPERABLE battery charger to the affected division.	2 hours
	<u>AND</u>	
	A.2 Restore battery terminal voltage to greater than or equal to the minimum established float voltage.	2 hours
	<u>AND</u>	
	A.3 Verify battery float current ≤ 3 amps.	Once per 12 hours
	<u>AND</u>	
	A.4 Restore battery charger to OPERABLE status.	7 days
		← RICT INSERT

(continued)

<div> <div> Add header row to this page: </div> <div> CONDITION / REQUIRED ACTION / COMPLETION TIME </div> </div>		
<div> <div> ACTIONS (continued) </div> </div>		
B. One DC electrical power division crosstied to opposite-unit DC electrical power subsystem that has an inoperable battery charger, while opposite unit is in MODE 1, 2, 3, or 4.	B.1 Open at least one crosstie breaker between the crosstied divisions.	204 hours ← RICT INSERT
C. One DC electrical power division crosstied to opposite-unit DC electrical power subsystem with an inoperable source, while opposite unit is in MODE 5, 6, or defueled.	C.1 -----NOTE----- Only required when opposite unit has an inoperable battery. ----- Verify opposite-unit DC bus load ≤ 200 amps. <u>AND</u> C.2 Open at least one crosstie breaker between the crosstied divisions.	Once per 12 hours 7 days ← RICT INSERT
D. One DC electrical power subsystem inoperable for reasons other than Condition A, B, or C.	D.1 Restore DC electrical power subsystem to OPERABLE status.	2 hours ← RICT INSERT
E. Required Action and Associated Completion Time not met.	E.1 Be in MODE 3. <u>AND</u> E.2 Be in MODE 5.	6 hours 36 hours

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters-Operating

LC0 3.8.7 Four instrument bus inverters shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One instrument bus inverter inoperable.	A.1 -----NOTE----- Enter applicable Conditions and Required Actions of LC0 3.8.9, "Distribution Systems-Operating" with any instrument bus de-energized. ----- Restore inverter to OPERABLE status.	7 days ← RICT INSERT
	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5.	6 hours 36 hours

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One AC electrical power distribution subsystem inoperable.	A.1 Restore AC electrical power distribution subsystem to OPERABLE status.	8 hours ← RICT INSERT AND 16 hours from discovery of failure to meet LCO
B. One AC instrument bus electrical power distribution subsystem inoperable.	B.1 Restore AC instrument bus electrical power distribution subsystem to OPERABLE status.	2 hours ← RICT INSERT AND 16 hours from discovery of failure to meet LCO
C. One DC electrical power distribution subsystem inoperable.	C.1 Restore DC electrical power distribution subsystem to OPERABLE status.	2 hours ← RICT INSERT AND 16 hours from discovery of failure to meet LCO
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 5.	6 hours 36 hours

(continued)

5.5 Programs and Manuals

5.5.19 Surveillance Frequency Control Program

This program provides controls for Surveillance Frequencies. The program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met.

- a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.
- b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1.
- c. The Provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

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-A, 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 change to the plant configuration change, as defined in NEI 06-09-A, Appendix A, 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.

5.5 Programs and Manuals

- d. For emergent conditions, if the extent of condition evaluation for inoperable structures, systems, or components (SSCs) is not complete prior to exceeding the Completion Time, the RICT shall account for the increased possibility of common cause failure (CCF) by either:
 - 1. Numerically accounting for the increased possibility of CCF in the RICT calculation; or
 - 2. Risk Management Actions (RMAs) not already credited in the RICT calculation shall be implemented that support redundant or diverse SSCs that perform the function(s) of the inoperable SSCs, and, if practicable, reduce the frequency of initiating events that challenge the function(s) performed by the inoperable SSCs.
- e. The risk assessment approaches and methods shall be acceptable to the NRC. The plant PRA shall be based on the as-built, as-operated, and maintained plant; and reflect the operating experience at the plant, as specified in Regulatory Guide 1.200, Revision 2. Methods to assess the risk from extending the Completion Times must be PRA methods approved for use with this program, or other methods approved by the NRC for generic use; and any change in the PRA methods to assess risk that are outside these approval boundaries require prior NRC approval.

B/B TS INSERTS

RICT INSERT

OR

In accordance with
the Risk Informed
Completion Time
Program

INSERT TS 3.3.1 Condition L

L. Required Action and associated Completion Time of Condition K not met.	L.1 Reduce THERMAL POWER to < P-7.	6 hours
---	------------------------------------	---------

INSERT TS 3.3.1 Condition N

N. Required Action and associated Completion Time of Condition M not met.	N.1 Reduce THERMAL POWER to < P-8.	6 hours
---	------------------------------------	---------

INSERT TS 3.3.1 Condition S

S. Required Action and associated Completion Time of Condition R not met.	S.1 Be in MODE 2.	6 hours
---	-------------------	---------

INSERT TS 3.3.1 Condition U

U. Required Action and associated Completion Time of Condition B, D, E, O, P, Q, R, or T not met.	U.1 Be in MODE 3.	6 hours
---	-------------------	---------

B/B TS INSERTS

INSERT TS 3.3.1 Condition W

W. Required Action and associated Completion Time of Condition V not met.	W.1 Reduce THERMAL POWER to < P-7.	6 hours
---	------------------------------------	---------

INSERT TS 3.3.2 Condition M

M. Required Action and associated Completion Time of Conditions B, C, or K not met.	M.1 Be in MODE 3.	6 hours
	<u>AND</u> M.2 Be in MODE 5.	36 hours

INSERT TS 3.3.2 Condition N

N. Required Action and associated Completion Time of Conditions D, E, or G not met.	N.1 Be in MODE 3.	6 hours
	<u>AND</u> N.2 Be in MODE 4.	12 hours

INSERT TS 3.3.2 Condition O

O. Required Action and associated Completion Time of Condition I not met.	O.1 Be in MODE 3.	6 hours
---	-------------------	---------

ATTACHMENT 2b

Proposed Technical Specification Changes – Byron Station Mark-Ups

**Byron Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. STN 50-454 and STN 50-455**

1.3 Completion Times

EXAMPLES (continued)

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.

EXAMPLE 1.3-8

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. <u>One subsystem inoperable.</u>	A.1 <u>Restore subsystem to OPERABLE status.</u>	<u>7 days</u> <u>OR</u> <u>In accordance with the Risk Informed Completion Time Program</u>
B. <u>Required Action and associated Completion Time not met.</u>	B.1 <u>Be in MODE 3.</u> <u>AND</u> B.2 <u>Be in MODE 5.</u>	<u>6 hours</u> <u>36 hours</u>

1.3 Completion Times

EXAMPLES (continued)

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 B must also be entered.

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 has 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 B is also entered and the Completion Time clocks for Required Actions B.1 and B.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 B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start. If the inoperable subsystems are restored to OPERABLE status after Condition B is entered, Condition A is exited, and therefore, the Required Actions of Condition B 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

LC0 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 train(s).	Immediately
B. One Manual Reactor Trip channel inoperable.	B.1 Restore channel to OPERABLE status.	48 hours
	OR	← RICT INSERT
	B.2 Be in MODE 3.	54 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One Power Range Neutron Flux-High channel inoperable.	<p>-----NOTE----- One channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment. -----</p>	
	D.1 Place channel in trip.	72 hours
	OR	78 hours
E. One channel inoperable.	<p>-----NOTE----- One channel may be bypassed for up to 12 hours for surveillance testing. -----</p>	
	E.1 Place channel in trip.	72 hours
	OR	78 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
J. One Source Range Neutron Flux channel inoperable.	J.1 Restore channel to OPERABLE status.	48 hours
	<u>OR</u>	
	J.2.1 Initiate action to fully insert all rods.	48 hours
	<u>AND</u>	
	J.2.2 Place the Rod Control System in a condition incapable of rod withdrawal.	49 hours
K. One channel inoperable.	-----NOTES----- 1. For Functions with installed bypass test capability (Functions 8a, 9, 10), one channel may be bypassed for up to 12 hours for surveillance testing.	
	2. For Functions with no installed bypass test capability (Functions 12 and 13), the inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels.	

	K.1 Place channel in trip.	72 hours
	<u>OR</u>	
	K.2 Reduce THERMAL POWER to < P-7.	78 hours

← INSERT TS 3.3.1
Condition L

← RICT INSERT



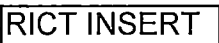


(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<div> <div> <div></div> <div> <div></div> <div>M</div> </div> </div> <div> <div> <div></div> <div> <div></div> <div>T</div> </div> </div> <div>One Turbine Trip channel inoperable.</div> </div> </div>	<div> <div>-----NOTE-----</div> <div>The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels.</div> <div>-----</div> </div> <div> <div> <div> <div></div> <div> <div></div> <div>T.1</div> </div> </div> <div>Place channel in trip.</div> </div> <div> <div> <div></div> <div> <div></div> <div>M</div> </div> </div> <div>OR</div> <div> <div> <div></div> <div> <div></div> <div>T.2</div> </div> </div> <div>Reduce THERMAL POWER to \leq P-8.</div> </div> </div> </div>	<div>72 hours</div> <div> <div>←</div> <div>RICT INSERT</div> </div> <div>78 hours</div>
<div> <div> <div></div> <div> <div></div> <div>O</div> </div> </div> <div> <div> <div></div> <div> <div></div> <div>M</div> </div> </div> <div>One train inoperable.</div> </div> </div>	<div> <div>-----NOTE-----</div> <div>One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE.</div> <div>-----</div> </div> <div> <div> <div> <div></div> <div> <div></div> <div>M.1</div> </div> </div> <div>Restore train to OPERABLE status.</div> </div> <div> <div> <div></div> <div> <div></div> <div>O</div> </div> </div> <div>OR</div> <div> <div> <div></div> <div> <div></div> <div>M.2</div> </div> </div> <div>Be in MODE 3.</div> </div> </div> </div>	<div>24 hours</div> <div> <div>←</div> <div>RICT INSERT</div> </div> <div>30 hours</div>

(continued)

ACTIONS (continued)


CONDITION	REQUIRED ACTION	COMPLETION TIME
 N. One RTB train inoperable.	<p>-----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE. -----</p> <p>  N.1 Restore train to OPERABLE status. OR N.2 Be in MODE 3. </p>	<p>24 hour</p> <p>← </p> <p>30 hours</p>
 Θ. One or more channels inoperable.	<p>  Θ.1 Verify interlock is in required state for existing unit conditions. OR Θ.2 Be in MODE 3. </p>	<p>1 hour</p> <p>7 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>P. One or more channels inoperable.</p> <p>INSERT TS 3.3.1 Condition S</p>	<p>P.1 Verify interlock is in required state for existing unit conditions.</p> <p>OR</p> <p>P.2 Be in MODE 2.</p>	<p>1 hour</p> <p>7 hours</p>
<p>Q. One trip mechanism inoperable for one RTB.</p> <p>INSERT TS 3.3.1 Condition U</p>	<p>Q.1 Restore inoperable trip mechanism to OPERABLE status.</p> <p>OR</p> <p>Q.2 Be in MODE 3.</p>	<p>48 hours</p> <p>RICT INSERT</p> <p>54 hours</p>
<p>R. One Reactor Coolant Pump (RCP) Breaker Position channel(per train) inoperable.</p> <p>INSERT TS 3.3.1 Condition W</p>	<p>-----NOTE----- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. -----</p> <p>R.1 Place channel in trip.</p> <p>OR</p> <p>R.2 Reduce THERMAL POWER to \leq P-7.</p>	<p>Add line</p> <p>6 hours</p> <p>12 hours</p>

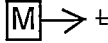
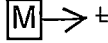
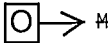
Table 3.3.1-1 (page 2 of 6)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
6. Overtemperature ΔT	1,2	4	E	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 3.3.1.15	Refer to Note 1
7. Overpower ΔT	1,2	4	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.15	Refer to Note 2
8. Pressurizer Pressure					
a. Low	1 ^(e)	4	K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.15	≥ 1875 psig
b. High	1,2	4	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.15	≤ 2393 psig
9. Pressurizer Water Level-High	1 ^(e)	3	K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	$\leq 93.5\%$ of instrument span
10. Reactor Coolant Flow-Low (per loop)	1 ^(e)	3	K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.15	$\geq 89.3\%$ of loop minimum measured flow
11. Reactor Coolant Pump (RCP) Breaker Position (per train)	1 ^(e)	4	 R	SR 3.3.1.13	NA

(continued)

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

Table 3.3.1-1 (page 3 of 6)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
12. Undervoltage RCPs (per train)	1 ^(e)	4	K	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.15	≥ 4920 V
13. Underfrequency RCPs (per train)	1 ^(e)	4	K	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.15	≥ 56.08 Hz
14. Steam Generator (SG) Water Level-Low Low (per SG)					
a. Unit 1	1,2	4	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.15	≥ 16.1% of narrow range instrument span
b. Unit 2	1,2	4	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.15	≥ 34.8% of narrow range instrument span
15. Turbine Trip					
a. Emergency Trip Header Pressure (per train)	1 ^(f)	3		SR 3.3.1.10 SR 3.3.1.14	≥ 910 psig
b. Turbine Throttle Valve Closure (per train)	1 ^(f)	4		SR 3.3.1.10 SR 3.3.1.14	≥ 1% open
16. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1,2	2 trains		SR 3.3.1.13	NA

(continued)

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

(f) Above the P-8 (Power Range Neutron Flux) interlock.

Table 3.3.1-1 (page 4 of 6)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
17. Reactor Trip System Interlocks					
a. Source Range Block Permissive, P-6	2 ^(d)	2	$\boxed{Q} \rightarrow \emptyset$	SR 3.3.1.11 SR 3.3.1.12	$\geq 6E-11$ amp
b. Low Power Reactor Trips Block, P-7					
(1) P-10 Input	1	3	$\boxed{R} \rightarrow P$	SR 3.3.1.11 SR 3.3.1.12	NA
(2) P-13 Input	1	2	$\boxed{R} \rightarrow P$	SR 3.3.1.10 SR 3.3.1.12	NA
c. Power Range Neutron Flux, P-8	1	3	$\boxed{R} \rightarrow P$	SR 3.3.1.11 SR 3.3.1.12	$\leq 32.1\%$ RTP
d. Power Range Neutron Flux, P-10	1,2	3	$\boxed{Q} \rightarrow \emptyset$	SR 3.3.1.11 SR 3.3.1.12	$\geq 7.9\%$ RTP and $\leq 12.1\%$ RTP
e. Turbine Impulse Pressure, P-13	1	2	$\boxed{R} \rightarrow P$	SR 3.3.1.10 SR 3.3.1.12	$\leq 12.1\%$ turbine power
18. Reactor Trip Breakers (RTBs) ^(g)	1,2 3 ^(a) , 4 ^(a) , 5 ^(a)	2 trains 2 trains	$\boxed{P} \rightarrow \#$ C	SR 3.3.1.4 SR 3.3.1.4	NA NA
19. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms	1,2 3 ^(a) , 4 ^(a) , 5 ^(a)	1 each per RTB 1 each per RTB	$\boxed{T} \rightarrow \emptyset$ C	SR 3.3.1.4 SR 3.3.1.4	NA NA
20. Automatic Trip Logic	1,2 3 ^(a) , 4 ^(a) , 5 ^(a)	2 trains 2 trains	$\boxed{O} \rightarrow \#$ C	SR 3.3.1.5 SR 3.3.1.5	NA NA

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

(d) Below the P-6 (Source Range Block Permissive) interlock.

(g) 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

LC0 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 inoperable.	B.1 Restore channel 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

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One train inoperable.	C.1 -----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. -----	
	Restore train to OPERABLE status.	24 hours
	<u>OR</u>	← RICT INSERT
	C.2.1 Be in MODE 3.	30 hours
	<u>AND</u> C.2.2 Be in MODE 5.	60 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One channel inoperable.	D.1 -----NOTE----- One channel may be bypassed for up to 12 hours for surveillance testing. -----	
	Place channel in trip.	72 hours
	<u>OR</u>	
	D.2.1 Be in MODE 3.	78 hours
	AND	
	D.2.2 Be in MODE 4.	84 hours

(continued)

← RICT INSERT

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One Containment Pressure channel inoperable.	E.1 -----NOTE----- One additional channel may be bypassed for up to 12 hours for surveillance testing. -----	
	Place channel in bypass.	72 hours
	<u>OR</u>	
	E.2.1 Be in MODE 3.	78 hours
	<u>AND</u>	
	E.2.2 Be in MODE 4.	84 hours
F. One channel or train inoperable.	F.1 Restore channel or train to OPERABLE status.	48 hours
	<u>OR</u>	
	F.2.1 Be in MODE 3.	54 hours
	<u>AND</u>	
	F.2.2 Be in MODE 4.	60 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. One train inoperable.	G.1 -----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. -----	
	Restore train to OPERABLE status.	24 hours
	<u>OR</u>	← RICT INSERT
	G.2.1 Be in MODE 3.	30 hours
	<u>AND</u> G.2.2 Be in MODE 4.	36 hours
H. One channel inoperable.	H.1 -----NOTE----- One channel may be bypassed for up to 2 hours for surveillance testing provided the other channel is OPERABLE. -----	
	Place channel in trip.	1 hour
	<u>OR</u>	
	H.2.1 Be in MODE 3.	7 hours
	<u>AND</u> H.2.2 Be in MODE 4.	13 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. One channel inoperable.	I.1 -----NOTE----- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. -----	
	Place channel in trip.	72 hours
	OR	← RICT INSERT
	I.2 Be in MODE 3.	78 hours
J. One or more trains inoperable.	J.1 Declare associated auxiliary feedwater pump inoperable.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
K. One channel inoperable.	K.1 -----NOTE----- One channel may be bypassed for up to 12 hours for surveillance testing. -----	
	Place channel in trip.	72 hours
	OR	
	K.2.1 Be in MODE 3.	78 hours
	AND	
	K.2.2 Be in MODE 5.	108 hours

← RICT INSERT

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
L. One or more channels inoperable.	L.1 Verify interlock is in required state for existing unit condition.	1 hour
	<u>OR</u>	
	L.2.1 Be in MODE 3.	7 hours
	<u>AND</u>	
	L.2.2 Be in MODE 4.	13 hours

← INSERT TS 3.3.2
Conditions
M, N, and O

SURVEILLANCE REQUIREMENTS

-----NOTE-----
Refer to Table 3.3.2-1 to determine which SRs apply for each ESFAS Function.

