

## Industry/TSTF Standard Technical Specification Change Traveler

### Eliminate Modified Time Zero Completion Times

NUREGs Affected:  1430  1431  1432  1433  1434

Classification: 1) Technical Change

Recommended for CLIIP?: Yes

Priority: 1) High

Simple or Complex Change: Complex

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### 1.0 DESCRIPTION

The Improved Standard Technical Specifications (NUREGs 1430 through 1434) associated with all NSSS designs were issued in September 1992. A second Completion Time was included in the Completion Time for certain Required Actions to establish a limit on the maximum time allowed for any combination of Conditions of inoperability during any single continuous failure to meet the LCO. The intent of the second Completion Time was to preclude entry into and out of the ACTIONS for an indefinite period of time by providing a limit on the amount of time that the LCO could not be met for various combinations of Conditions. The second Completion Time was derived by adding the individual Completion Times associated with the affected Required Actions.

A Westinghouse Owners Group (WOG) Topical Report (WCAP-15622, "Risk-Informed Evaluation of Extensions to AC Electrical Power System Completion Times") that justified extending the Completion Times associated with certain Required Actions using a risk-informed approach was submitted to the NRC for review in June 2001. The Completion Times associated with two of these Required Actions also contained a second Completion Time. In order to implement the extended Completion Times justified in the Topical Report, the two Completion Times (one being the current Completion Time not being changed, and one being the Completion Time proposed to be changed) associated with the applicable Required Actions were added, to obtain a new, and increased second Completion Time. The Traveler (TSTF-417, Rev. 0, "AC Electrical Power System Completion Times (WCAP-15622)" containing the improved Standard Technical Specification (ISTS) and Bases changes to NUREG-1431, Rev. 2, associated with WCAP-15622 was submitted to the NRC for review in September 2001.

The NRC transmitted a letter to NEI in November 2001 discussing a staff concern identified during their review of Topical Reports WCAP-15622, "Risk-Informed Evaluation of Extensions to AC Electrical Power System Completion Times" (TSTF-417) and CE NSPD-1045, "Joint Applications Report, Modification to the Containment Spray System, and the Low Pressure Safety Injection System Technical Specifications" (TSTF-409). Specifically, the NRC indicated that increases in iSTS Completion Time limits by adding together risk-informed and deterministic values using engineering judgment would not be approved. Additionally, the NRC provided a Request for Additional Information to the WOG on the method of determining the new second Completion Time during their review of the WOG Topical Report, WCAP-15622 in December 2001.

This Traveler provides the background and justification for deleting the second Completion Time, to address the NRC staff's concern associated with Risk-Informed Completion Time extensions and the associated second Completion Time. This proposed change was discussed with the NRC in the December 19, 2001 RITSTF/NRC meeting.

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**2.0 PROPOSED CHANGE**

## NUREG-1430

ISTS Completion Times Example 1.3-3 is being deleted, and the second Completion Time associated with Technical Specification 3.6.6 Required Actions A.1 and C.1, Technical Specification 3.7.5 Required Action A.1 and B.1, Technical Specification 3.8.1 Required Actions A.3 and B.4, and Technical Specification 3.8.9 Required Actions A.1, B.1, and C.1 is being deleted. The Bases associated with these Required Actions is also being revised to delete the discussion of the second Completion Time.

## NUREG-1431 and NUREG-1432

ISTS Completion Times Example 1.3-3 is being deleted, and the second Completion Time associated with Technical Specification 3.6.6A Required Actions A.1 and C.1, Technical Specification 3.6.6B Required Actions A.1 and B.1, Technical Specification 3.7.5 Required Action A.1 and B.1, Technical Specification 3.8.1 Required Actions A.3 and B.4, and Technical Specification 3.8.9 Required Actions A.1, B.1, and C.1 is being deleted. The Bases associated with these Required Actions is also being revised to delete the discussion of the second Completion Time.

## NUREG-1433 and NUREG-1434

ISTS Completion Times Example 1.3-3 is being deleted, and the second Completion Time associated with Technical Specification 3.1.7 Required Actions A.1 and B.1, 3.8.1 Required Actions A.3 and B.4, and Technical Specification 3.8.9 Required Actions A.1, B.1, and C.1 is being deleted. The Bases associated with these Required Actions is also being revised to delete the discussion of the second Completion Time.

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### 3.0 BACKGROUND

The ISTS were developed based on "Condition" versus "Component" based Actions. A "Condition" based Completion Time does not acknowledge any uniqueness for differing component failures which result in entering the individual Condition. The "Condition" itself must be restored within the allowed Completion Time. For example, for an LCO requiring two OPERABLE pumps, with one pump inoperable, the Completion Time "clock" starts. If a second pump becomes inoperable, and then the first inoperable pump is restored to OPERABLE, the time allowed to repair the second inoperable pump is the same as was provided for the first pump; the "clock" continues from the initial "Condition" entry.

"Condition" based Actions mean that the time allowed for restoring OPERABILITY is only applied one time; i.e., to the "Condition" of the inoperability, independent of whether the inoperability was actually due to two or more separate "components" (i.e., no separate time(s) for restoration of inoperabilities subsequent to the "Condition" that caused the initial inoperability.) This philosophy was also extended to the LCO, that is, the time allowed in any one Condition was referenced to when the LCO was initially not met, even if the LCO was initially not met for some other Condition. An example as it relates to the LCO is the inoperability of an offsite circuit (LCO 3.8.1, "AC Sources - Operating) followed by the inoperability of a Diesel Generator (in the same LCO). This philosophy applied on an LCO level, would restrict the restoration of both sources to 72 hours. Application of the ISTS Condition entry and Completion Time tracking would provide a separate 72 hours for the offsite circuit and for the Diesel Generator (a different Condition appropriately limits the time they can be simultaneously inoperable).

In order to implement this "LCO based" philosophy as discussed in the AC Sources - Operating example above, each Condition that is entered (offsite source and Diesel Generator) has its own separate time, which is tracked from the time of entry of that Condition, and is also provided with a maximum time "second Completion Time" that was placed on combinations of AC Sources.

This second Completion Time was added to other LCOs, in addition to LCO 3.8.1, in the various NUREGs.

Based on the above discussion, this second Completion Time was added to the ISTS based on a deterministic argument, in the absence of any risk-insights.

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#### 4.0 TECHNICAL ANALYSIS

The final Maintenance Rule, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," was published by the Nuclear Regulatory Commission (NRC) in the Federal Register (56 Fed. Reg. 31324) as 10 CFR 50.65 on July 10, 1991. The Maintenance Rule became effective July 10, 1996, requiring full implementation by all licensees on that date. The overall objective of this performance-based rule is to ensure that nuclear power plant structures, systems, and components (SSCs) will be maintained so that they will perform their intended function when required.

The scope of the monitoring program specified in paragraph (a)(1) and (a)(2) of 10 CFR 50.65 includes safety-related and nonsafety related structures, systems, and components, as follows:

(1) Safety-related structures, systems, or components that are relied upon to remain functional during and following design basis events to ensure the integrity of the reactor coolant pressure boundary, the capability to shut down the reactor and maintain it in a safe shutdown condition, and the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the 10 CFR part 100 guidelines.

(2) Nonsafety-related structures, systems, or components:

(i) That are relied upon to mitigate accidents or transients or are used in plant emergency operating procedures (EOPs); or

(ii) Whose failure could prevent safety-related structures, systems, and components from fulfilling their safety-related function; or

(iii) Whose failure could cause a reactor scram or actuation of a safety-related system.

These systems associated with the LCOs that contain a second Completion are included in the scope of the Maintenance Rule as discussed above.

10 CFR 50.65 (a)(1) requires each licensee to monitor the performance or condition of SSCs against licensee-established goals to ensure that the SSCs are capable of fulfilling their intended functions. If the performance or condition of an SSC does not meet established goals, appropriate corrective action is required to be taken.

After determining the SSCs that are within the scope of the Maintenance Rule, risk-informed methodologies are used to establish performance-monitoring criteria and thresholds for acceptable SSC operation and condition. Those SSCs that meet these standards are monitored under paragraph (a)(2) of the Maintenance Rule. For SSCs that do not meet these performance criteria, a cause determination is performed and appropriate goals are established commensurate with the SSC's safety significance and performance must have performance improvement goals established. Monitoring the performance of the SSCs against these established performance criteria and goals is intended to provide reasonable assurance that the SSCs are proceeding to acceptable performance and ensures that the objective of preventing failures is appropriately balanced against the objective of assuring acceptable SSC availability.

The performance and condition monitoring activities required by 10 CFR 50.65 (a)(1) and (a)(2) would identify if continuous multiple entries into the ACTIONS of the Technical Specifications results in unacceptable unavailability of these SSCs. The effectiveness of these performance monitoring activities, and associated corrective actions, is evaluated at least every refueling cycle, not to exceed 24 months per 10 CFR 50.65 (a)(3). This aspect of the Maintenance Rule requires adjustments to performance and condition monitoring activities, associated goals, and preventive maintenance activities to ensure that the objective of preventing failures of structures, systems, and components through maintenance is appropriately balanced

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against the objective of minimizing unavailability of structures, systems, and components due to monitoring or preventive maintenance.