SURVEILLANCE	FREQUENCY
SR 3.3.2.1 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.2 Perform COT.	In accordance with the Surveillance Frequency Control Program

(continued)

3.3 INSTRUMENTATION

3.3.5 Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation

LCO 3.3.5 Two channels per bus of the loss of voltage Function, two channels per bus of the degraded voltage Function and two channels per bus of the low degraded voltage Function shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4;
When associated DG is required to be OPERABLE by LCO 3.8.2, "AC Sources-Shutdown."

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one channel on one or more buses inoperable.	A.1 -----NOTE----- For loss of voltage Function, the inoperable channel may be bypassed for up to 2 hours for surveillance testing of the other channel. ----- Place channel in trip.	1 hour ← RICT INSERT
B. One or more Functions with two channels on one or more buses inoperable.	B.1 Restore one channel for the Function on the affected bus to OPERABLE status.	1 hour → RICT INSERT

(continued)

-----NOTE-----
Not applicable when the same Function is inoperable on more than one bus.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.11 Pressurizer Power Operated Relief Valves (PORVs)

LC0 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 and each block valve.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more PORVs inoperable and capable of being manually cycled.	A.1 Close and maintain power to associated block valve.	1 hour
B. One PORV inoperable and not capable of being manually cycled.	B.1 Close associated block valve.	1 hour
	<u>AND</u>	
	B.2 Remove power from associated block valve.	1 hour
	<u>AND</u>	
	B.3 Restore PORV to OPERABLE status.	72 hours
		← RICT INSERT

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One block valve inoperable.	C.1 Place associated PORV in manual control.	1 hour
	<u>AND</u> C.2 Restore block valve to OPERABLE status.	72 hours ← RICT INSERT
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Be in MODE 3.	6 hours
	<u>AND</u> D.2 Be in MODE 4.	12 hours
E. Two PORVs inoperable and not capable of being manually cycled.	E.1 Be in MODE 3.	6 hours
	<u>AND</u> E.2 Be in MODE 4.	12 hours
F. Two block valves inoperable.	F.1 Restore one block valve to OPERABLE status.	2 hours
G. Required Action and associated Completion Time of Condition F not met.	G.1 Be in MODE 3.	6 hours
	<u>AND</u> G.2 Be in MODE 4.	12 hours

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS-Operating

LC0 3.5.2 Two ECCS trains shall be OPERABLE.

- NOTES-----
1. In MODE 3, both Safety Injection (SI) pump flow paths and a portion of both Residual Heat Removal (RHR) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1.
 2. In MODE 3, a portion of both Residual Heat Removal (RHR) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1, provided an alternate means of cold leg injection is available for each isolated flow path.
-

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One train inoperable.	A.1 Restore train to OPERABLE status.	7 days ← RICT INSERT
B. Two trains inoperable. <u>AND</u> At least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.	B.1 Restore one train to OPERABLE status.	72 hours

(continued)

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
	<u>AND</u>	
	C.2 Verify a door is closed in the affected air lock.	1 hour
	<u>AND</u>	
	C.3 Restore air lock to OPERABLE status.	24 hours
		← RICT INSERT
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

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 for 48 inch purge valve flow paths may be unisolated intermittently under administrative controls.
 2. Separate Condition entry is allowed for each penetration flow path.
 3. Enter applicable Conditions and Required Actions for systems made inoperable by 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
<p>A. -----NOTE----- Only applicable to penetration flow paths with two containment isolation valves. -----</p> <p>One or more penetration flow paths with one containment isolation valve inoperable except for purge valve leakage not within limit.</p>	<p>A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic or remote manual valve, closed manual valve, blind flange, or check valve with flow through the valve secured.</p> <p><u>AND</u></p>	<p>4 hours</p> <p>← RICT INSERT</p> <p>(continued)</p>

Containment Isolation Valves
3.6.3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	<p>A.2</p> <p>-----NOTES-----</p> <p>1. Isolation devices in high radiation areas may be verified by use of administrative means.</p> <p>2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means.</p> <p>-----</p> <p>Verify the affected penetration flow path is isolated.</p>	<p>Once per 31 days for isolation devices outside containment</p> <p><u>AND</u></p> <p>Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment</p>

following
isolation

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. -----NOTE----- Only applicable to penetration flow paths with only one containment isolation valve and a closed system. -----</p> <p>One or more penetration flow paths with one containment isolation valve inoperable.</p>	<p>C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic or remote manual valve, closed manual valve, or blind flange.</p> <p><u>AND</u></p> <p>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 use of administrative means. ----- Verify the affected penetration flow path is isolated.</p>	<p>72 hours</p> <p>← RICT INSERT</p> <p>Once per 31 days</p>
<p>D. One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits.</p>	<p>D.1 Restore purge valve leakage to within limits.</p>	<p>24 hours</p> <p>following isolation</p>

(continued)

3.7 PLANT SYSTEMS

3.7.2 Main Steam Isolation Valves (MSIVs)

LC0 3.7.2 Four MSIVs and their associated actuator trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MSIV actuator train inoperable.	A.1 Restore MSIV actuator train to OPERABLE status.	7 days ← RICT INSERT
B. Two MSIVs each with one actuator train inoperable such that the inoperable actuator trains are in different ESF Divisions.	B.1 Restore one MSIV actuator train to OPERABLE status.	72 hours ← RICT INSERT
C. Two MSIVs each with one actuator train inoperable and both inoperable actuator trains are in the same ESF Division.	C.1 Restore one MSIV actuator train to OPERABLE status.	24 hours
D. Two MSIV actuator trains inoperable on the same MSIV.	D.1 Declare the affected MSIV inoperable.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Three or more MSIV actuator trains inoperable. <u>OR</u> Required Action and associated Completion Time of Condition A, B, or C not met.	E.1 Declare each affected MSIV inoperable.	Immediately
F. One MSIV inoperable in MODE 1.	F.1 Restore MSIV to OPERABLE status.	8 hours
		← RICT INSERT
G. Required Action and associated Completion Time of Condition F not met.	G.1 Be in MODE 2.	6 hours
H. -----NOTE----- Separate Condition entry is allowed for each MSIV. ----- One or more MSIV inoperable in MODE 2 or 3.	H.1 Close MSIV. <u>AND</u> H.2 Verify MSIV is closed.	8 hours Once per 7 days
I. Required Action and associated Completion Time of Condition H not met.	I.1 Be in MODE 3. <u>AND</u> I.2 Be in MODE 4.	6 hours 12 hours

3.7 PLANT SYSTEMS

3.7.4 Steam Generator (SG) Power Operated Relief Valves (PORVs)

LC0 3.7.4 Four SG PORV lines shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SG PORV line inoperable.	A.1 Restore SG PORV line to OPERABLE status.	30 days ← RICT INSERT
B. Two or more SG PORV lines inoperable.	B.1 Restore all but one SG PORV line to OPERABLE status.	24 hours ← RICT INSERT
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. <u>AND</u>	6 hours
	C.2 Be in MODE 4.	12 hours

-----NOTE-----
Not applicable when more than two required SG PORV lines are inoperable.

3.7 PLANT SYSTEMS

3.7.5 Auxiliary Feedwater (AF) System

LCO 3.7.5 Two AF trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

-----NOTE-----
LCO 3.0.4.b is not applicable when entering MODE 1.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One AF train inoperable.	A.1 Restore AF train to OPERABLE status.	72 hours ← RICT INSERT
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4.	12 hours
C. Two AF trains inoperable.	C.1 -----NOTE----- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AF train is restored to OPERABLE status. ----- Initiate action to restore one AF train to OPERABLE status.	Immediately

3.7 PLANT SYSTEMS

3.7.7 Component Cooling Water (CC) System

LC0 3.7.7 The CC System shall be OPERABLE.

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

ACTIONS

-----NOTE-----
Enter applicable Conditions and Required Actions of LC0 3.4.6, "RCS
Loops-MODE 4," for Residual Heat Removal loops made inoperable by CC.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CC flow path inoperable.	A.1 Restore CC flow path to OPERABLE status.	7 days ← RICT INSERT
B. One required CC pump inoperable.	B.1 Restore required CC pump to OPERABLE status.	7 days ← RICT INSERT
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3.	6 hours
	<u>AND</u> C.2 Be in MODE 5.	36 hours

3.7 PLANT SYSTEMS

3.7.8 Essential Service Water (SX) System

LCO 3.7.8 The following SX trains shall be OPERABLE:

- a. Two unit-specific SX trains; and
- b. One opposite-unit SX train for unit-specific support.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One unit-specific SX train inoperable.	<p>A.1</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. Enter applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources-Operating," for Emergency Diesel Generator made inoperable by SX. 2. Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops-MODE 4," for Residual Heat Removal loops made inoperable by SX. <p>-----</p> <p>Restore unit-specific SX train to OPERABLE status.</p>	<p>72 hours</p> <p>← RICT INSERT</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Opposite-unit SX train inoperable.	B.1 Restore opposite-unit SX train to OPERABLE status.	7 days ← RICT INSERT
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3. <u>AND</u>	6 hours
	C.2 Be in MODE 5.	36 hours

3.7 PLANT SYSTEMS

3.7.9 Ultimate Heat Sink (UHS)

LC0 3.7.9 The UHS shall be OPERABLE and the required SX cooling tower (SXCT) fans shall be OPERABLE and operating as specified in Table 3.7.9-1 or Table 3.7.9-2.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more OPERABLE SXCT fan(s) not running in required high speed as required by Table 3.7.9-1 or Table 3.7.9-2.	A.1 Initiate actions to operate OPERABLE SXCT fan(s) in high speed.	Immediately
B. One required SXCT fan inoperable.	B.1 Verify OPERABLE SXCT fans are capable of being powered by an OPERABLE emergency power source.	1 hour
	<p><u>AND</u></p> <p>B.2 Restore required SXCT fan to OPERABLE status.</p>	<p>72 hours</p> <p>← RICT INSERT</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Outside air wet bulb temperature > 76°F. <u>AND</u> Any electrical division not capable of providing power to at least one OPERABLE SXCT fan.	C.1 Verify OPERABLE SXCT fans are capable of being powered by an OPERABLE emergency power source.	1 hour
	<u>AND</u> C.2 Restore SXCT fan configuration such that each electrical division is capable of providing power to at least one OPERABLE SXCT fan.	72 hours
D. SX pump discharge water temperature > 96°F.	D.1 Be in MODE 3.	6 hours
	<u>AND</u> D.2 Be in MODE 5.	36 hours
E. One or more basin level(s) < 60%.	E.1 Restore both basin levels to ≥ 60%.	6 hours

← RICT INSERT

(continued)

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources-Operating

- LC0 3.8.1 The following AC electrical sources shall be OPERABLE:
- a. Two qualified circuits per bus between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System; and
 - b. Two Diesel Generators (DGs) capable of supplying the onsite Class 1E AC Electrical Power Distribution System.

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

ACTIONS

-----NOTE-----
LC0 3.0.4.b is not applicable to DGs.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more buses with one required qualified circuit inoperable.	A.1 Perform SR 3.8.1.1 for the required OPERABLE qualified circuits.	1 hour <u>AND</u> Once per 8 hours thereafter
	<u>AND</u> A.2 Restore required qualified circuit(s) to OPERABLE status.	72 hours ← RICT INSERT <u>AND</u> 17 days from discovery of failure to meet LC0

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.5 Restore DG to OPERABLE status.	14 days ← RICT INSERT AND 17 days from discovery of failure to meet LCO
C. Required Action and associated Completion Time of Required Action B.1 not met.	C.1 Restore DG to OPERABLE status.	72 hours
D. One or more buses with two required qualified circuits inoperable.	D.1 Restore one required qualified circuit per bus to OPERABLE status.	24 hours ← RICT INSERT
E. One DG inoperable and one or more buses with one required qualified circuit inoperable. <u>OR</u> One DG inoperable and one bus with two required qualified circuits inoperable.	-----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems-Operating," when Condition E is entered with no AC power source to a division. ----- E.1 Restore required qualified circuit(s) to OPERABLE status. <u>OR</u> E.2 Restore DG to OPERABLE status.	 12 hours ← RICT INSERT 12 hours ← RICT INSERT

(continued)

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources-Operating

LCO 3.8.4 Division 11(21) and Division 12(22) DC electrical power subsystems shall be OPERABLE and not crosstied to the opposite unit.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One battery charger inoperable.	A.1 Crosstie opposite-unit bus with associated OPERABLE battery charger to the affected division.	2 hours
	<u>AND</u>	
	A.2 Restore battery terminal voltage to greater than or equal to the minimum established float voltage.	2 hours
	<u>AND</u>	
	A.3 Verify battery float current ≤ 3 amps.	Once per 12 hours
	<u>AND</u>	
	A.4 Restore battery charger to OPERABLE status.	7 days

← RICT INSERT

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One DC electrical power division crosstied to opposite-unit DC electrical power subsystem that has an inoperable battery charger, while opposite unit is in MODE 1, 2, 3, or 4.	B.1 Open at least one crosstie breaker between the crosstied divisions.	204 hours ← RICT INSERT
C. One DC electrical power division crosstied to opposite-unit DC electrical power subsystem with an inoperable source, while opposite unit is in MODE 5, 6, or defueled.	C.1 -----NOTE----- Only required when opposite unit has an inoperable battery. ----- Verify opposite-unit DC bus load ≤ 200 amps. <u>AND</u> C.2 Open at least one crosstie breaker between the crosstied divisions.	Once per 12 hours 7 days ← RICT INSERT
D. One DC electrical power subsystem inoperable for reasons other than Condition A, B, or C.	D.1 Restore DC electrical power subsystem to OPERABLE status.	2 hours ← RICT INSERT
E. Required Action and Associated Completion Time not met.	E.1 Be in MODE 3. <u>AND</u> E.2 Be in MODE 5.	6 hours 36 hours

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters-Operating

LCO 3.8.7 Four instrument bus inverters shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One instrument bus inverter inoperable.	<p>A.1 -----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems-Operating" with any instrument bus de-energized. -----</p> <p>Restore inverter to OPERABLE status.</p>	<p>7 days</p> <p>← RICT INSERT</p>
B. Required Action and associated Completion Time not met.	<p>B.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>B.2 Be in MODE 5.</p>	<p>6 hours</p> <p>36 hours</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One AC electrical power distribution subsystem inoperable.	A.1 Restore AC electrical power distribution subsystem to OPERABLE status.	8 hours ← RICT INSERT AND 16 hours from discovery of failure to meet LCO
B. One AC instrument bus electrical power distribution subsystem inoperable.	B.1 Restore AC instrument bus electrical power distribution subsystem to OPERABLE status.	2 hours ← RICT INSERT AND 16 hours from discovery of failure to meet LCO
C. One DC electrical power distribution subsystem inoperable.	C.1 Restore DC electrical power distribution subsystem to OPERABLE status.	2 hours ← RICT INSERT AND 16 hours from discovery of failure to meet LCO
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 5.	6 hours 36 hours

(continued)

5.5 Programs and Manuals

5.5.19 Surveillance Frequency Control Program

This program provides controls for Surveillance Frequencies. The program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met.

- a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.
- b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1.
- c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

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-A, 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 change to the plant configuration change, as defined in NEI 06-09-A, Appendix A, 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.

5.5 Programs and Manuals

- d. For emergent conditions, if the extent of condition evaluation for inoperable structures, systems, or components (SSCs) is not complete prior to exceeding the Completion Time, the RICT shall account for the increased possibility of common cause failure (CCF) by either:
 - 1. Numerically accounting for the increased possibility of CCF in the RICT calculation; or
 - 2. Risk Management Actions (RMAs) not already credited in the RICT calculation shall be implemented that support redundant or diverse SSCs that perform the function(s) of the inoperable SSCs, and, if practicable, reduce the frequency of initiating events that challenge the function(s) performed by the inoperable SSCs.
- e. The risk assessment approaches and methods shall be acceptable to the NRC. The plant PRA shall be based on the as-built, as-operated, and maintained plant; and reflect the operating experience at the plant, as specified in Regulatory Guide 1.200, Revision 2. Methods to assess the risk from extending the Completion Times must be PRA methods approved for use with this program, or other methods approved by the NRC for generic use; and any change in the PRA methods to assess risk that are outside these approval boundaries require prior NRC approval.