The ongoing monitoring of SSC condition and performance under paragraph (a)(1) and (a)(2), along with the assessments required by paragraph (a)(3) of the Maintenance Rule, assure an effective maintenance program and to identify necessary adjustments that should be made to the program. As part of the periodic review, corrective actions taken because of ongoing maintenance activities or goal setting are evaluated to ensure action was initiated when appropriate and the action(s) taken resulted in improved performance of the SSC.

Paragraph (a)(4) of the Maintenance Rule requires licensees to assess and manage the risk associated with maintenance activities. Section 11 of NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants", Revision 3, outlines processes to meet this requirement.

Additionally, NEI 99-02, Revision 2, "Regulatory Assessment Performance Indicator Guideline establishes Safety System Unavailability criteria for the AFW and Diesel Generators as a part of the Mitigating Systems Cornerstone. Continuous multiple entries into these LCOs would be identified as part of the unavailability for these systems.

Based on the above discussions, the concern regarding multiple continuous entries into LCOs would be identified by the associated system unavailability monitoring programs described above, given that all licensees' Maintenance Rule programs include unavailability monitoring for the SSCs included in this evaluation. Therefore, this potential concern is no longer an issue, since all licensees have been required to comply with the Maintenance Rule since July 10, 1996. This obviates the need for the potential multiple continuous LCO entries that the second Completion Time was intended to prevent.

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## 5.0 REGULATORY ANALYSIS

### 5.1 No Significant Hazards Consideration

#### NUREG-1430

ISTS Completion Times Example 1.3-3 is being deleted, and the second Completion Time associated with Technical Specification 3.6.6 Required Actions A.1 and C.1, Technical Specification 3.7.5 Required Action A.1 and B.1, Technical Specification 3.8.1 Required Actions A.3 and B.4, and Technical Specification 3.8.9 Required Actions A.1, B.1, and C.1 is being deleted. The Bases associated with these Required Actions is also being revised to delete the discussion of the second Completion Time.

#### NUREG-1431 and NUREG-1432

ISTS Completion Times Example 1.3-3 is being deleted, and the second Completion Time associated with Technical Specification 3.6.6A Required Actions A.1 and C.1, Technical Specification 3.6.6B Required Actions A.1 and B.1, Technical Specification 3.7.5 Required Action A.1 and B.1, Technical Specification 3.8.1 Required Actions A.3 and B.4, and Technical Specification 3.8.9 Required Actions A.1, B.1, and C.1 is being deleted. The Bases associated with these Required Actions is also being revised to delete the discussion of the second Completion Time.

#### NUREG-1433 and NUREG-1434

ISTS Completion Times Example 1.3-3 is being deleted, and the second Completion Time associated with Technical Specification 3.1.7 Required Actions A.1 and B.1, 3.8.1 Required Actions A.3 and B.4, and Technical Specification 3.8.9 Required Actions A.1, B.1, and C.1 is being deleted. The Bases associated with these Required Actions is also being revised to delete the discussion of the second Completion Time.

In accordance with the criteria set forth in 10 CFR 50.92, the proposed changes to NUREGs-1430, 1431, 1432, 1433, and 1434 have been evaluated and it was determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion:

#### **Standard I - Involves a Significant Increase in the Probability or Consequences of an Accident Previously Evaluated**

The proposed change to delete the second Completion Time does not change the response of the plant to any accidents.

The proposed changes do not adversely affect accident initiators or precursors nor alter the design assumptions, conditions, or configuration of the facility, or the manner in which the plant is operated and maintained. The proposed changes do not alter or prevent the ability of structures, systems, and components (SSCs) from performing their intended function to mitigate the consequences of an initiating event within the assumed acceptance limits. The proposed changes do not affect the source term, containment isolation, or radiological release assumptions used in evaluating the radiological consequences of an accident previously evaluated. Further, the proposed changes do not increase the types or amounts of radioactive effluent that may be released offsite, nor significantly increase individual or cumulative occupational/public radiation exposures. The proposed changes are consistent with the safety analysis assumptions and resultant consequences.

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Therefore, it is concluded that this change does not involve a significant increase in the probability or consequences of an accident previously analyzed.

**Standard II - Create the Possibility of a New or Different Kind of Accident from any Previously Evaluated**

The proposed change to delete the second Completion Time does not involve any change in the design or operation of the plant. The change to delete the second Completion Time does not change any existing accident scenarios, nor create any new or different accident scenarios.

The changes do not involve a physical alteration of the plant (i.e., no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. In addition, the changes do not impose any new or different requirements or eliminate any existing requirements. The changes do not alter any assumptions made in the safety analysis. The proposed changes are consistent with the safety analysis assumptions and current plant operating practice.