B/B TS INSERTS

RICT INSERT

OR

In accordance with
the Risk Informed
Completion Time
Program

INSERT TS 3.3.1 Condition L

L. Required Action and associated Completion Time of Condition K not met.	L.1 Reduce THERMAL POWER to < P-7.	6 hours
---	------------------------------------	---------

INSERT TS 3.3.1 Condition N

N. Required Action and associated Completion Time of Condition M not met.	N.1 Reduce THERMAL POWER to < P-8.	6 hours
---	------------------------------------	---------

INSERT TS 3.3.1 Condition S

S. Required Action and associated Completion Time of Condition R not met.	S.1 Be in MODE 2.	6 hours
---	-------------------	---------

INSERT TS 3.3.1 Condition U

U. Required Action and associated Completion Time of Condition B, D, E, O, P, Q, R, or T not met.	U.1 Be in MODE 3.	6 hours
---	-------------------	---------

B/B TS INSERTS

INSERT TS 3.3.1 Condition W

W. Required Action and associated Completion Time of Condition V not met.	W.1 Reduce THERMAL POWER to < P-7.	6 hours
---	------------------------------------	---------

INSERT TS 3.3.2 Condition M

M. Required Action and associated Completion Time of Conditions B, C, or K not met.	M.1 Be in MODE 3.	6 hours
	<u>AND</u> M.2 Be in MODE 5.	36 hours

INSERT TS 3.3.2 Condition N

N. Required Action and associated Completion Time of Conditions D, E, or G not met.	N.1 Be in MODE 3.	6 hours
	<u>AND</u> N.2 Be in MODE 4.	12 hours

INSERT TS 3.3.2 Condition O

O. Required Action and associated Completion Time of Condition I not met.	O.1 Be in MODE 3.	6 hours
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ATTACHMENT 3a

Proposed Technical Specification Bases Changes – Braidwood Station Mark-Ups

**Braidwood Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457**

(For Information Only)

BASES

ACTIONS (continued)

4. Activities that result in the inoperability of electrical systems (e.g., AC and DC power) and cooling systems (e.g., essential service water and component cooling water) that support the RCS pressure relief system, AFW system, AMSAC, turbine trip, one complete train of ECCS, and the available reactor trip and ESFAS actuation functions should not be scheduled when a logic train or RTB train is inoperable. That is, one complete train of a function that supports a complete train of a function noted above must be available.

A.1

Condition A applies to all RTS protection Functions. Condition A addresses the situation where one or more required channels or trains for one or more Functions are inoperable at the same time. The Required Action is to refer to Table 3.3.1-1 and to take the Required Actions for the protection functions affected. The Completion Times are those from the referenced Conditions and Required Actions.

B.1 and B.2

RICT BASES INSERT 1

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.

BASES

ACTIONS (continued)

~~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 reach MODE 3 from full power operation in an orderly manner and without challenging plant systems. With the unit in MODE 3, Action C would apply 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.~~

C.1 and C.2

Condition C 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 are 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, the action must be initiated within the same 48 hours to ensure that all rods are fully inserted, and the Rod Control System must be placed in a condition incapable of rod withdrawal within the next hour. The additional hour provides sufficient time to accomplish the action in an orderly manner. With rods fully inserted and the Rod Control System incapable of rod withdrawal, these Functions are no longer required.

BASES

ACTIONS (continued)

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.

A Note to the ACTIONS restricts the transition from MODE 5 with the Rod Control System not capable of rod withdrawal and all rods fully inserted, to MODE 5 with the Rod Control System capable of rod withdrawal or all rods not fully inserted for Functions 18, 19, and 20 while complying with the ACTIONS (i.e., while the LCO is not met). LCO 3.0.4 typically allows entry into MODES or other specified conditions in the Applicability while in MODE 5, however, the restriction of this Note is necessary to assure an OPERABLE RTS function prior to commencing operation with the Rod Control System capable of rod withdrawal or all rods not fully inserted.

D.1 and D.2

Condition D applies to the Power Range Neutron Flux-High Function.

The NIS power range detectors provide input to the Rod Control System and the SG Water Level 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 14. ←

RICT BASES INSERT 2

~~As an alternative to the above Action, 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 Required 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 inoperable channel can be placed in the tripped condition within 72 hours or in accordance with the Risk Informed Completion Time Program.

BASES

ACTIONS (continued)

The Required Actions are modified by a Note that allows placing one channel in bypass for 12 hours while performing surveillance testing, and setpoint adjustments when a setpoint reduction is required by other Technical Specifications.

When surveillance testing is performed under the Required Action Note, the appropriate TS Condition is entered, and the Required Action Note is applied, allowing an inoperable channel to be placed in bypass for up to 12 hours. The Completion Time starts after the time in the Required Action Note expires, providing the equipment remains removed from service or bypassed. If the surveillance time exceeds 12 hours, the Required Action would have to be performed (e.g., place channel in trip within 72 hours ~~or be in Mode 3 within 78 hours.~~) In addition, if a channel is discovered inoperable, the channel may be placed in a bypass condition during troubleshooting prior to expiration of the appropriate TS Condition Required Action Completion Time to place the channel in trip. The 12 hour time limit is justified in Reference 14.

E.1 and E.2

Condition E 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.

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

RICT BASES INSERT 1

BASES

ACTIONS (continued)

requiring only 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 14.

~~If the inoperable 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 plant systems.~~

The Required Actions are modified by a Note that allows placing one channel in bypass for 12 hours while performing surveillance testing.

When surveillance testing is performed under the Required Action Note, the appropriate TS Condition is entered, and the Required Action Note is applied, allowing an inoperable channel to be placed in bypass for up to 12 hours. The Completion Time starts after the time in the Required Action Note expires, providing the equipment remains removed from service or bypassed. If the surveillance time exceeds 12 hours, the Required Action would have to be performed (e.g., place channel in trip within 72 hours ~~or be in Mode 3 within 78 hours.~~) In addition, if a channel is discovered inoperable, the channel may be placed in a bypass condition during troubleshooting prior to expiration of the appropriate TS Condition Required Action Completion Time to place the channel in trip. The 12 hour time limit is justified in Reference 14.

F.1 and F.2

Condition F 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

BASES

ACTIONS (continued)

K.1 and K.2

Condition K applies to the following reactor trip Functions:

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

RICT BASES INSERT 1

With one channel inoperable, the 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 additional channel to initiate a reactor trip above the P-7 setpoint. These Functions do not have to be OPERABLE below the P-7 setpoint. The 72 hours allowed to place the channel in the tripped condition is justified in Reference 14. ~~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 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 K.

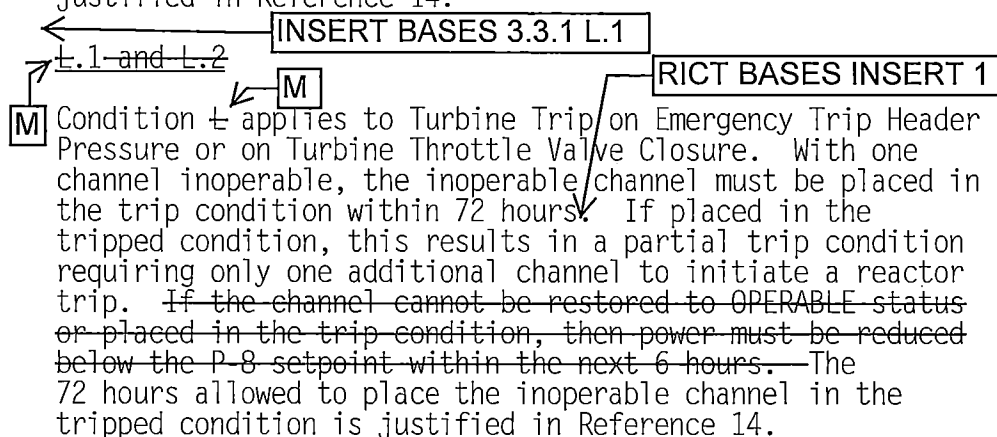
The Required Actions are modified by two Notes. The first Note applies to Functions 8a, 9, and 10 that have installed bypass capability. The Note allows placing one channel in bypass for 12 hours while performing surveillance testing. The second Note applies to Functions 12 and 13 that do not have installed bypass capability. This Note allows placing the inoperable channel in bypass for 12 hours while performing surveillance testing of other channels.

When surveillance testing is performed for functions with installed bypass test capability under the Required Action Note, the appropriate TS Condition is entered, and the Required Action Note is applied, allowing an inoperable channel to be placed in bypass for up to 12 hours. The Completion Time starts after the time in the Required Action Note expires, providing the equipment remains removed from

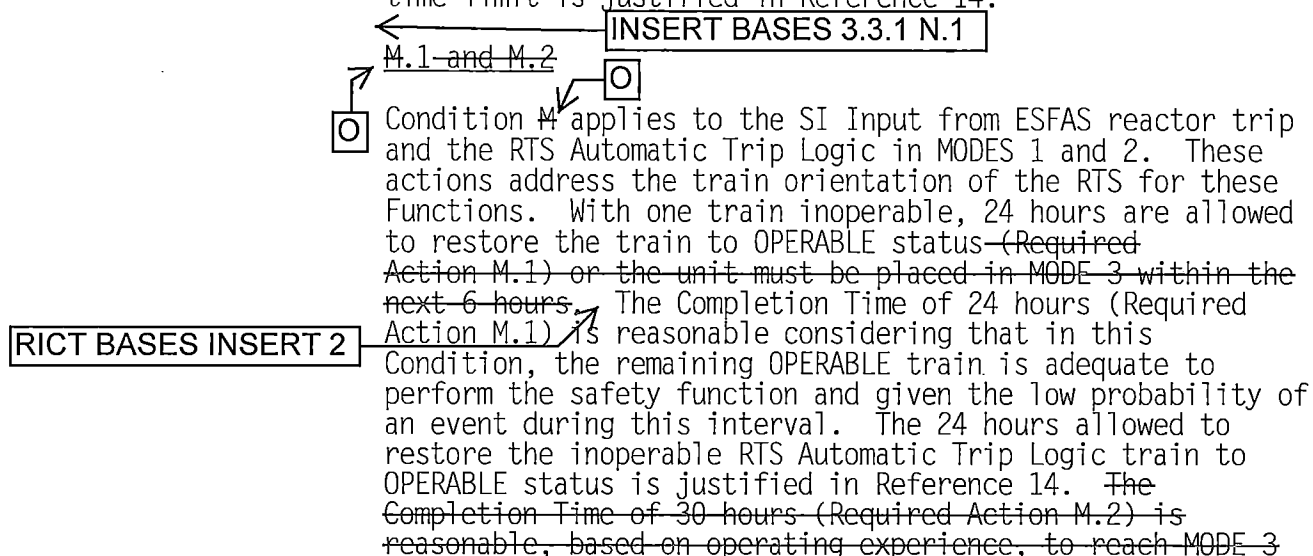
BASES

ACTIONS (continued)

service or bypassed. If the surveillance time exceeds 12 hours, the Required Action would have to be performed (e.g., place channel in trip within 72 hours ~~or be in Mode 3 within 78 hours.~~) In addition, for channels with installed bypass test capability, if a channel is discovered inoperable, the bypass test capability could be utilized during troubleshooting prior to expiration of the appropriate TS Condition Required Action Completion Time to place the channel in trip. The 12 hour time limit is justified in Reference 14.



The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 12 hours while performing routine surveillance testing of the other channels. The 12 hour time limit is justified in Reference 14.



BASES

ACTIONS (continued)

~~from full power in an orderly manner and without challenging plant systems.~~

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.

The 4 hour time limit for testing the RTS Automatic Trip Logic train may include testing the RTB also, if both the Logic test and the RTB test are conducted within the 4 hour time limit. The 4 hour time limit is justified in Reference 14.

N.1 and N.2 P P RICT BASES INSERT 2

P Condition N 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 are allowed for train corrective maintenance to restore the train to OPERABLE status ~~on the unit must be placed in MODE 3 within the next 6 hours.~~ The 24 hour Completion Time is justified in Reference 15. ~~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 plant systems. Placing the unit in MODE 3 results in Action C entry while RTB(s) are inoperable.~~

The Required Actions have been modified by a Note. The Note allows one channel 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 15.

Q.1 and Q.2 Q Q

Q Condition Q applies to the P-6 and P-10 interlocks. With one or more channels inoperable for one-out-of-two or two-out-of-four coincidence logic, the associated interlock must be verified to be in its required state for the existing unit condition by observation of the associated permissive annunciator window 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 plant systems. The 1 hour and 6 hour Completion~~

BASES

ACTIONS (continued)

~~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.~~

~~P.1 and P.2~~

R

R

Condition P applies to the P-7, P-8, and P-13 interlocks. With one or more channels inoperable for one-out-of-two or two-out-of-four coincidence logic, the associated interlock must be verified to be in its required state for the existing unit condition by observation of the associated permissive annunciator window 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 plant systems.~~

INSERT BASES 3.3.1 S.1

~~Q.1 and Q.2~~

T

T

Condition Q 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 plant systems. With the unit in MODE 3, Action C would apply to any inoperable RTB trip mechanism.

RICT BASES INSERT

BASES

ACTIONS (continued)

The Completion Time of 48 hours for Required Action Q.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 BASES 3.3.1 U.1

← R.1 and R.2

V

V

placed in trip

Condition R applies to the RCP Breaker Position reactor trip Function. There is one breaker position device per RCP breaker. With one channel inoperable, the inoperable channel must be restored to OPERABLE status within 6 hours. If the channel cannot be restored to OPERABLE status within the 6 hours, then THERMAL POWER must be reduced below the P-7 setpoint within the next 6 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-7 setpoint because other RTS Functions provide core protection below the P-7 setpoint. The 6 hours allowed to restore the channel to OPERABLE status and the 6 additional hours allowed to reduce THERMAL POWER to below the P-7 setpoint are justified in Reference 11.

The 6 hour time limit is justified in Reference 11.

The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 4 hours while performing routine surveillance testing of the other channels. The 4-hour time limit is justified in Reference 7.

← INSERT BASES 3.3.1 W.1

SURVEILLANCE
REQUIREMENTS

The SRs for each RTS Function are identified by the SRs column of Table 3.3.1-1 for that Function.

A Note has been added to the SR Table stating that Table 3.3.1-1 determines which SRs apply to which RTS Functions.

Note that each channel of process protection supplies both trains of the RTS. 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.

BASES

ACTIONS (continued)

of ESFAS Function 2.c, "Containment Spray, Containment Pressure High-3," and ESFAS Function 3.b.(3), "Containment Isolation, Phase B Isolation, Containment Pressure High-3." TS 3.3.2, Condition E requires that both of these functions be placed in bypass when inoperable.

4. Activities that result in the inoperability of electrical systems (e.g., AC and DC power) and cooling systems (e.g., essential service water and component cooling water) that support the RCS pressure relief system, AFW system, AMSAC, turbine trip, one complete train of ECCS, and the available reactor trip and ESFAS actuation functions should not be scheduled when a logic train is inoperable. That is, one complete train of a function that supports a complete train of a function noted above must be available.

A.1

Condition A applies to all ESFAS protection functions. Condition A addresses the situation where one or more required channels or trains for one or more Functions are inoperable at the same time. The Required Action is to refer to Table 3.3.2-1 and to take the Required Actions for the protection functions affected. The Completion Times are those from the referenced Conditions and Required Actions.

B.1, B.2.1, and B.2.2

Condition B applies to manual initiation of:

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

RICT BASES INSERT 2

This action addresses the train orientation of the SSPS for the functions listed above. If one channel 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 switches in one channel renders the channel inoperable. Condition B, therefore, encompasses

BASES

ACTIONS (continued)

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.~~

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

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

- SI;
- Containment Spray;
- Phase A Isolation;
- Phase B Isolation; and
- Automatic Switchover to Containment Sump.

RICT BASES INSERT 2

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 15. 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 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.~~

BASES

ACTIONS (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 assumption of WCAP-10271-P-A (Ref. 7) that 4 hours is the average time required to perform train surveillance.

D.1., D.2.1., and D.2.2

Condition D applies to:

- Containment Pressure-High 1;
- Pressurizer Pressure-Low;
- Steam Line Pressure-Low;
- Containment Pressure-High 2;
- Steam Line Pressure-Negative Rate-High;
- SG Water Level-Low Low; and
- SG Water Level-High High (P-14).

RICT BASES INSERT 2

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 or a two-out-of-four logic. Therefore, failure of one channel places the Function in a two-out-of-two configuration. One channel must be tripped to place the Function in a one-out-of-two configuration that satisfies redundancy requirements. The 72 hours allowed to restore the channel to OPERABLE status or to place it in the tripped condition is justified in Reference 15.

~~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.~~

BASES

ACTIONS (continued)

The Required Actions are modified by a Note that allows placing one channel in bypass for 12 hours while performing surveillance testing.

When surveillance testing is performed under the Required Action Note, the appropriate TS Condition is entered, and the Required Action Note is applied, allowing an inoperable channel to be placed in bypass for up to 12 hours. The Completion Time starts after the time in the Required Action Note expires, providing the equipment remains removed from service or bypassed. If the surveillance time exceeds 12 hours, the Required Action would have to be performed (e.g., place channel in trip within 72 hours or be in Mode 3 within 78 hours.) In addition, if a channel is discovered inoperable, the channel may be placed in a bypass condition during troubleshooting prior to expiration of the appropriate TS Condition Required Action Completion Time to place the channel in trip. The 12 hours allowed for testing, is justified in Reference 15.

E.1, E.2.1, and E.2.2

Condition E applies to:

- Containment Spray Containment Pressure-High 3; and
- Containment Phase B Isolation Containment Pressure-High 3.

None 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

BASES

ACTIONS (continued)

instrumentation channel failure will not spuriously initiate containment spray.

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 in a trip condition). The Completion Time is further justified based on the low probability of an event occurring during this interval. The Completion Time is further justified based on the low probability of an event occurring during this interval. ~~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 one additional channel to be bypassed for up to 12 hours for surveillance testing. Placing a second channel in the bypass condition for up to 12 hours for testing purposes is acceptable based on the results of Reference 15.

BASES

ACTIONS (continued)

F.1, F.2.1, and F.2.2

Condition F applies to:

- Manual Initiation of Steam Line Isolation; and
- P-4 Interlock.

For the Manual Initiation and the P-4 Interlock Functions, this action addresses the train orientation of the SSPS. If a train or channel is inoperable, 48 hours is allowed to return it to 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 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 functions noted above.

G.1, G.2.1 and G.2.2

Condition G applies to the automatic actuation logic and actuation relays for the Steam Line Isolation, Turbine Trip and Feedwater Isolation, and AF actuation Functions.

BASES

ACTIONS (continued)

RICT BASES INSERT 2

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 to restore the inoperable train to OPERABLE status is justified in Reference 15. 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.~~

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. 7) assumption that 4 hours is the average time required to perform channel surveillance.

H.1, H.2.1, and H.2.2

Condition H applies to Loss of Offsite Power. For this Function, if one channel is inoperable, 1 hour is allowed to restore the channel to OPERABLE status or to place it in the tripped condition. Failure to restore the inoperable channel to OPERABLE status or place it in the tripped condition within an hour requires the unit be placed in MODE 3 within the following 6 hours (total of 7 hours) and MODE 4 within the next 6 hours (total of 13 hours).

BASES

ACTIONS (continued)

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, the 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 2 hours for surveillance testing of other channels. The 1 hour allowed to restore the channel to OPERABLE status or to place the inoperable channel in the tripped condition, and the 2 hours allowed for testing, are deemed acceptable based on engineering judgement.

I.1 and I.2

Condition I applies to the Undervoltage Reactor Coolant Pump Function.

RICT BASES INSERT 2

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 on the affected train where one-out-of-three logic will result in actuation. ~~The 72 hours allowed to restore the channel to OPERABLE status or to place it in the tripped condition is justified in Reference 15. 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 3 within the following 6 hours. The allowed Completion Time of 78 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.~~

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. 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 15.

BASES

ACTIONS (continued)

J.1

Condition J applies to the Auxiliary Feedwater Pump Suction Transfer on Suction Pressure-Low Function. With one train inoperable, the associated auxiliary feedwater pump must be immediately declared inoperable. This requires entry into applicable Conditions and Required Actions of LCO 3.7.5, "AF System."

K.1, K.2.1, and K.2.2

Condition K applies to the RWST Level-Low Low Coincident with Safety Injection Function.

RWST Level-Low Low Coincident with SI provides actuation of switchover to the containment sump. Note that this Function requires the bistables to energize to perform their required action.

This Condition applies to a Function that operates on two-out-of-four logic. Therefore, failure of one channel places the Function in a two-out-of-three configuration. One channel must be tripped to place the Function in a one-out-of-three configuration that satisfies redundancy requirements.

~~If the channel cannot be returned to OPERABLE status or placed in the tripped condition within 72 hours, the unit must be brought to MODE 3 within the following 6 hours and MODE 5 within the next 30 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, the unit does not have any analyzed transients or conditions that require the explicit use of the protection function noted above.~~

The Required Actions are modified by a Note that allows placing one channel in bypass for 12 hours while performing surveillance testing. |

BASES

ACTIONS (continued)

When surveillance testing is performed under the Required Action Note, the appropriate TS Condition is entered, and the Required Action Note is applied, allowing an inoperable channel to be placed in bypass for up to 12 hours. The Completion Time starts after the time in the Required Action Note expires, providing the equipment remains removed from service or bypassed. If the surveillance time exceeds 12 hours, the Required Action would have to be performed (e.g., place channel in trip within 72 hours or be in Mode 3 within 78 hours.) In addition, if a channel is discovered inoperable, the channel may be placed in a bypass condition during troubleshooting prior to expiration of the appropriate TS Condition Required Action Completion Time to place the channel in trip. This is acceptable based on the results of Reference 15.

L.1, L.2.1 and L.2.2

Condition L applies to the P-11 and P-12 interlocks.

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 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.

← INSERT BASES 3.3.2 M.1 and M.2

← INSERT BASES 3.3.2 N.1 and N.2

← INSERT BASES 3.3.2 O.1

BASES

ACTIONS

In the event a channel's Trip Setpoint is found nonconservative with respect to the Allowable Value, or the channel is found inoperable, then the function that channel provides must be declared inoperable and the LCO Condition entered for the particular protection function affected.

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered separately for each Function listed in the LCO on a per bus basis. The Completion Time(s) of the inoperable channel(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

A.1

RICT BASES INSERT 1

Condition A applies to the LOP DG Start Instrumentation Function with one channel on one or more buses inoperable.

If one channel is inoperable, Required Action A.1 requires that channel to be placed in trip within 1 hour. With a channel in trip, the LOP DG Start Instrumentation channels are configured to provide a one-out-of-one logic to initiate an undervoltage, degraded voltage or low degraded voltage signal for that bus.

For the Loss of Voltage Function, a Note is added to allow bypassing an inoperable channel for up to 2 hours for surveillance testing of the other channel. This allowance is made where bypassing the channel does not cause an actuation.

The specified Completion Time is reasonable considering the low probability of an event occurring during these intervals.

B.1

Condition B applies to each of the LOP DG Start Instrumentation Functions with two channels on one or more buses inoperable.

Required Action B.1 requires restoring one channel of the affected Function to OPERABLE status. The 1 hour Completion Time takes into account the low probability of an event requiring an LOP start occurring during this interval.

**BASES 3.3.5 B.1
INSERT**

RICT BASES INSERT 2

BASES

ACTIONS (continued)

B.1, B.2 and B.3

If one PORV is inoperable and 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 Times of 1 hour are reasonable, based on challenges to the PORVs during this time period, and provide the operator adequate time to correct the situation. If the inoperable valve cannot be restored to OPERABLE status, it must be isolated within the specified time. Because there is at least one PORV that remains OPERABLE, 72 hours is provided to restore the inoperable PORV to OPERABLE status. If the PORV cannot be restored within this time, the unit must be brought to a MODE in which the LCO does not apply, as required by Condition D.

C.1, and C.2

of 1 hour.

If one 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 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 PORV in manual control (i.e., closed) to preclude its automatic opening for an overpressure event and to avoid the potential for a stuck open PORV 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.

BASES

ACTIONS (continued)

RICT BASES INSERT 2

Because at least one PORV remains OPERABLE, 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 block valve is based upon the Completion Time for restoring an inoperable PORV in Condition B, since the PORVs may not be capable of mitigating an event if the inoperable block valve is not full open. If the block valve is restored within the Completion Time of 72 hours, the power will be restored, and the PORV restored to OPERABLE status. If it cannot be restored within this additional time, the unit must be brought to a MODE in which the LCO does not apply, as required by Condition D.

D.1 and D.2

If the Required Action of Condition A, B, or C is not met, then 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 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 MODE 4, 5, and 6 with the reactor vessel head on, automatic PORV OPERABILITY may be required. See LCO 3.4.12.

BASES

APPLICABILITY (continued)

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

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

ACTIONS

A.1 and B.1

RICT BASES INSERT 1

With one ECCS train inoperable, 100% of the ECCS flow is provided by the remaining OPERABLE ECCS train. Required Action A.1 requires that the inoperable train be restored to OPERABLE status within 7 days. The 7 day Completion Time is based on a probabilistic risk assessment evaluation (Refs. 6 and 7) which concludes that the Completion Time does not significantly affect the overall probability of core damage.

With two ECCS trains inoperable and at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available, Required Action B.1 requires that one train 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 design function or their required supporting systems are not available.

BASES

ACTIONS (continued)

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 (e.g., both doors in the same air lock are inoperable) Condition C is entered. Note, an air lock with only an inoperable door (Condition A) and interlock (Condition B) does not require entry into Condition C. The Required Actions of Conditions A and B provide the appropriate remedial actions for the degraded condition. 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 unit shutdown. In addition, even with both doors failing the seal test, the overall containment leakage rate can still be within limits.

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 and the overall containment leakage rate is within the Containment Leakage Rate Testing Program leakage limits.

RICT BASES INSERT 1

BASES

ACTIONS (continued)

A.1 and A.2

In the event one containment isolation valve (Table B 3.6.3-1) in one or more penetration flow paths is inoperable, except for purge valve leakage not within limit, 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 or remote manual containment isolation valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. De-activated remote manual valves may include, air operated valves with air removed, or de-energized motor operated valves. Automatic valves refer to those valves that require a motive force to actuate, such as air or electric, and receive an automatic actuation signal. Power operated valves require a motive force to actuate, such as air or electric, but do not receive an automatic actuation signal. Based on the design, the acceptable means of isolating the 48 inch purge valve penetration is to close and de-activate the 48 inch purge valve. 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.

↑
RICT BASES INSERT 1

BASES

ACTIONS (continued)

following isolation

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, that those isolation devices outside containment and capable of being mispositioned are in the correct position. The Completion Time of "once per 31 days 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. However, penetration 94 for Containment Mini-Flow Purge Exhaust is an exception to the Condition A Note. Since only one inside valve and one outside valve are required to ensure isolation capability is maintained assuming a single failure, Condition A is applicable to this penetration flow path which contains three containment isolation valves, one inside valve (VQ005A) and two outside valves (VQ005B and VQ005C). If one or more outside valves are inoperable or the inside valve is inoperable in this penetration flow path, Required Actions A.1 and A.2 must be completed (Table B 3.6.3-2 Action 6.a and Action 6.b). For penetration flow paths with only one containment isolation valve and a closed system, Condition C provides the appropriate actions.

BASES

ACTIONS (continued)

C.1 and C.2

With one or more penetration flow paths 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 or remote manual valve, a closed manual valve, and a blind flange. De-activated remote manual valves may include, air operated valves with air removed, or de-energized motor operated valves.

RICT BASES INSERT 1

Automatic valves refer to those valves that require a motive force to actuate, such as air or electric, and receive an automatic actuation signal. Power operated valves require a motive force to actuate, such as air or electric, but do not receive an automatic actuation signal. 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. 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. 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

following isolation

assure leak tightness of containment and that containment penetrations requiring isolation following an accident are isolated. The Completion Time of once per 31 days 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.

BASES

APPLICABILITY

The MSIVs and required actuator trains must be OPERABLE in MODE 1, and in MODES 2 and 3 except when closed, 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.

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

RICT BASES INSERT 1

With a single actuator train inoperable on one MSIV, action must be taken to restore the inoperable actuator train to OPERABLE status within 7 days. The 7-day Completion Time is reasonable in light of the dual-redundant actuator train design such that with one actuator train inoperable, the affected MSIV is still capable of closing on demand via the remaining OPERABLE actuator train. The 7-day Completion Time takes into account the redundant OPERABLE actuator train to the MSIV, reasonable time for repairs, and the low probability of an event occurring that requires the inoperable actuator train to the affected MSIV.

B.1

RICT BASES INSERT 1

With one actuator train on one MSIV inoperable; and one actuator train on an additional MSIV inoperable, such that the inoperable actuator trains are not in the same ESF Division, action must be taken to restore one of the inoperable actuator trains to OPERABLE status within 72 hours. With one actuator train inoperable on two different MSIVs that are not in the same ESF Division, there is an increased likelihood that an additional failure (such as the failure of an actuator logic train) could cause one MSIV to fail to close. The 72-hour Completion Time is reasonable since the dual-redundant actuator train design ensures that with only one actuator train on each of two affected MSIVs inoperable, each MSIV is still capable of closing on demand.

BASES

ACTIONS (continued)

to the dual-redundant actuator train design), or that at least one MSIV is inoperable, or that with an additional single failure up to three MSIVs could be incapable of closing on demand. Therefore, in some cases, immediately declaring the affected MSIVs inoperable is conservative (when some or all of the affected MSIVs may still be capable of closing on demand even with a single additional failure), while in other cases it is appropriate (when at least one of the MSIVs would be inoperable, or up to three could be rendered inoperable by an additional single failure). Required Action E.1 is conservatively based on the worst-case condition and therefore requires immediately declaring all the affected MSIVs inoperable.

F.1**RICT BASES INSERT 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.

Condition F is entered when one MSIV is inoperable in MODE 1, including when both actuator trains for one MSIV are inoperable. When only one actuator train is inoperable on one MSIV, Condition A applies.

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.

G.1

If the MSIV cannot be restored to OPERABLE status within 8 hours, 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 H would be entered. The Completion Time is reasonable, based on operating experience, to reach MODE 2 and to close the MSIVs in an orderly manner and without challenging plant systems.

BASES

ACTIONS

A.1

RICT BASES INSERT 1

With one SG PORV line inoperable, action must be taken to restore OPERABLE status within 30 days. The 30 day Completion Time allows for the redundant capability afforded by the remaining OPERABLE SG PORV lines, a nonsafety grade backup in the Steam Dump System, and MSSVs.

B.1

With two or more SG PORV lines inoperable, action must be taken to restore all but one SG PORV line to OPERABLE status. Since the block valve can be closed to isolate a SG PORV, some repairs may be possible with the unit at power. The 24 hour Completion Time is reasonable to repair inoperable SG PORV lines, based on the availability of the Steam Dump System and MSSVs, and the low probability of an event occurring during this period that would require the SG PORV lines.

**BASES 3.7.4 B.1
INSERT**

RICT BASES INSERT 2

C.1 and C.2

If the SG PORV 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 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 plant systems.

SURVEILLANCE
REQUIREMENTS

SR 3.7.4.1

To perform a controlled cooldown of the RCS, the SG PORVs must be able to be opened either remotely or locally and throttled through their full range. This SR ensures that the SG PORVs are tested through a full control cycle at least once per fuel cycle. Performance of inservice testing or use of a SG PORV during a unit cooldown may satisfy this requirement. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

ACTIONS

A Note prohibits the application of LCO 3.0.4.b to an inoperable AF train when entering MODE 1. There is an increased risk associated with entering MODE 1 with an AF 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.

A.1

RICT BASES INSERT 1

With one of the required AF trains (pump or flow path) inoperable, action must be taken to restore OPERABLE status within 72 hours. The 72 hour Completion Time is reasonable, based on redundant capabilities afforded by the AF System, time needed for repairs, and the low probability of a DBA occurring during this time period.

B.1 and B.2

When Required Action A.1 cannot be completed within 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 at least 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 full power conditions in an orderly manner and without challenging plant systems.

C.1

If both AF trains are inoperable, 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 nonsafety 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 AF train to OPERABLE status.

Required Action C.1 is modified by a Note indicating that all required MODE changes or power reductions are suspended until one AF 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. In addition, the Completion Times of Required Actions which are suspended are also suspended.

BASES

ACTIONS

The actions are 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 CC train 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.

A.1

RICT BASES INSERT 1

If a CC flow path is not OPERABLE, action must be taken to restore OPERABLE status within 7 days. In this Condition, the remaining OPERABLE flow path is adequate to perform the heat removal function. The inoperability of the common CC heat exchanger impacts both units' flow paths. Inoperability of a unit-specific CC heat exchanger impacts only the unit-specific flow path.

The 7 day Completion Time is reasonable, based on the redundant capabilities afforded by the OPERABLE train, the ability to crosstie trains and units, and the low probability of a DBA occurring during this period.

B.1

RICT BASES INSERT 1

If one required CC pump is inoperable, action must be taken to restore OPERABLE status within 7 days. In this Condition, the remaining OPERABLE CC pump is adequate to perform the heat removal function. The 7 day Completion Time is reasonable, based on the redundant capabilities afforded by the OPERABLE train, the ability to crosstie the trains and Units, and the low probability of a DBA occurring during this period.

C.1 and C.2

If the CC flow path or pump 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 plant systems.

BASES

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

While a specific unit is in MODES 1, 2, 3, or 4, the opposite-unit SX System must be available (independent of the opposite unit's MODE or condition) for unit-specific support. This minimizes the risk associated with loss of all unit-specific SX.