Therefore, the possibility of a new or different malfunction of safety related equipment is not created.

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**6.0 ENVIRONMENTAL CONSIDERATION**

A review has determined that the proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

**7.0 REFERENCES**

None.

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**Revision History**

**OG Revision 0**                      **Revision Status: Active**                      **Next Action: NRC**

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Revision Proposed by: Wolf Creek

Revision Description:  
Original Issue

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**Owners Group Review Information**

Date Originated by OG: 07-Feb-02

Owners Group Comments:  
(No Comments)

Owners Group Resolution: Approved      Date: 13-Feb-02

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**TSTF Review Information**

TSTF Received Date: 07-Feb-02                      Date Distributed for Review: 13-Feb-02

OG Review Completed:  BWOG  WOG  CEOG  BWROG

TSTF Comments:  
(No Comments)

TSTF Resolution: Approved      Date: 13-Feb-02

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**NRC Review Information**

NRC Received Date: 03-Jun-02

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**Affected Technical Specifications**

1.3                      Completion Times

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|                       |                                                              |                                    |
|-----------------------|--------------------------------------------------------------|------------------------------------|
| Action 3.1.7.B Bases  | SLC System                                                   |                                    |
| Action 3.8.1.A        | AC Sources - Operating                                       |                                    |
| Action 3.8.1.A Bases  | AC Sources - Operating                                       |                                    |
| Action 3.8.1.B        | AC Sources - Operating                                       |                                    |
| Action 3.8.1.B Bases  | AC Sources - Operating                                       |                                    |
| Action 3.8.9.A        | Distribution Systems - Operating                             |                                    |
| Action 3.8.9.A Bases  | Distribution Systems - Operating                             |                                    |
| Action 3.8.9.B        | Distribution Systems - Operating                             |                                    |
| Action 3.8.9.B Bases  | Distribution Systems - Operating                             |                                    |
| Action 3.8.9.C        | Distribution Systems - Operating                             |                                    |
| Action 3.8.9.C Bases  | Distribution Systems - Operating                             |                                    |
| Action 3.6.6.A        | Containment Spray and Cooling Systems                        | NUREG(s)- 1430 Only                |
| Action 3.6.6.A Bases  | Containment Spray and Cooling Systems                        | NUREG(s)- 1430 Only                |
| Action 3.6.6.C        | Containment Spray and Cooling Systems                        | NUREG(s)- 1430 Only                |
| Action 3.6.6.C Bases  | Containment Spray and Cooling Systems                        | NUREG(s)- 1430 Only                |
| Action 3.7.5.A        | EFW System                                                   | NUREG(s)- 1430 Only                |
| Action 3.7.5.A Bases  | EFW System                                                   | NUREG(s)- 1430 Only                |
| Action 3.7.5.B        | EFW System                                                   | NUREG(s)- 1430 Only                |
| Action 3.7.5.B Bases  | EFW System                                                   | NUREG(s)- 1430 Only                |
| Action 3.7.5.B Bases  | AFW System                                                   | NUREG(s)- 1431 1432 1433 1434 Only |
| Action 3.6.6B.A       | Containment Spray and Cooling Systems (Atmospheric and Dual) | NUREG(s)- 1431 1432 Only           |
| Action 3.6.6A.A       | Containment Spray and Cooling Systems (Atmospheric and Dual) | NUREG(s)- 1431 1432 Only           |
| Action 3.6.6A.A Bases | Containment Spray and Cooling Systems (Atmospheric and Dual) | NUREG(s)- 1431 1432 Only           |
| Action 3.6.6B.A Bases | Containment Spray and Cooling Systems (Atmospheric and Dual) | NUREG(s)- 1431 1432 Only           |
| Action 3.6.6B.B       | Containment Spray and Cooling Systems (Atmospheric and Dual) | NUREG(s)- 1431 1432 Only           |

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|                       |                                                              |                          |
|-----------------------|--------------------------------------------------------------|--------------------------|
| Action 3.6.6B.B Bases | Containment Spray and Cooling Systems (Atmospheric and Dual) | NUREG(s)- 1431 1432 Only |
| Action 3.6.6A.C       | Containment Spray and Cooling Systems (Atmospheric and Dual) | NUREG(s)- 1431 1432 Only |
| Action 3.6.6A.C Bases | Containment Spray and Cooling Systems (Atmospheric and Dual) | NUREG(s)- 1431 1432 Only |
| Action 3.7.5.A        | AFW System                                                   | NUREG(s)- 1431 1432 Only |
| Action 3.7.5.A Bases  | AFW System                                                   | NUREG(s)- 1431 1432 Only |
| Action 3.7.5.B        | AFW System                                                   | NUREG(s)- 1431 1432 Only |
| Action 3.1.7.A        | SLC System                                                   | NUREG(s)- 1433 1434 Only |
| Action 3.1.7.A Bases  | SLC System                                                   | NUREG(s)- 1433 1434 Only |
| Action 3.1.7.B        | SLC System                                                   | NUREG(s)- 1433 1434 Only |

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## 1.3 Completion Times

## DESCRIPTION (continued)

- b. Must remain inoperable or not within limits after the first inoperability is resolved.