In MODES 5 and 6 the OPERABILITY requirements of the unit-specific SX System are determined by the systems it supports and there are no opposite-unit SX System requirements.

ACTIONS

A.1

RICT BASES INSERT 1

If one unit-specific SX train is inoperable, action must be taken to restore OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE SX train is adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure in the OPERABLE SX train could result in loss of the SX System function in the short term. 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.

Required Action A.1 is modified by two Notes. The first Note indicates that the applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources-Operating," should be entered if an inoperable SX train results in an inoperable emergency diesel generator. The second Note indicates that the applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops-MODE 4," should be entered if an inoperable SX train results in an inoperable decay heat removal train. These are exceptions to LCO 3.0.6 and ensure the proper actions are taken for these components.

BASES

ACTIONS (continued)

B.1

RICT BASES INSERT 1

If the opposite-unit SX train is not OPERABLE for unit-specific support, action must be taken to restore OPERABLE status within 7 days. In this Condition, if a complete loss of unit-specific SX were to occur, the SX System function would be lost. The 7 day Completion Time is based on the capabilities of the unit-specific SX System and the low probability of a DBA with a loss of all unit-specific SX occurring during this time period.

C.1 and C.2

If the unit-specific SX train or the opposite-unit SX train 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 plant systems.

BASES

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 required qualified circuit inoperable, it is necessary to verify the OPERABILITY of the remaining required qualified 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 another required circuit fails SR 3.8.1.1, this qualified circuit is inoperable, and additional Conditions and Required Actions may be appropriate. If the additional inoperability results in a bus with two required qualified circuits inoperable Condition D is entered. If the additional inoperability results in the second bus with one required qualified circuit inoperable Condition A is still applicable.

A.2

RICT BASES INSERT 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 or more buses with one required qualified 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 plant safety systems. In this Condition, however, the remaining OPERABLE required qualified circuits and DGs are adequate to supply electrical power to the onsite Class 1E Distribution System.

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.

BASES

ACTIONS (continued)

~~The second Completion Time for Required Action A.2 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition A is entered while, for instance, a DG is inoperable and that DG is subsequently returned OPERABLE, the LCO may already have been not met for up to 14 days. This could lead to a total of 17 days, since initial failure to meet the LCO, to restore the required qualified circuit(s). At this time, a DG could again become inoperable, the circuit(s) restored OPERABLE, and an additional 14 days (for a total of 31 days) allowed prior to complete restoration of the LCO. The 17 day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently. The "AND" connector between the 72 hour and 17 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.~~

~~The Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time that the LCO was initially not met, instead of at the time Condition A was entered.~~

B.1

The 14 day Completion Time for Required Action B.5 is predicated on the OPERABILITY of the opposite-unit DGs (Ref. 7). It is required to verify both opposite-unit DGs OPERABLE within 1 hour and to continue this action once per 24 hours thereafter until restoration of the required DG is accomplished. This verification provides assurance that both opposite-unit DGs are capable of supplying the onsite Class 1E AC Electrical Power Distribution System.

BASES

ACTIONS (continued)

In the event the inoperable DG is restored to OPERABLE status prior to completing either B.4.1 or B.4.2, the Corrective Action Program Procedure will continue to evaluate the common cause possibility and determine the need for any additional DG testing. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B.

If while a DG is inoperable, a new problem with the DG is discovered that would have prevented the DG from performing its specified safety function, a separate entry into Condition B is not required. The new DG problem should be addressed in accordance with the Corrective Action Program.

According to Generic Letter 84-15 (Ref. 8), 24 hours is reasonable to confirm that the OPERABLE DG is not affected by the same problem as the inoperable DG.

B.5

According to Reference 7, operation may continue in Condition B for a period that should not exceed 14 days. This Completion Time is based upon a risk-informed assessment that concluded that the associated risk is acceptable based upon the availability of the offsite power sources and the onsite standby power sources (i.e., the DGs), and the implementation of a Configuration Risk Management Program.

In Condition B, the remaining OPERABLE DG and required qualified 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.

← RICT BASES INSERT 2

BASES

ACTIONS (continued)

~~The second Completion Time for Required Action B.5 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition B is entered while, for instance, a required qualified circuit is inoperable and that circuit is subsequently restored OPERABLE, the LCO may already have been not met for up to 72 hours. This could lead to a total of 17 days, since initial failure to meet the LCO, to restore the DG. At this time, a required qualified circuit could again become inoperable, the DG restored OPERABLE, and an additional 72 hours (for a total of 20 days) allowed prior to complete restoration of the LCO. The 17 day Completion Time provides a limit on time allowed in a specified condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently. The "AND" connector between the 14 day and 17 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.~~

~~As in Required Action B.3, the Completion Time allows for an exception to the normal "time zero" for beginning the allowed time "clock." This will result in establishing the "time zero" at the time that the LCO was initially not met, instead of at the time Condition B was entered.~~

C.1

In Condition C, with an opposite-unit DG inoperable, the remaining OPERABLE unit-specific DG and required qualified circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition C for a period that should not exceed 72 hours. 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.

BASES

ACTIONS (continued)

D.1

With one or more buses with both of its required qualified 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 LOCA, 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 required qualified circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria.

RICT BASES INSERT 2

According to Regulatory Guide 1.93 (Ref. 6), with the available required qualified circuits two less than required by the LCO, operation may continue for 24 hours. If two required qualified circuits are restored within 24 hours, unrestricted operation may continue. If only one required qualified circuit is restored within 24 hours, power operation continues in accordance with Condition A.

E.1 and E.2

In Condition E, with one DG inoperable and one or more buses with one qualified circuit inoperable or with one DG and one bus with both qualified circuits inoperable, individual redundancy is lost in both the offsite electrical power system and 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 Condition may appear higher than that in Condition D. 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 to restore the DG or the required qualified circuit(s) 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.

RICT BASES INSERT 2

BASES

ACTIONS (continued)

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition E are modified by a Note to indicate that when Condition E is entered with no AC source to any division (one or more divisions de-energized), the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems-Operating," must be immediately entered. This allows Condition E to provide requirements for the loss of one DG and one required qualified circuit on one or more buses, without regard to whether a division is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized division.

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition E for a period that should not exceed 12 hours.

F.1

RICT BASES INSERT 2

With Train A and Train B DGs inoperable, there are no remaining standby AC sources. 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 is 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 both DGs inoperable, operation may continue for a period that should not exceed 2 hours.

BASES

ACTIONS (continued)

Required Action A.3 requires that the battery float current be verified as less than or equal to 3 amps. This indicates that, if the battery had been discharged as the result of the inoperable battery charger, it has now been fully recharged. If at the expiration of the initial 12 hour period the battery float current is not less than or equal to 3 amps this indicates there may be additional battery problems and the battery must be declared inoperable.

Required Action A.4 limits the restoration time for the inoperable battery charger to 7 days. This action is applicable if an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage has been used (e.g., balance of plant non-Class 1E battery charger). The 7 day Completion Time reflects a reasonable time to effect restoration of the qualified battery charger to operable status.

B.1

RICT BASES INSERT 2

Condition B addresses the situation of crosstieing the operating unit's DC bus to the opposite unit, which has an inoperable battery charger, when the opposite unit is operating in MODE 1, 2, 3, or 4. This provision is included to accommodate unexpected failures, maintenance, and/or testing of the opposite unit's DC subsystems. The Completion Time for Required Action B.1 of 204 hours is adequate to allow testing and restoration activities. In this Condition, the opposite unit's battery is assumed to remain OPERABLE. Therefore, the function of the crosstie is to maintain the opposite unit's battery fully charged and to supply the minimal opposite unit DC loads. The 204 hours is based on the 7 days the opposite unit has to restore the inoperable charger and the 36 hours the opposite unit would have to reach MODE 5, if the charger is not restored to OPERABLE status. When the opposite unit reaches MODE 5, Condition C is entered. Requiring the associated crosstie breaker to be opened within 204 hours also ensures that independence of the DC subsystems is reestablished.

RICT BASES INSERT 2

BASES

ACTIONS (continued)

C.1 and C.2

Condition C addresses an operating unit's DC bus that is crosstied to the opposite unit's associated DC bus, which has an inoperable source (i.e., battery or battery charger), when the opposite unit is shutdown. This provision is included to accommodate maintenance and/or testing of the shutdown unit's DC subsystems.

With the shutdown unit's battery inoperable, the operating unit will be required to supply all loads on the shutdown unit's crosstied bus should an event occur on the shutdown unit. Therefore, Required Action C.1 specifies that the possible loading on the shutdown unit's DC bus be verified to be ≤ 200 amps once per 12 hours. Limiting the load to 200 amps, ensures that the operating unit's DC subsystem will not be overloaded in the event of a concurrent event on the operating unit. Required Action C.1 is modified by a Note only requiring Required Action C.1 when the opposite unit has an inoperable battery.

RICT BASES INSERT 1

Required Action C.2 requires the associated crosstie breaker to be opened within 7 days and ensures that measures are being taken to restore the inoperable battery or battery charger and reestablish independence of the DC subsystems.

D.1

Condition D represents one division with a loss of ability to completely respond to an event, and a potential loss of ability for the DC division 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 division. The 2 hour limit is consistent with the allowed time for an inoperable DC distribution system division.

RICT BASES INSERT 2

BASES

ACTIONS (continued)

RICT BASES INSERT 2

Required Action A.1 allows 7 days to fix the inoperable inverter and return it to service. The 7 day 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 AC instrument bus is powered from its constant voltage source, it is relying upon interruptible AC electrical power sources (offsite and onsite). The uninterruptible inverter source to the AC instrument buses is the preferred source for powering instrumentation trip setpoint devices.

With a required inverter inoperable, the following compensatory actions will be taken (Ref. 4):

- a. Entry into the extended inverter Completion Time (CT) will not be planned concurrent with Diesel Generator (DG) maintenance on the associated train.
- b. Entry into the extended inverter CT will not be planned concurrent with planned maintenance on another RPS or ESFAS channel that could result in that channel being in a tripped condition.

These actions are taken because it is recognized that with an inverter inoperable and the instrument bus being powered by the constant voltage transformer, instrument power for that train is dependent on power from the associated DG following a loss of offsite power event.

B.1 and B.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.

BASES

ACTIONS

A.1

With one AC bus, except AC instrument buses, inoperable, the remaining AC electrical power distribution subsystem is 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 power distribution subsystem could result in the minimum required ESF functions not being supported. Therefore, the required AC bus must be restored to OPERABLE status within 8 hours. ↗

RICT BASES INSERT 1

Condition A worst scenario is one division without AC power (i.e., no offsite power to the division 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 division by stabilizing the unit, and on restoring power to the affected division. 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 division, to the actions associated with taking the unit to shutdown within this time limit; and
- b. The low probability for an event in conjunction with a single failure of a redundant component in the division with AC power.

BASES

ACTIONS (continued)

~~The second Completion Time for Required Action A.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition A is entered while, for instance, a DC bus is inoperable and subsequently restored OPERABLE, the LCO may already have been not met for up to 2 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the AC distribution system. At this time, a DC circuit could again become inoperable, and AC distribution restored OPERABLE. This could continue indefinitely.~~

~~The Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition A was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.~~

B.1

With one AC instrument bus inoperable, the remaining OPERABLE AC instrument 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 instrument bus must be restored to OPERABLE status within 2 hours by powering the bus from the associated inverter via inverted DC, inverter using AC source, or Class 1E constant voltage transformer.

↑
RICT BASES INSERT 2

BASES

ACTIONS (continued)

~~The second Completion Time for Required Action B.1 establishes a limit on the maximum allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition B is entered while, for instance, an AC bus is inoperable and subsequently returned OPERABLE, the LCO may already have been not met for up to 8 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the instrument bus distribution system. At this time, an AC bus could again become inoperable, and instrument bus distribution restored OPERABLE. This could continue indefinitely.~~

~~This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition B was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.~~

C.1

With one DC bus inoperable, the remaining DC electrical power distribution subsystem is 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 DC electrical power distribution subsystem could result in the minimum required ESF functions not being supported. Therefore, the DC bus must be restored to OPERABLE status within 2 hours by powering the bus from the associated battery or charger.

↑
RICT BASES INSERT 2

BASES

ACTIONS (continued)

~~The second Completion Time for Required Action C.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition C is entered while, for instance, an AC bus is inoperable and subsequently returned OPERABLE, the LCO may already have been not met for up to 8 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the DC distribution system. At this time, an AC bus could again become inoperable, and DC distribution restored OPERABLE. This could continue indefinitely.~~

~~This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition C was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.~~

D.1 and D.2

If the inoperable distribution subsystem cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

E.1

With two electrical power distribution subsystems inoperable 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.

B/B TS BASES INSERTS

RICT BASES INSERT 1

or in accordance with the Risk Informed Completion Time Program

RICT BASES INSERT 2

Alternatively, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

INSERT BASES 3.3.1 L.1

L.1

If the Required Action and associated Completion Time of Condition K is not met, 6 hours is allowed to reduce THERMAL POWER to below P-7.

INSERT BASES 3.3.1 N.1

N.1

If the Required Action and associated Completion Time of Condition M is not met, THERMAL POWER must be reduced below the P-8 setpoint within 6 hours. This places the unit in a MODE where the LCO is no longer applicable.

INSERT BASES 3.3.1 S.1

S.1

If the Required Action and associated Completion Time of Condition R 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 BASES 3.3.1 U.1

U.1

If the Required Action and associated Completion Time of Condition B, D, E, O, P, Q, R, or T 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 K 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.

B/B TS BASES INSERTS

INSERT BASES 3.3.1 W.1

W.1

If the Required Action and associated Completion Time of Condition V is not met, THERMAL POWER must be reduced below the P-7 setpoint within 6 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-7 setpoint because other RTS Functions provide core protection below the P-7 setpoint. The 6 hours to reduce THERMAL POWER to below the P-7 setpoint is justified in Reference 14.

INSERT BASES 3.3.2 M.1 and M.2

M.1 and M.2

If the Required Action and associated Completion Time of Condition B, C, or K is not met, the unit must be placed in a MODE in which the LCO does not apply. This is accomplished by placing the unit 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 4, these Functions are no longer required OPERABLE.

INSERT BASES 3.3.2 N.1 and N.2

N.1 and N.2

If the Required Action and associated Completion Time of Condition D, E, or G 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.

INSERT BASES 3.3.2 O.1

O.1

If the Required Action and associated Completion Time of Condition I 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.

BASES 3.3.5 B.1 INSERT

This Condition has been modified by a NOTE to require that application of the Risk Informed Completion Time Program is not applicable when the same Function is inoperable on more than one bus. The DG Success Criterion is one of two DGs; however, the DG "fail to start" event in the PRA will be used as a conservative surrogate for these non-modeled components.

B/B TS BASES INSERTS

BASES 3.7.4 B.1 INSERT

This Condition has been modified by a NOTE to require that application of the Risk Informed Completion Time Program is not applicable when more than two required SG PORV lines are inoperable. The PRA Success Criterion is two of four SG PORVs for Steam Generator Tube Rupture (SGTR) scenarios and one of four SG PORVs for all other scenarios. As previously described in the Bases, with two or more SG PORV lines inoperable, action must be taken to restore all but one SG PORV line to operable status. Since the block valve can be closed to isolate a SG PORV, some repairs may be possible with the unit at power.

ATTACHMENT 3b

Proposed Technical Specification Bases Changes – Byron Station Mark-Ups

**Byron Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. STN 50-454 and STN 50-455**

(For Information Only)

BASES

ACTIONS (continued)

systems (e.g., essential service water and component cooling water) that support the RCS pressure relief system, AFW system, AMSAC, turbine trip, one complete train of ECCS, and the available reactor trip and ESFAS actuation functions should not be scheduled when a logic train or RTB train is inoperable. That is, one complete train of a function that supports a complete train of a function noted above must be available.

A.1

Condition A applies to all RTS protection Functions. Condition A addresses the situation where one or more required channels or trains for one or more Functions are inoperable at the same time. The Required Action is to refer to Table 3.3.1-1 and to take the Required Actions for the protection functions affected. The Completion Times are those from the referenced Conditions and Required Actions.

B.1 and B.2

RICT BASES INSERT 1

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.

~~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 reach MODE 3 from full power operation in an orderly manner and without challenging plant systems. With the unit in MODE 3, Action C would apply 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.~~

BASES

ACTIONS (continued)

A Note to the ACTIONS restricts the transition from MODE 5 with the Rod Control System not capable of rod withdrawal and all rods fully inserted, to MODE 5 with the Rod Control System capable of rod withdrawal or all rods not fully inserted for Functions 18, 19, and 20 while complying with the ACTIONS (i.e., while the LCO is not met). LCO 3.0.4 typically allows entry into MODES or other specified conditions in the Applicability while in MODE 5, however, the restriction of this Note is necessary to assure an OPERABLE RTS function prior to commencing operation with the Rod Control System capable of rod withdrawal or all rods not fully inserted.

D.1 and D.2

Condition D applies to the Power Range Neutron Flux-High Function.

The NIS power range detectors provide input to the Rod Control System and the SG Water Level 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 13.