The total Completion Time allowed for completing a Required Action to address the subsequent inoperability shall be limited to the more restrictive of either:

- a. The stated Completion Time, as measured from the initial entry into the Condition, plus an additional 24 hours or
- b. The stated Completion Time as measured from discovery of the subsequent inoperability.

The above Completion Time extensions do not apply to those Specifications that have exceptions that allow completely separate re-entry into the Condition (for each train, subsystem, component, or variable expressed in the Condition) and separate tracking of Completion Times based on this re-entry. These exceptions are stated in individual Specifications.

The above Completion Time extension does not apply to a Completion Time with a modified "time zero." This modified "time zero" may be expressed as a repetitive time (i.e., "once per 8 hours," where the Completion Time is referenced from a previous completion of the Required Action versus the time of Condition entry) or as a time modified by the phrase "from discovery . . ." Example 1.3-3 illustrates one use of this type of Completion Time. The 10 day Completion Time specified for Conditions A and B in Example 1.3-3 may not be extended.

## EXAMPLES

The following examples illustrate the use of Completion Times with different types of Conditions and changing Conditions.

## 1.3 Completion Times

## EXAMPLES (continued)

On restoring one of the pumps to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first pump was declared inoperable. This Completion Time may be extended if the pump restored to OPERABLE status was the first inoperable pump. A 24 hour extension to the stated 7 days is allowed, provided this does not result in the second pump being inoperable for > 7 days.

## EXAMPLE 1.3-3

## ACTIONS

| CONDITION                                                                             | REQUIRED ACTION                                                                                                   | COMPLETION TIME                                                             |
|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| A. One Function X train inoperable.                                                   | A.1 Restore Function X train to OPERABLE status.                                                                  | 7 days<br><u>AND</u><br>10 days from discovery of failure to meet the LCO   |
| B. One Function Y train inoperable.                                                   | B.1 Restore Function Y train to OPERABLE status.                                                                  | 72 hours<br><u>AND</u><br>10 days from discovery of failure to meet the LCO |
| C. One Function X train inoperable.<br><u>AND</u><br>One Function Y train inoperable. | C.1 Restore Function X train to OPERABLE status.<br><u>OR</u><br>C.2 Restore Function Y train to OPERABLE status. | 72 hours<br><br>72 hours                                                    |

When one Function X train and one Function Y train are inoperable,

### 1.3 Completion Times

#### EXAMPLES (continued)

Condition A and Condition B are concurrently applicable. The Completion Times for Condition A and Condition B are tracked separately for each train starting from the time each train was declared inoperable and the Condition was entered. A separate Completion Time is established for Condition C and tracked from the time the second train was declared inoperable (i.e., the time the situation described in Condition C was discovered).

If Required Action C.2 is completed within the specified Completion Time, Conditions B and C are exited. If the Completion Time for Required Action A.1 has not expired, operation may continue in accordance with Condition A. The remaining Completion Time in Condition A is measured from the time the affected train was declared inoperable (i.e., initial entry into Condition A).

The Completion Times of Conditions A and B are modified by a logical connector, with a separate 10 day Completion Time measured from the time it was discovered the LCO was not met. In this example, without the separate Completion Time, it would be possible to alternate between Conditions A, B, and C in such a manner that operation could continue indefinitely without ever restoring systems to meet the LCO. The separate Completion Time modified by the phrase "from discovery of failure to meet the LCO" is designed to prevent indefinite continued operation while not meeting the LCO. This Completion Time allows for an exception to the normal "time zero" for beginning the Completion Time "clock." In this instance, the Completion Time "time zero" is specified as commencing at the time the LCO was initially not met, instead of at the time the associated Condition was entered.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE ~~1.3.4~~ <sup>1.3-3</sup>

ACTIONS

| CONDITION                                                  | REQUIRED ACTION                          | COMPLETION TIME |
|------------------------------------------------------------|------------------------------------------|-----------------|
| A. One or more valves inoperable.                          | A.1 Restore valve(s) to OPERABLE status. | 4 hours         |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                        | 6 hours         |
|                                                            | <u>AND</u><br>B.2 Be in MODE 4.          | 12 hours        |

A single Completion Time is used for any number of valves inoperable at the same time. The Completion Time associated with Condition A is based on the initial entry into Condition A and is not tracked on a per valve basis. Declaring subsequent valves inoperable, while Condition A is still in effect, does not trigger the tracking of separate Completion Times.