RICT BASES INSERT 2

~~As an alternative to the above Action, 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 Required 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 are modified by a Note that allows placing one channel in bypass for 12 hours while performing surveillance testing, and setpoint adjustments when a setpoint reduction is required by other Technical Specifications.

the inoperable channel can be placed in the tripped condition within 72 hours or in accordance with the Risk Informed Completion Time Program.

BASES

ACTIONS (continued)

When surveillance testing is performed under the Required Action Note, the appropriate TS Condition is entered, and the Required Action Note is applied, allowing an inoperable channel to be placed in bypass for up to 12 hours. The Completion Time starts after the time in the Required Action Note expires, providing the equipment remains removed from service or bypassed. If the surveillance time exceeds 12 hours, the Required Action would have to be performed (e.g., place channel in trip within 72 hours ~~or be in Mode 3 within 78 hours.~~) In addition, if a channel is discovered inoperable, the channel may be placed in a bypass condition during troubleshooting prior to expiration of the appropriate TS Condition Required Action Completion Time to place the channel in trip. The 12 hour time limit is justified in Reference 13.

E.1 and E.2

Condition E 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.

RICT BASES INSERT 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-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 13.

~~If the inoperable 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~~

BASES

ACTIONS (continued)

~~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 plant systems.~~

The Required Actions are modified by a Note that allows placing one channel in bypass for 12 hours while performing surveillance testing.

When surveillance testing is performed under the Required Action Note, the appropriate TS Condition is entered, and the Required Action Note is applied, allowing an inoperable channel to be placed in bypass for up to 12 hours. The Completion Time starts after the time in the Required Action Note expires, providing the equipment remains removed from service or bypassed. If the surveillance time exceeds 12 hours, the Required Action would have to be performed (e.g., place channel in trip within 72 hours ~~or be in Mode 3 within 78 hours.~~) In addition, if a channel is discovered inoperable, the channel may be placed in a bypass condition during troubleshooting prior to expiration of the appropriate TS Condition Required Action Completion Time to place the channel in trip. The 12-hour time limit is justified in Reference 13.

F.1 and F.2

Condition F 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, 2 hours is allowed to reduce THERMAL POWER below the P-6 setpoint or increase to THERMAL POWER above the P-10 setpoint. The provisions of LCO 3.0.4 allow entry into a MODE or other specified condition in the Applicability as directed by the Required Actions. Therefore, a MODE change is permitted with one channel inoperable whenever Required Action F.2 is used. The NIS Intermediate Range Neutron Flux channels must be

BASES

ACTIONS (continued)

K.1 and K.2

Condition K applies to the following reactor trip Functions:

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

RICT BASES INSERT 1

With one channel inoperable, the 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 additional channel to initiate a reactor trip above the P-7 setpoint. These Functions do not have to be OPERABLE below the P-7 setpoint. The 72 hours allowed to place the channel in the tripped condition is justified in Reference 13. ~~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 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 K.

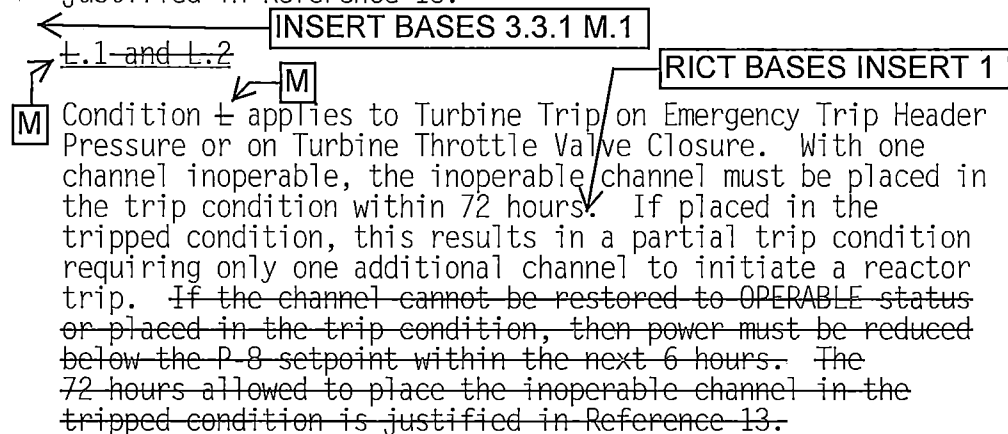
The Required Actions are modified by two Notes. The first Note applies to Functions 8a, 9, and 10 that have installed bypass capability. The Note allows placing one channel in bypass for 12 hours while performing surveillance testing. The second Note applies to Functions 12 and 13 that do not have installed bypass capability. This Note allows placing the inoperable channel in bypass for 12 hours while performing surveillance testing of other channels.

When surveillance testing is performed for functions with installed bypass test capability under the Required Action Note, the appropriate TS Condition is entered, and the Required Action Note is applied, allowing an inoperable channel to be placed in bypass for up to 12 hours. The Completion Time starts after the time in the Required Action Note expires, providing the equipment remains removed from

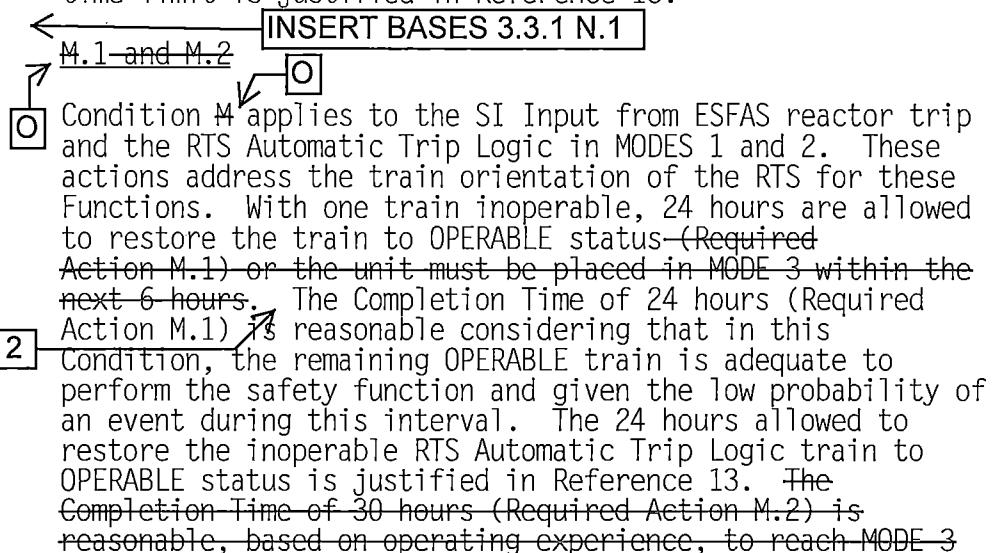
BASES

ACTIONS (continued)

service or bypassed. If the surveillance time exceeds 12 hours, the Required Action would have to be performed (e.g., place channel in trip within 72 hours ~~or be in Mode 3 within 78 hours.~~) In addition, for channels with installed bypass test capability, if a channel is discovered inoperable, the bypass test capability could be utilized during troubleshooting prior to expiration of the appropriate TS Condition Required Action Completion Time to place the channel in trip. The 12 hour time limit is justified in Reference 13.



The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 12 hours while performing routine surveillance testing of the other channels. The 12 hour time limit is justified in Reference 13.



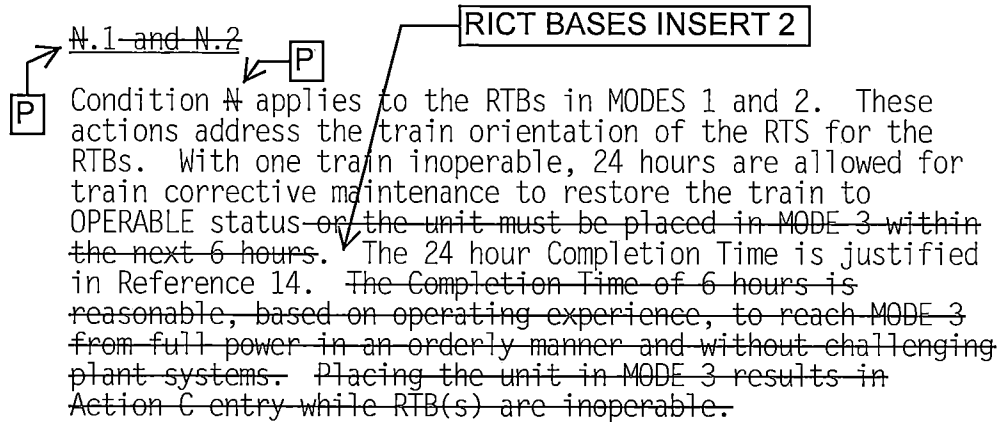
BASES

ACTIONS (continued)

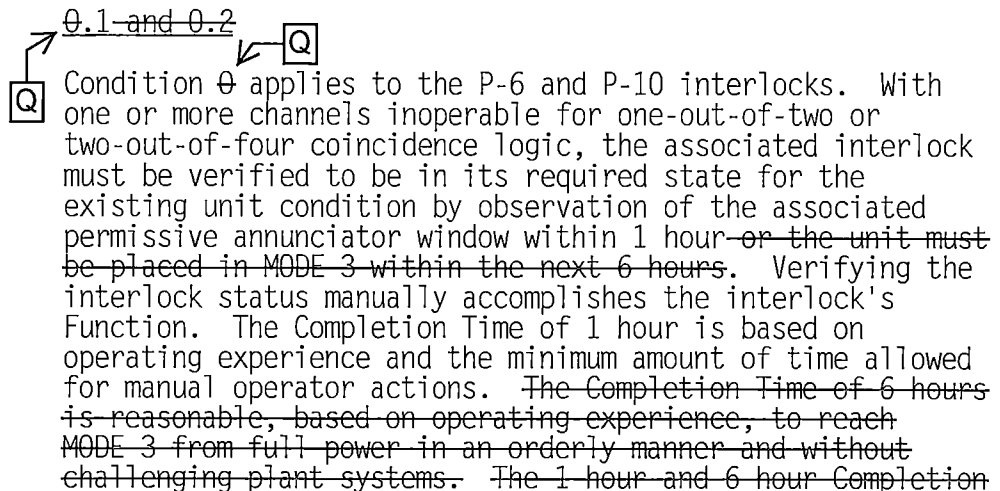
~~from full power in an orderly manner and without challenging plant systems.~~

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.

The 4 hour time limit for testing the RTS Automatic Trip Logic train may include testing the RTB also, if both the Logic test and the RTB test are conducted within the 4 hour time limit. The 4 hour time limit is justified in Reference 13.



The Required Actions have been modified by a Note. The Note allows one channel 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 14.



BASES

ACTIONS (continued)

~~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.~~

~~P.1 and P.2~~ R

R Condition ~~P~~ applies to the P-7, P-8, and P-13 interlocks. With one or more channels inoperable for one-out-of-two or two-out-of-four coincidence logic, the associated interlock must be verified to be in its required state for the existing unit condition by observation of the associated permissive annunciator window 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 plant systems.~~

INSERT BASES 3.3.1 S.1

~~Q.1 and Q.2~~ T

T Condition ~~Q~~ 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 plant systems. ~~With the unit in MODE 3, Action C would apply to any inoperable RTB trip mechanism.~~

RICT BASES INSERT

BASES

ACTIONS (continued)

The Completion Time of 48 hours for Required Action Q.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 BASES 3.3.1 U.1

R.1 and R.2

V

V

placed in trip

Condition R applies to the RCP Breaker Position reactor trip Function. There is one breaker position device per RCP breaker. With one channel inoperable, the inoperable channel must be restored to OPERABLE status within 6 hours. If the channel cannot be restored to OPERABLE status within the 6 hours, then THERMAL POWER must be reduced below the P-7 setpoint within the next 6 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-7 setpoint because other RTS Functions provide core protection below the P-7 setpoint. The 6 hours allowed to restore the channel to OPERABLE status and the 6 additional hours allowed to reduce THERMAL POWER to below the P-7 setpoint are justified in Reference 11.

The 6 hour time limit is justified in Reference 11.

The Required Actions have been modified by a Note that allows placing the inoperable channel in the bypassed condition for up to 4 hours while performing routine surveillance testing of the other channels. The 4-hour time limit is justified in Reference 7.

← INSERT BASES 3.3.1 W.1

SURVEILLANCE
REQUIREMENTS

The SRs for each RTS Function are identified by the SRs column of Table 3.3.1-1 for that Function.

A Note has been added to the SR Table stating that Table 3.3.1-1 determines which SRs apply to which RTS Functions.

Note that each channel of process protection supplies both trains of the RTS. 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.

BASES

ACTIONS (continued)

Pressure High-3." TS 3.3.2, Condition E requires that both of these functions be placed in bypass when inoperable.

4. Activities that result in the inoperability of electrical systems (e.g., AC and DC power) and cooling systems (e.g., essential service water and component cooling water) that support the RCS pressure relief system, AFW system, AMSAC, turbine trip, one complete train of ECCS, and the available reactor trip and ESFAS actuation functions should not be scheduled when a logic train is inoperable. That is, one complete train of a function that supports a complete train of a function noted above must be available.

A.1

Condition A applies to all ESFAS protection functions. Condition A addresses the situation where one or more required channels or trains for one or more Functions are inoperable at the same time. The Required Action is to refer to Table 3.3.2-1 and to take the Required Actions for the protection functions affected. The Completion Times are those from the referenced Conditions and Required Actions.

B.1, B.2.1, and B.2.2

Condition B applies to manual initiation of:

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

RICT BASES INSERT 2

This action addresses the train orientation of the SSPS for the functions listed above. If one channel 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 switches in one channel renders the channel 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

BASES

ACTIONS (continued)

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.~~

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

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

- SI;
- Containment Spray;
- Phase A Isolation;
- Phase B Isolation; and
- Automatic Switchover to Containment Sump.

RICT BASES INSERT 2

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 15. 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 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.~~

BASES

ACTIONS (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 assumption of WCAP-10271-P-A (Ref. 7) that 4 hours is the average time required to perform channel surveillance.

D.1, D.2.1, and D.2.2

Condition D applies to:

- Containment Pressure-High 1;
- Pressurizer Pressure-Low;
- Steam Line Pressure-Low;
- Containment Pressure-High 2;
- Steam Line Pressure-Negative Rate-High;
- SG Water Level-Low Low; and
- SG Water Level-High High (P-14).

RICT BASES INSERT 2

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 or a two-out-of-four logic. Therefore, failure of one channel places the Function in a two-out-of-two configuration. One channel must be tripped to place the Function in a one-out-of-two configuration that satisfies redundancy requirements. The 72 hours allowed to restore the channel to OPERABLE status or to place it in the tripped condition is justified in Reference 15.

~~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.~~

BASES

ACTIONS (continued)

The Required Actions are modified by a Note that allows placing one channel in bypass for 12 hours while performing surveillance testing.

When surveillance testing is performed under the Required Action Note, the appropriate TS Condition is entered, and the Required Action Note is applied, allowing an inoperable channel to be placed in bypass for up to 12 hours. The Completion Time starts after the time in the Required Action Note expires, providing the equipment remains removed from service or bypassed. If the surveillance time exceeds 12 hours, the Required Action would have to be performed (e.g., place channel in trip within 72 hours or be in Mode 3 within 78 hours.) In addition, if a channel is discovered inoperable, the channel may be placed in a bypass condition during troubleshooting prior to expiration of the appropriate TS Condition Required Action Completion Time to place the channel in trip. The 12 hours allowed for testing is justified in Reference 15.

E.1, E.2.1, and E.2.2

Condition E applies to:

- Containment Spray Containment Pressure-High 3; and
- Containment Phase B Isolation Containment Pressure-High 3.

None 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.

BASES

ACTIONS (continued)

Furthermore, with one channel bypassed, a single instrumentation channel failure will not spuriously initiate containment spray.

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 in a trip condition). The Completion Time is further justified based on the low probability of an event occurring during this interval. The Completion Time is further justified based on the low probability of an event occurring during this interval. ~~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 one additional channel to be bypassed for up to 12 hours for surveillance testing. Placing a second channel in the bypass condition for up to 12 hours for testing purposes is acceptable based on the results of Reference 15.

BASES

ACTIONS (continued)

F.1, F.2.1, and F.2.2

Condition F applies to:

- Manual Initiation of Steam Line Isolation; and
- P-4 Interlock.

For the Manual Initiation and the P-4 Interlock Functions, this action addresses the train orientation of the SSPS. If a train or channel is inoperable, 48 hours is allowed to return it to 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 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 functions noted above.

G.1, G.2.1 and G.2.2

Condition G applies to the automatic actuation logic and actuation relays for the Steam Line Isolation, Turbine Trip and Feedwater Isolation, and AF actuation Functions.

BASES

ACTIONS (continued)

RICT BASES INSERT 2

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 to restore the inoperable train to OPERABLE status is justified in Reference 15. 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.~~

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. 7) assumption that 4 hours is the average time required to perform channel surveillance.

H.1, H.2.1, and H.2.2

Condition H applies to Loss of Offsite Power. For this Function, if one channel is inoperable, 1 hour is allowed to restore the channel to OPERABLE status or to place it in the tripped condition. Failure to restore the inoperable channel to OPERABLE status or place it in the tripped condition within an hour requires the unit be placed in MODE 3 within the following 6 hours (total of 7 hours) and MODE 4 within the next 6 hours (total of 13 hours).

BASES

ACTIONS (continued)

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, the 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 2 hours for surveillance testing of other channels. The 1 hour allowed to restore the channel to OPERABLE status or to place the inoperable channel in the tripped condition, and the 2 hours allowed for testing, are deemed acceptable based on engineering judgement.

I.1 and I.2

Condition I applies to the Undervoltage Reactor Coolant Pump Function.

RICT BASES INSERT 2

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 on the affected train where one-out-of-three logic will result in actuation. ~~The 72 hours allowed to restore the channel to OPERABLE status or to place it in the tripped condition is justified in Reference 15. 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 3 within the following 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.~~

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. 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 15.

BASES

ACTIONS (continued)

J.1

Condition J applies to the Auxiliary Feedwater Pump Suction Transfer on Suction Pressure-Low Function. With one train inoperable, the associated auxiliary feedwater pump must be immediately declared inoperable. This requires entry into applicable Conditions and Required Actions of LCO 3.7.5, "AF System."

K.1, K.2.1, and K.2.2

Condition K applies to the RWST Level-Low Low Coincident with Safety Injection Function.

RWST Level-Low Low Coincident with SI provides actuation of switchover to the containment sump. Note that this Function requires the bistables to energize to perform their required action.

This Condition applies to a Function that operates on two-out-of-four logic. Therefore, failure of one channel places the Function in a two-out-of-three configuration. One channel must be tripped to place the Function in a one-out-of-three configuration that satisfies redundancy requirements.

~~If the channel cannot be returned to OPERABLE status or placed in the tripped condition within 72 hours, the unit must be brought to MODE 3 within the following 6 hours and MODE 5 within the next 30 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, the unit does not have any analyzed transients or conditions that require the explicit use of the protection function noted above.~~

The Required Actions are modified by a Note that allows placing one channel in bypass for 12 hours while performing surveillance testing.

BASES

ACTIONS (continued)

When surveillance testing is performed under the Required Action Note, the appropriate TS Condition is entered, and the Required Action Note is applied, allowing an inoperable channel to be placed in bypass for up to 12 hours. The Completion Time starts after the time in the Required Action Note expires, providing the equipment remains removed from service or bypassed. If the surveillance time exceeds 12 hours, the Required Action would have to be performed (e.g., place channel in trip within 72 hours or be in Mode 3 within 78 hours.) In addition, if a channel is discovered inoperable, the channel may be placed in a bypass condition during troubleshooting prior to expiration of the appropriate TS Condition Required Action Completion Time to place the channel in trip. This is acceptable based on the results of Reference 15.

L.1, L.2.1 and L.2.2

Condition L applies to the P-11 and P-12 interlocks.

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 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.

- ← INSERT BASES 3.3.2 M.1 and M.2
- ← INSERT BASES 3.3.2 N.1 and N.2
- ← INSERT BASES 3.3.2 O.1

BASES

ACTIONS

In the event a channel's Trip Setpoint is found nonconservative with respect to the Allowable Value, or the channel is found inoperable, then the function that channel provides must be declared inoperable and the LCO Condition entered for the particular protection function affected.

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered separately for each Function listed in the LCO on a per bus basis. The Completion Time(s) of the inoperable channel(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

A.1

RICT BASES INSERT 1

Condition A applies to the LOP DG Start Instrumentation Function with one channel on one or more buses inoperable.

If one channel is inoperable, Required Action A.1 requires that channel to be placed in trip within 1 hour. With a channel in trip, the LOP DG Start Instrumentation channels are configured to provide a one-out-of-one logic to initiate an undervoltage, degraded voltage signal or low degraded voltage for that bus.

For the Loss of Voltage Function, a Note is added to allow bypassing an inoperable channel for up to 2 hours for surveillance testing of the other channel. This allowance is made where bypassing the channel does not cause an actuation.

The specified Completion Time is reasonable considering the low probability of an event occurring during these intervals.

B.1

Condition B applies to each of the LOP DG Start Instrumentation Functions with two channels on one or more buses inoperable.

Required Action B.1 requires restoring one channel of the affected Function to OPERABLE status. The 1 hour Completion Time takes into account the low probability of an event requiring an LOP start occurring during this interval.

BASES 3.3.5 B.1
INSERT

RICT BASES INSERT 2

BASES

ACTIONS (continued)

B.1, B.2 and B.3

If one PORV is inoperable and 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 Times of 1 hour are reasonable, based on challenges to the PORVs during this time period, and provide the operator adequate time to correct the situation. If the inoperable valve cannot be restored to OPERABLE status, it must be isolated within the specified time. Because there is at least one PORV that remains OPERABLE, 72 hours is provided to restore the inoperable PORV to OPERABLE status. If the PORV cannot be restored within this time, the unit must be brought to a MODE in which the LCO does not apply, as required by Condition D.

C.1, and C.2

of 1 hour.

If one 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 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 PORV in manual control (i.e., closed) to preclude its automatic opening for an overpressure event and to avoid the potential for a stuck open PORV 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.

BASES

ACTIONS (continued)

RICT BASES INSERT 2

Because at least one PORV remains OPERABLE, 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 block valve is based upon the Completion Time for restoring an inoperable PORV in Condition B, since the PORVs may not be capable of mitigating an event if the inoperable block valve is not full open. If the block valve is restored within the Completion Time of 72 hours, the power will be restored, and the PORV restored to OPERABLE status. If it cannot be restored within this additional time, the unit must be brought to a MODE in which the LCO does not apply, as required by Condition D.

D.1 and D.2

If the Required Action of Condition A, B, or C is not met, then 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 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 MODE 4, 5, and 6 with the reactor vessel head on, automatic PORV OPERABILITY may be required. See LCO 3.4.12.

BASES

APPLICABILITY (continued)

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

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

ACTIONS

A.1 and B.1

RICT BASES INSERT 1

With one ECCS train inoperable, 100% of the ECCS flow is provided by the remaining OPERABLE ECCS train. Required Action A.1 requires that the inoperable train be restored to OPERABLE status within 7 days. The 7 day Completion Time is based on a probabilistic risk assessment evaluation (Refs. 6 and 7) which concludes that the Completion Time does not significantly affect the overall probability of core damage.

With two ECCS trains inoperable and at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available, Required Action B.1 requires that one train 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 design function or their required supporting systems are not available.

BASES

ACTIONS (continued)

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 (e.g., both doors in the same air lock are inoperable) Condition C is entered. Note, an air lock with only an inoperable door (Condition A) and interlock (Condition B) does not require entry into Condition C. The Required Actions of Conditions A and B provide the appropriate remedial actions for the degraded condition. 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 unit shutdown. In addition, even with both doors failing the seal test, the overall containment leakage rate can still be within limits.

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 and the overall containment leakage rate is within the Containment Leakage Rate Testing Program leakage limits.

RICT BASES INSERT 1

BASES

ACTIONS (continued)

A.1 and A.2

In the event one containment isolation valve (Table B 3.6.3-1) in one or more penetration flow paths is inoperable, except for purge valve leakage not within limit, 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 or remote manual containment isolation valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. De-activated remote manual valves may include, air operated valves with air removed, or de-energized motor operated valves. Automatic valves refer to those valves that require a motive force to actuate, such as air or electric, and receive an automatic actuation signal. Power operated valves require a motive force to actuate, such as air or electric, but do not receive an automatic actuation signal. Based on the design, the acceptable means of isolating the 48 inch purge valve penetration is to close and de-activate the 48 inch purge valve. 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.

↑
RICT BASES INSERT 1

BASES

ACTIONS (continued)

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, that those isolation devices outside containment and capable of being mispositioned are in the correct position. The Completion Time of "once per 31 days 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.

following isolation

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. However, penetration 94 for Containment Mini-Flow Purge Exhaust is an exception to the Condition A Note. Since only one inside valve and one outside valve are required to ensure isolation capability is maintained assuming a single failure, Condition A is applicable to this penetration flow path which contains three containment isolation valves, one inside valve (VQ005A) and two outside valves (VQ005B and VQ005C). If one or more outside valves are inoperable or the inside valve is inoperable in this penetration flow path, Required Actions A.1 and A.2 must be completed (Table B 3.6.3-2 Action 6.a and Action 6.b). For penetration flow paths with only one containment isolation valve and a closed system, Condition C provides the appropriate actions.

BASES

ACTIONS (continued)

C.1 and C.2

With one or more penetration flow paths 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 or remote manual valve, a closed manual valve, and a blind flange. De-activated remote manual valves may include, air operated valves with air removed, or de-energized motor operated valves.

Automatic valves refer to those valves that require a motive force to actuate, such as air or electric, and receive an automatic actuation signal. Power operated valves require a motive force to actuate, such as air or electric, but do not receive an automatic actuation signal. A check valve may not be used to isolate the affected penetration flow path.

RICT BASES INSERT 1

Required Action C.1 must be completed within the 72 hour Completion Time. 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. 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 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.

following isolation

BASES

APPLICABILITY The MSIVs and required actuator trains must be OPERABLE in MODE 1, and in MODES 2 and 3 except when closed, 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.

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

RICT BASES INSERT 1

With a single actuator train inoperable on one MSIV, action must be taken to restore the inoperable actuator train to OPERABLE status within 7 days. The 7-day Completion Time is reasonable in light of the dual-redundant actuator train design such that with one actuator train inoperable, the affected MSIV is still capable of closing on demand via the remaining OPERABLE actuator train. The 7-day Completion Time takes into account the redundant OPERABLE actuator train to the MSIV, reasonable time for repairs, and the low probability of an event occurring that requires the inoperable actuator train to the affected MSIV.

B.1

RICT BASES INSERT 1

With one actuator train on one MSIV inoperable; and one actuator train on an additional MSIV inoperable, such that the inoperable actuator trains are not in the same ESF Division, action must be taken to restore one of the inoperable actuator trains to OPERABLE status within 72 hours. With one actuator train inoperable on two different MSIVs that are not in the same ESF Division, there is an increased likelihood that an additional failure (such as the failure of an actuator logic train) could cause one MSIV to fail to close. The 72-hour Completion Time is reasonable since the dual-redundant actuator train design ensures that with only one actuator train on each of two affected MSIVs inoperable, each MSIV is still capable of closing on demand.

BASES

ACTIONS (continued)

to the dual-redundant actuator train design), or that at least one MSIV is inoperable, or that with an additional single failure up to three MSIVs could be incapable of closing on demand. Therefore, in some cases, immediately declaring the affected MSIVs inoperable is conservative (when some or all of the affected MSIVs may still be capable of closing on demand even with a single additional failure), while in other cases it is appropriate (when at least one of the MSIVs would be inoperable, or up to three could be rendered inoperable by an additional single failure). Required Action E.1 is conservatively based on the worst-case condition and therefore requires immediately declaring all the affected MSIVs inoperable.

F.1**RICT BASES INSERT 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.

Condition F is entered when one MSIV is inoperable in MODE 1, including when both actuator trains for one MSIV are inoperable. When only one actuator train is inoperable on one MSIV, Condition A applies.

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.

G.1

If the MSIV cannot be restored to OPERABLE status within 8 hours, 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 H would be entered. The Completion Time is reasonable, based on operating experience, to reach MODE 2 and to close the MSIVs in an orderly manner and without challenging plant systems.

BASES

LCO Four SG PORV lines are required to be OPERABLE. One SG PORV line is required from each of four steam generators to ensure that at least two SG PORV lines are available to conduct a unit cooldown following an SGTR, in which one steam generator becomes unavailable, accompanied by a single, active failure of a second SG PORV line on an unaffected steam generator. To ensure that at least two SG PORVs on intact SGs are available in the event of a passive electrical failure, the uninterruptible power supply system with at least a 90 minute battery backup supply to the C and D SG PORVs must be OPERABLE. The block valves must be OPERABLE to isolate a failed open SG PORV line. A closed block valve does not render it or its SG PORV line inoperable. Operator action time to open the block valve is supported in the accident analysis.

Failure to meet the LCO can result in the inability to cool the unit to RHR entry conditions following an SGTR event in which the condenser is unavailable for use with the Steam Dump System.

A SG PORV is considered OPERABLE when it is capable of providing controlled relief of the main steam flow and capable of fully opening and closing on demand.

APPLICABILITY In MODES 1, 2, and 3, the SG PORVs are required to be OPERABLE.

In MODE 4, the pressure and temperature limitations are such that the probability of an SGTR event requiring SG PORV operation is low. In addition, the RHR system is available to provide the decay heat removal function in MODE 4. Therefore, the SG PORV lines are not required OPERABLE in MODE 4.

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

ACTIONS A.1 RICT BASES INSERT 1

With one SG PORV line inoperable, action must be taken to restore OPERABLE status within 30 days. The 30 day Completion Time allows for the redundant capability afforded by the remaining OPERABLE SG PORV lines, a nonsafety grade backup in the Steam Dump System, and MSSVs.

BASES

ACTIONS (continued)

B.1

With two or more SG PORV lines inoperable, action must be taken to restore all but one SG PORV line to OPERABLE status. Since the block valve can be closed to isolate a SG PORV, some repairs may be possible with the unit at power. The 24 hour Completion Time is reasonable to repair inoperable SG PORV lines, based on the availability of the Steam Dump System and MSSVs, and the low probability of an event occurring during this period that would require the SG PORV lines.

BASES 3.7.4 B.1
INSERT

C.1 and C.2

RICT BASES INSERT 2

If the SG PORV 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 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 plant systems.

SURVEILLANCE
REQUIREMENTS

SR 3.7.4.1

To perform a controlled cooldown of the RCS, the SG PORVs must be able to be opened either remotely or locally and throttled through their full range. This SR ensures that the SG PORVs are tested through a full control cycle at least once per fuel cycle. Performance of inservice testing or use of a SG PORV during a unit cooldown may satisfy this requirement. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

ACTIONS

A Note prohibits the application of LCO 3.0.4.b to an inoperable AF train when entering MODE 1. There is an increased risk associated with entering MODE 1 with an AF 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.

A.1

RICT BASES INSERT 1

With one of the required AF trains (pump or flow path) inoperable, action must be taken to restore OPERABLE status within 72 hours. The 72 hour Completion Time is reasonable, based on redundant capabilities afforded by the AF System, time needed for repairs, and the low probability of a DBA occurring during this time period.

B.1 and B.2

When Required Action A.1 cannot be completed within 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 at least 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 full power conditions in an orderly manner and without challenging plant systems.

C.1

If both AF trains are inoperable, 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 nonsafety 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 AF train to OPERABLE status.

Required Action C.1 is modified by a Note indicating that all required MODE changes or power reductions are suspended until one AF 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. In addition, the Completion Times of Required Actions which are suspended are also suspended.

BASES

ACTIONS

The actions are 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 CC train 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.

A.1

RICT BASES INSERT 1

If a CC flow path is not OPERABLE, action must be taken to restore OPERABLE status within 7 days. In this Condition, the remaining OPERABLE flow path is adequate to perform the heat removal function. The inoperability of the common CC heat exchanger impacts both units' flow paths. Inoperability of a unit-specific CC heat exchanger impacts only the unit-specific flow path.

The 7 day Completion Time is reasonable, based on the redundant capabilities afforded by the OPERABLE train, the ability to crosstie trains and units, and the low probability of a DBA occurring during this period.

B.1

RICT BASES INSERT 1

If one required CC pump is inoperable, action must be taken to restore OPERABLE status within 7 days. In this Condition, the remaining OPERABLE CC pump is adequate to perform the heat removal function. The 7 day Completion Time is reasonable, based on the redundant capabilities afforded by the OPERABLE train, the ability to crosstie the trains and Units, and the low probability of a DBA occurring during this period.

C.1 and C.2

If the CC flow path or pump 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 plant systems.

BASES

ACTIONS

A.1

RICT BASES INSERT 1

If one unit-specific SX train is inoperable, action must be taken to restore OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE SX train is adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure in the OPERABLE SX train could result in loss of the SX System function in the short term. 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.

Required Action A.1 is modified by two Notes. The first Note indicates that the applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources-Operating," should be entered if an inoperable SX train results in an inoperable emergency diesel generator. The second Note indicates that the applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops-MODE 4," should be entered if an inoperable SX train results in an inoperable decay heat removal train. These are exceptions to LCO 3.0.6 and ensure the proper actions are taken for these components.

BASES

ACTIONS (continued)

B.1

RICT BASES INSERT 1

If the opposite-unit SX train is not OPERABLE for unit-specific support, action must be taken to restore OPERABLE status within 7 days. In this Condition, if a complete loss of unit-specific SX were to occur, the SX System function would be lost. The 7 day Completion Time is based on the capabilities of the unit-specific SX System and the low probability of a DBA with a loss of all unit-specific SX occurring during this time period.

C.1 and C.2

If the unit-specific SX train or the opposite-unit SX train 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 plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.8.1

Verifying the correct alignment for manual, power operated, and automatic valves in the unit-specific SX flow path provides assurance that the proper flow paths exist for unit-specific SX operation. 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 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 controlled under the Surveillance Frequency Control Program.