Once one of the valves has been restored to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first valve was declared inoperable. The Completion Time may be extended if the valve restored to OPERABLE status was the first inoperable valve. The Condition A Completion Time may be extended for up to 4 hours provided this does not result in any subsequent valve being inoperable for > 4 hours.

If the Completion Time of 4 hours (plus the extension) expires while one or more valves are still inoperable, Condition B is entered.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 

ACTIONS

- NOTE -

Separate Condition entry is allowed for each inoperable valve.

| CONDITION                                                  | REQUIRED ACTION                       | COMPLETION TIME |
|------------------------------------------------------------|---------------------------------------|-----------------|
| A. One or more valves inoperable.                          | A.1 Restore valve to OPERABLE status. | 4 hours         |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                     | 6 hours         |
|                                                            | <u>AND</u><br>B.2 Be in MODE 4.       | 12 hours        |

The Note above the ACTIONS Table is a method of modifying how the Completion Time is tracked. If this method of modifying how the Completion Time is tracked was applicable only to a specific Condition, the Note would appear in that Condition rather than at the top of the ACTIONS Table.

The Note allows Condition A to be entered separately for each inoperable valve, and Completion Times tracked on a per valve basis. When a valve is declared inoperable, Condition A is entered and its Completion Time starts. If subsequent valves are declared inoperable, Condition A is entered for each valve and separate Completion Times start and are tracked for each valve.

If the Completion Time associated with a valve in Condition A expires, Condition B is entered for that valve. If the Completion Times associated with subsequent valves in Condition A expire, Condition B is entered separately for each valve and separate Completion Times start and are tracked for each valve. If a valve that caused entry into Condition B is restored to OPERABLE status, Condition B is exited for that valve.

1.3 Completion Times

EXAMPLES (continued)

Since the Note in this example allows multiple Condition entry and tracking of separate Completion Times, Completion Time extensions do not apply.

EXAMPLE ~~1.3-6~~ 1.3-5

ACTIONS

| CONDITION                                                  | REQUIRED ACTION                                     | COMPLETION TIME  |
|------------------------------------------------------------|-----------------------------------------------------|------------------|
| A. One channel inoperable.                                 | A.1 Perform SR 3.x.x.x.                             | Once per 8 hours |
|                                                            | <u>OR</u><br>A.2 Reduce THERMAL POWER to ≤ 50% RTP. | 8 hours          |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                                   | 6 hours          |

Entry into Condition A offers a choice between Required Action A.1 or A.2. Required Action A.1 has a "once per" Completion Time, which qualifies for the 25% extension, per SR 3.0.2, to each performance after the initial performance. The initial 8 hour interval of Required Action A.1 begins when Condition A is entered and the initial performance of Required Action A.1 must be complete within the first 8 hour interval. If Required Action A.1 is followed and the Required Action is not met within the Completion Time (plus the extension allowed by SR 3.0.2), Condition B is entered. If Required Action A.2 is followed and the Completion Time of 8 hours is not met, Condition B is entered.

If after entry into Condition B, Required Action A.1 or A.2 is met, Condition B is exited and operation may then continue in Condition A.



## 1.3 Completion Times

## EXAMPLES (continued)

EXAMPLE ~~1.3-7~~ 

## ACTIONS

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

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

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

## 3.6 CONTAINMENT SYSTEMS

## 3.6.6 Containment Spray and Cooling Systems

LCO 3.6.6 Two containment spray trains and two containment cooling trains shall be OPERABLE.

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

## ACTIONS

| CONDITION                                                                 | REQUIRED ACTION                                                          | COMPLETION TIME                                                             |
|---------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| A. One containment spray train inoperable.                                | A.1 Restore containment spray train to OPERABLE status.                  | 72 hours<br><u>AND</u><br>10 days from discovery of failure to meet the LCO |
| B. Required Action and associated Completion Time of Condition A not met. | B.1 Be in MODE 3.<br><u>AND</u><br>B.2 Be in MODE 5.                     | 6 hours<br><br>84 hours                                                     |
| C. One [required] containment cooling train inoperable.                   | C.1 Restore [required] containment cooling train to OPERABLE status.     | 7 days<br><u>AND</u><br>10 days from discovery of failure to meet the LCO   |
| D. Two [required] containment cooling trains inoperable.                  | D.1 Restore one [required] containment cooling train to OPERABLE status. | 72 hours                                                                    |

3.7 PLANT SYSTEMS

3.7.5 Emergency Feedwater (EFW) System

LCO 3.7.5 [Three] EFW trains shall be OPERABLE.

**- NOTE -**

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

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

ACTIONS

| CONDITION                                                                                                                                                                                                                                                        | REQUIRED ACTION                                           | COMPLETION TIME                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| <p>A. [ One steam supply to turbine driven EFW pump inoperable.</p> <p><u>OR</u></p> <p><b>- NOTE -</b><br/>Only applicable if MODE 2 has not been entered following refueling.</p> <p>One turbine driven EFW pump inoperable in MODE 3 following refueling.</p> | <p>A.1 Restore affected equipment to OPERABLE status.</p> | <p>7 days <sup>1</sup></p> <p><del>AND</del><br/><del>10 days from discovery of failure to meet the LCO ]</del></p> |
| <p>B. One EFW train inoperable [for reasons other than Condition A] in MODE 1, 2, or 3.</p>                                                                                                                                                                      | <p>B.1 Restore EFW train to OPERABLE status.</p>          | <p>72 hours</p> <p><del>AND</del><br/><del>[10 days from discovery of failure to meet the LCO ]</del></p>           |

## ACTIONS (continued)

| CONDITION                        | REQUIRED ACTION                                                                                                                 | COMPLETION TIME                                                                                      |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
|                                  | A.3 Restore [required] offsite circuit to OPERABLE status.                                                                      | 72 hours<br><del>AND<br/>6 days from discovery of failure to meet LCO</del>                          |
| B. One [required] DG inoperable. | B.1 Perform SR 3.8.1.1 for OPERABLE [required] offsite circuit(s).                                                              | 1 hour<br><u>AND</u><br>Once per 8 hours thereafter                                                  |
|                                  | <u>AND</u>                                                                                                                      |                                                                                                      |
|                                  | B.2 Declare required feature(s) supported by the inoperable DG inoperable when its redundant required feature(s) is inoperable. | 4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s) |
|                                  | <u>AND</u>                                                                                                                      |                                                                                                      |
|                                  | B.3.1 Determine OPERABLE DG(s) is not inoperable due to common cause failure.                                                   | [24] hours                                                                                           |
|                                  | <u>OR</u>                                                                                                                       |                                                                                                      |
|                                  | B.3.2 Perform SR 3.8.1.2 for OPERABLE DG(s).                                                                                    | [24] hours                                                                                           |
|                                  | <u>AND</u>                                                                                                                      |                                                                                                      |

ACTIONS (continued)

| CONDITION                                                                                     | REQUIRED ACTION                                                                                                                                                                                                                                                                                                                     | COMPLETION TIME                                                                                                                                       |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                               | B.4 Restore [required] DG to OPERABLE status.                                                                                                                                                                                                                                                                                       | 72 hours<br><del>AND<br/>6 days from discovery of failure to meet LCO</del>                                                                           |
| C. Two [required] offsite circuits inoperable.                                                | C.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.<br><br>AND<br><br>C.2 Restore one [required] offsite circuit to OPERABLE status.                                                                                                                                                   | 12 hours from discovery of Condition C concurrent with inoperability of redundant required feature(s)<br><br><br><br><br><br><br><br><br><br>24 hours |
| D. One [required] offsite circuit inoperable.<br><br>AND<br><br>One [required] DG inoperable. | -----<br>- NOTE -<br>Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition D is entered with no AC power source to any train.<br>-----<br><br>D.1 Restore [required] offsite circuit to OPERABLE status.<br><br>OR<br><br>D.2 Restore [required] DG to OPERABLE status. | 12 hours<br><br><br><br><br><br><br><br><br><br>12 hours                                                                                              |

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems - Operating

LCO 3.8.9 Train A and Train B AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE.

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

ACTIONS

| CONDITION                                                                     | REQUIRED ACTION                                                                                                                                                                                                                                                                                                                                                                | COMPLETION TIME                                                                                                     |
|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| <p>A. One or more AC electrical power distribution subsystems inoperable.</p> | <p style="text-align: center;">-----<br/> <b>- NOTE -</b><br/>                     Enter applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," for DC trains made inoperable by inoperable power distribution subsystems.<br/>                     -----</p> <p>A.1 Restore AC electrical power distribution subsystem(s) to OPERABLE status.</p> | <p>8 hours<br/>                     AND<br/>                     16 hours from discovery of failure to meet LCO</p> |
| <p>B. One or more AC vital buses inoperable.</p>                              | <p>B.1 Restore AC vital bus subsystem(s) to OPERABLE status.</p>                                                                                                                                                                                                                                                                                                               | <p>2 hours<br/>                     AND<br/>                     16 hours from discovery of failure to meet LCO</p> |