BASES

ACTIONS (continued)

exceeded during a design basis accident. The immediate Completion Time is reasonable since an OPERABLE SXCT fan must be capable of running in high speed and the fan can be placed in this condition from the Main Control Room.

B.1 and B.2

RICT BASES INSERT 1

If one required SXCT fan is inoperable, action must be taken to restore the inoperable SXCT fan to OPERABLE status within 72 hours. Required Action B.1 requires the remaining required OPERABLE SXCT fans be capable of being powered by an OPERABLE emergency power source. This action assures availability of electric power to the remaining required fans in the unlikely event of a loss of offsite power. The 1 hour Completion Time is reasonable based on the fact this is an administrative check of the OPERABILITY of the emergency power sources.

The 72 hour Completion Time is reasonable based on the low probability of an accident occurring during the 72 hours that one required SXCT fan is inoperable, the number of available systems, and the time required to reasonably complete the Required Action.

C.1 and C.2

These Required Actions are applicable when SX is operating in a crosstied configuration on both Units. When outside air wet bulb temperature is > 76°F and any electrical division is not capable of providing power to at least one SXCT fan, then a postulated worst case single failure could result in no OPERABLE SXCT fans on one tower and four SXCT fans on the second tower. In this potential configuration, design basis SX temperatures could be exceeded. The Required Action is to reconfigure the SXCT fans to eliminate this vulnerability. Required Action C.1 requires the OPERABLE SXCT fans to be capable of being powered by an OPERABLE emergency power source. This action assures availability of electrical power to the SXCT fans in the unlikely event of a loss of offsite power.

The 72 hour Completion Time is reasonable based on the low probability of an accident occurring during the 72 hour timeframe in addition to a single failure disabling two SXCT fans on the same tower that initially had two inoperable fans.

BASES

ACTIONS (continued)

D.1 and D.2

If the SX pump discharge temperature exceeds 96°F, then the UHS SXCT fans cannot prevent the design SX system temperature limit of 100°F from being exceeded during a design basis accident. Consequently, in this condition, 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 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 in an orderly manner and without challenging plant systems.

E.1

RICT BASES INSERT 1

If one or more cooling tower basin level is < 60%, the assumptions of the design basis analyses are not met, and action must be taken to restore both basin levels within 6 hours. The 6 hour Completion Time is reasonable based on the low probability of an accident occurring during the 6 hours that the basin level is < 60%, the number of systems available to replenish basin level, and the time required to reasonably complete the Required Actions.

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

When one SX makeup pump is inoperable, action must be taken to verify a $\geq 90\%$ cooling tower basin level in both basins within 72 hours, and verify OPERABILITY of an associated makeup source within 72 hours. The increased basin level must be verified every 2 hours thereafter, and the inoperable SX makeup pump must be restored to OPERABLE status within 7 days or 14 days depending on plant conditions.

In this Condition, the remaining OPERABLE makeup sources are adequate to perform the UHS makeup function. However, the overall reliability is reduced because failure of the OPERABLE makeup source(s) could result in a loss of the makeup function.

Required Action F.1 requires verification that both basin levels are $\geq 90\%$, and Required Action F.2 verifies the OPERABILITY of an associated makeup source (pump and flow path). The increased basin level and its verification every

BASES

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 required qualified circuit inoperable, it is necessary to verify the OPERABILITY of the remaining required qualified 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 another required circuit fails SR 3.8.1.1, this qualified circuit is inoperable, and additional Conditions and Required Actions may be appropriate. If the additional inoperability results in a bus with two required qualified circuits inoperable Condition D is entered. If the additional inoperability results in the second bus with one required qualified circuit inoperable Condition A is still applicable.

A.2

RICT BASES INSERT 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 or more buses with one required qualified 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 plant safety systems. In this Condition, however, the remaining OPERABLE required qualified circuits and DGs are adequate to supply electrical power to the onsite Class 1E Distribution System.

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.

BASES

ACTIONS (continued)

~~The second Completion Time for Required Action A.2 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition A is entered while, for instance, a DG is inoperable and that DG is subsequently returned OPERABLE, the LCO may already have been not met for up to 14 days. This could lead to a total of 17 days, since initial failure to meet the LCO, to restore the required qualified circuit(s). At this time, a DG could again become inoperable, the circuit(s) restored OPERABLE, and an additional 14 days (for a total of 31 days) allowed prior to complete restoration of the LCO. The 17 day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently. The "AND" connector between the 72 hour and 17 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.~~

~~The Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time that the LCO was initially not met, instead of at the time Condition A was entered.~~

B.1

The 14 day Completion Time for Required Action B.5 is predicated on the OPERABILITY of the opposite-unit DGs (Ref. 7). It is required to verify both opposite-unit DGs OPERABLE within 1 hour and to continue this action once per 24 hours thereafter until restoration of the required DG is accomplished. This verification provides assurance that both opposite-unit DGs are capable of supplying the onsite Class 1E AC Electrical Power Distribution System.

BASES

ACTIONS (continued)

In the event the inoperable DG is restored to OPERABLE status prior to completing either B.4.1 or B.4.2, the Corrective Action Program Procedure will continue to evaluate the common cause possibility and determine the need for any additional DG testing. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B.

If while a DG is inoperable, a new problem with the DG is discovered that would have prevented the DG from performing its specified safety function, a separate entry into Condition B is not required. The new DG problem should be addressed in accordance with the Corrective Action Program.

According to Generic Letter 84-15 (Ref. 8), 24 hours is reasonable to confirm that the OPERABLE DG is not affected by the same problem as the inoperable DG.

B.5

According to Reference 7, operation may continue in Condition B for a period that should not exceed 14 days. This Completion Time is based upon a risk-informed assessment that concluded that the associated risk is acceptable based upon the availability of the offsite power sources and the onsite standby power sources (i.e., the DGs), and the implementation of a Configuration Risk Management Program.

In Condition B, the remaining OPERABLE DG and required qualified 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.

↖ RICT BASES INSERT 2

BASES

ACTIONS (continued)

~~The second Completion Time for Required Action B.5 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition B is entered while, for instance, a required qualified circuit is inoperable and that circuit is subsequently restored OPERABLE, the LCO may already have been not met for up to 72 hours. This could lead to a total of 17 days, since initial failure to meet the LCO, to restore the DG. At this time, a required qualified circuit could again become inoperable, the DG restored OPERABLE, and an additional 72 hours (for a total of 20 days) allowed prior to complete restoration of the LCO. The 17 day Completion Time provides a limit on time allowed in a specified condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently. The "AND" connector between the 14 day and 17 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.~~

~~As in Required Action B.3, the Completion Time allows for an exception to the normal "time zero" for beginning the allowed time "clock." This will result in establishing the "time zero" at the time that the LCO was initially not met, instead of at the time Condition B was entered.~~

C.1

In Condition C, with an opposite-unit DG inoperable, the remaining OPERABLE unit-specific DG and required qualified circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition C for a period that should not exceed 72 hours. 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.

BASES

ACTIONS (continued)

D.1

With one or more buses with both of its required qualified 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 LOCA, 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 required qualified circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria.

RICT BASES INSERT 2

According to Regulatory Guide 1.93 (Ref. 6), with the available required qualified circuits two less than required by the LCO, operation may continue for 24 hours. If two required qualified circuits are restored within 24 hours, unrestricted operation may continue. If only one required qualified circuit is restored within 24 hours, power operation continues in accordance with Condition A.

E.1 and E.2

In Condition E, with one DG inoperable and one or more buses with one qualified circuit inoperable or with one DG and one bus with both qualified circuits inoperable, individual redundancy is lost in both the offsite electrical power system and 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 Condition may appear higher than that in Condition D. 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 to restore the DG or the required qualified circuit(s) 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.

RICT BASES INSERT 2

BASES

ACTIONS (continued)

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition E are modified by a Note to indicate that when Condition E is entered with no AC source to any division (one or more divisions de-energized), the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems-Operating," must be immediately entered. This allows Condition E to provide requirements for the loss of one DG and one required qualified circuit on one or more buses, without regard to whether a division is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized division.

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition E for a period that should not exceed 12 hours.

F.1 RICT BASES INSERT 2

With Train A and Train B DGs inoperable, there are no remaining standby AC sources. 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 is 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 both DGs inoperable, operation may continue for a period that should not exceed 2 hours.

BASES

ACTIONS (continued)

Required Action A.3 requires that the battery float current be verified as less than or equal to 3 amps. This indicates that, if the battery had been discharged as the result of the inoperable battery charger, it has now been fully recharged. If at the expiration of the initial 12 hour period the battery float current is not less than or equal to 3 amps this indicates there may be additional battery problems and the battery must be declared inoperable.

Required Action A.4 limits the restoration time for the inoperable battery charger to 7 days. This action is applicable if an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage has been used (e.g., balance of plant non-Class 1E battery charger). The 7 day Completion Time reflects a reasonable time to effect restoration of the qualified battery charger to operable status.

B.1

RICT BASES INSERT 2

Condition B addresses the situation of crosstieing the operating unit's DC bus to the opposite unit, which has an inoperable battery charger, when the opposite unit is operating in MODE 1, 2, 3, or 4. This provision is included to accommodate unexpected failures, maintenance, and/or testing of the opposite unit's DC subsystems. The Completion Time for Required Action B.1 of 204 hours is adequate to allow testing and restoration activities. In this Condition, the opposite unit's battery is assumed to remain OPERABLE. Therefore, the function of the crosstie is to maintain the opposite unit's battery fully charged and to supply the minimal opposite unit DC loads. The 204 hours is based on the 7 days the opposite unit has to restore the inoperable charger and the 36 hours the opposite unit would have to reach MODE 5, if the charger is not restored to OPERABLE status. When the opposite unit reaches MODE 5, Condition C is entered. Requiring the associated crosstie breaker to be opened within 204 hours also ensures that independence of the DC subsystems is reestablished.

RICT BASES INSERT 2

BASES

ACTIONS (continued)

C.1 and C.2

Condition C addresses an operating unit's DC bus that is crosstied to the opposite unit's associated DC bus, which has an inoperable source (i.e., battery or battery charger), when the opposite unit is shutdown. This provision is included to accommodate maintenance and/or testing of the shutdown unit's DC subsystems.

With the shutdown unit's battery inoperable, the operating unit will be required to supply all loads on the shutdown unit's crosstied bus should an event occur on the shutdown unit. Therefore, Required Action C.1 specifies that the possible loading on the shutdown unit's DC bus be verified to be ≤ 200 amps once per 12 hours. Limiting the load to 200 amps, ensures that the operating unit's DC subsystem will not be overloaded in the event of a concurrent event on the operating unit. Required Action C.1 is modified by a Note only requiring Required Action C.1 when the opposite unit has an inoperable battery.

RICT BASES INSERT 1

Required Action C.2 requires the associated crosstie breaker to be opened within 7 days and ensures that measures are being taken to restore the inoperable battery or battery charger and reestablish independence of the DC subsystems.

D.1

Condition D represents one division with a loss of ability to completely respond to an event, and a potential loss of ability for the DC division 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 division. The 2 hour limit is consistent with the allowed time for an inoperable DC distribution system division.

RICT BASES INSERT 2

BASES

ACTIONS (continued)

RICT BASES INSERT 2

Required Action A.1 allows 7 days to fix the inoperable inverter and return it to service. The 7 day 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 AC instrument bus is powered from its constant voltage source, it is relying upon interruptible AC electrical power sources (offsite and onsite). The uninterruptible inverter source to the AC instrument buses is the preferred source for powering instrumentation trip setpoint devices.

With a required inverter inoperable, the following compensatory actions will be taken (Ref. 4):

- a. Entry into the extended inverter Completion Time (CT) will not be planned concurrent with Diesel Generator (DG) maintenance on the associated train.
- b. Entry into the extended inverter CT will not be planned concurrent with planned maintenance on another RPS or ESFAS channel that could result in that channel being in a tripped condition.

These actions are taken because it is recognized that with an inverter inoperable and the instrument bus being powered by the constant voltage transformer, instrument power for that train is dependent on power from the associated DG following a loss of offsite power event.

B.1 and B.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.

BASES

ACTIONS

A.1

With one AC bus, except AC instrument buses, inoperable, the remaining AC electrical power distribution subsystem is 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 power distribution subsystem could result in the minimum required ESF functions not being supported. Therefore, the required AC bus must be restored to OPERABLE status within 8 hours. ↗

RICT BASES INSERT 1

Condition A worst scenario is one division without AC power (i.e., no offsite power to the division 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 division by stabilizing the unit, and on restoring power to the affected division. 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 division, to the actions associated with taking the unit to shutdown within this time limit; and
- b. The low probability for an event in conjunction with a single failure of a redundant component in the division with AC power.

BASES

ACTIONS (continued)

~~The second Completion Time for Required Action A.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition A is entered while, for instance, a DC bus is inoperable and subsequently restored OPERABLE, the LCO may already have been not met for up to 2 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the AC distribution system. At this time, a DC circuit could again become inoperable, and AC distribution restored OPERABLE. This could continue indefinitely.~~

~~The Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition A was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.~~

B.1

With one AC instrument bus inoperable, the remaining OPERABLE AC instrument 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 instrument bus must be restored to OPERABLE status within 2 hours by powering the bus from the associated inverter via inverted DC, inverter using AC source, or Class 1E constant voltage transformer.

↑
RICT BASES INSERT 2

BASES

ACTIONS (continued)

~~The second Completion Time for Required Action B.1 establishes a limit on the maximum allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition B is entered while, for instance, an AC bus is inoperable and subsequently returned OPERABLE, the LCO may already have been not met for up to 8 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the instrument bus distribution system. At this time, an AC bus could again become inoperable, and instrument bus distribution restored OPERABLE. This could continue indefinitely.~~

~~This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition B was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.~~

C.1

With one DC bus inoperable, the remaining DC electrical power distribution subsystem is 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 DC electrical power distribution subsystem could result in the minimum required ESF functions not being supported. Therefore, the DC bus must be restored to OPERABLE status within 2 hours by powering the bus from the associated battery or charger.

↑
RICT BASES INSERT 2

BASES

ACTIONS (continued)

~~The second Completion Time for Required Action C.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition C is entered while, for instance, an AC bus is inoperable and subsequently returned OPERABLE, the LCO may already have been not met for up to 8 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the DC distribution system. At this time, an AC bus could again become inoperable, and DC distribution restored OPERABLE. This could continue indefinitely.~~

~~This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition C was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.~~

D.1 and D.2

If the inoperable distribution subsystem cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

E.1

With two electrical power distribution subsystems inoperable 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.

B/B TS BASES INSERTS

RICT BASES INSERT 1

or in accordance with the Risk Informed Completion Time Program

RICT BASES INSERT 2

Alternatively, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.

INSERT BASES 3.3.1 L.1

L.1

If the Required Action and associated Completion Time of Condition K is not met, 6 hours is allowed to reduce THERMAL POWER to below P-7.

INSERT BASES 3.3.1 N.1

N.1

If the Required Action and associated Completion Time of Condition M is not met, THERMAL POWER must be reduced below the P-8 setpoint within 6 hours. This places the unit in a MODE where the LCO is no longer applicable.

INSERT BASES 3.3.1 S.1

S.1

If the Required Action and associated Completion Time of Condition R 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 BASES 3.3.1 U.1

U.1

If the Required Action and associated Completion Time of Condition B, D, E, O, P, Q, R, or T 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 K 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.

B/B TS BASES INSERTS

INSERT BASES 3.3.1 W.1

W.1

If the Required Action and associated Completion Time of Condition V is not met, THERMAL POWER must be reduced below the P-7 setpoint within 6 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-7 setpoint because other RTS Functions provide core protection below the P-7 setpoint. The 6 hours to reduce THERMAL POWER to below the P-7 setpoint is justified in Reference 14.

INSERT BASES 3.3.2 M.1 and M.2

M.1 and M.2

If the Required Action and associated Completion Time of Condition B, C, or K is not met, the unit must be placed in a MODE in which the LCO does not apply. This is accomplished by placing the unit 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 4, these Functions are no longer required OPERABLE.

INSERT BASES 3.3.2 N.1 and N.2

N.1 and N.2

If the Required Action and associated Completion Time of Condition D, E, or G 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.

INSERT BASES 3.3.2 O.1

O.1

If the Required Action and associated Completion Time of Condition I 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.

BASES 3.3.5 B.1 INSERT

This Condition has been modified by a NOTE to require that application of the Risk Informed Completion Time Program is not applicable when the same Function is inoperable on more than one bus. The DG Success Criterion is one of two DGs; however, the DG "fail to start" event in the PRA will be used as a conservative surrogate for these non-modeled components.

B/B TS BASES INSERTS

BASES 3.7.4 B.1 INSERT

This Condition has been modified by a NOTE to require that application of the Risk Informed Completion Time Program is not applicable when more than two required SG PORV lines are inoperable. The PRA Success Criterion is two of four SG PORVs for Steam Generator Tube Rupture (SGTR) scenarios and one of four SG PORVs for all other scenarios. As previously described in the Bases, with two or more SG PORV lines inoperable, action must be taken to restore all but one SG PORV line to operable status. Since the block valve can be closed to isolate a SG PORV, some repairs may be possible with the unit at power.