ACTIONS (continued)

| CONDITION                                                                                             | REQUIRED ACTION                                                               | COMPLETION TIME                                                             |
|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| C. One or more DC electrical power distribution subsystems inoperable.                                | C.1 Restore DC electrical power distribution subsystem(s) to OPERABLE status. | 2 hours<br><br><u>AND</u><br>16 hours from discovery of failure to meet LCO |
|                                                                                                       | D. Required Action and associated Completion Time not met.                    | D.1 Be in MODE 3.<br><br><u>AND</u><br>D.2 Be in MODE 5.                    |
| E. Two or more electrical power distribution subsystems inoperable that result in a loss of function. | E.1 Enter LCO 3.0.3.                                                          | Immediately                                                                 |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE                                                                                                                              | FREQUENCY |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| SR 3.8.9.1 Verify correct breaker alignments and voltage to [required] AC, DC, and AC vital bus electrical power distribution subsystems. | 7 days    |

## BASES

## ACTIONS

A.1

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

~~The 10 day portion of the Completion Time for Required Action A.1 is based upon engineering judgment. It takes into account the low probability of coincident entry into two Conditions in this LCO coupled with the low probability of an accident occurring during this time. Refer to Section 1.3, Completion Times, for a more detailed discussion of the purpose of the "from discovery of failure to meet the LCO" portion of the Completion Time.~~

B.1 and B.2

If the inoperable containment spray train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 84 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. The extended interval to reach MODE 5 allows additional time to attempt restoration of the containment spray train and is reasonable when considering the driving force for a release of radioactive material from the Reactor Coolant System is reduced in MODE 3.

C.1

With one of the required containment cooling trains inoperable, the inoperable containment cooling train must be restored to OPERABLE status within 7 days. The components in this degraded condition provide iodine removal capabilities and are capable of providing at least 100% of the heat removal needs after an accident. The 7 day Completion Time was developed taking into account the redundant heat removal capabilities afforded by combinations of the Containment Spray System and Containment Cooling System and the low probability of a DBA occurring during this period.



## BASES

## ACTIONS (continued)

The 10 day portion of the Completion Time for Required Action C.1 is based upon engineering judgment. It takes into account the low probability of coincident entry into two Conditions in this LCO coupled with the low probability of an accident occurring during this time. Refer to Section 1.3 for a more detailed discussion of the purpose of the "from discovery of failure to meet the LCO" portion of the Completion Time.

D.1

With two of the required containment cooling trains inoperable, one of the required containment cooling trains must be restored to OPERABLE status within 72 hours. The components in this degraded condition (both spray trains are OPERABLE or else Condition F is entered) provide iodine removal capabilities and are capable of providing at least 100% of the heat removal needs after an accident. The 72 hour Completion Time was developed taking into account the redundant heat removal capabilities afforded by combinations of the Containment Spray System and Containment Cooling System and the low probability of a DBA occurring during this period.

E.1 and E.2

If the Required Actions and associated Completion Times of Condition C or D of this LCO are not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

F.1

With two containment spray trains or any combination of three or more containment spray and containment cooling trains inoperable, the unit is in a condition outside the accident analysis. Therefore, LCO 3.0.3 must be entered immediately.

## BASES

## ACTIONS

[ A.1

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

- a. For the inoperability of a steam supply to the turbine driven EFW pump, the 7 day Completion time is reasonable since there is a redundant steam supply line for the turbine driven pump.
- b. For the inoperability of a turbine driven EFW pump while in MODE 3 immediately subsequent to a refueling, the 7 day Completion time is reasonable due to the minimal decay heat levels in this situation.
- c. For both the inoperability of a steam supply line to the turbine driven pump and an inoperable turbine driven EFW pump while in MODE 3 immediately following refueling, the 7 day Completion Time is reasonable due to the availability of redundant OPERABLE motor driven EFW pumps, and due to the low probability of an event requiring the use of the turbine driven EFW pump.

~~The second Completion Time for Required Action A.1 establishes a limit on the maximum time allowed for any combination of Conditions to be inoperable during any continuous failure to meet this LCO.~~

~~The 10 day Completion Time provides a limitation time allowed in this 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 72 hours and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.~~

Condition A is modified by a Note which limits the applicability of the Condition to when the unit has not entered MODE 2 following a refueling. Condition A allows one EFW train to be inoperable for 7 days vice the 72 hour Completion Time in Condition B. This longer Completion Time is based on the reduced decay heat following refueling and prior to the reactor being critical. ]

B.1

When one of the required EFW trains (pump or flow path) is inoperable, action must be taken to restore the train to OPERABLE status within

## BASES

## ACTIONS (continued)

72 hours. This Condition includes the loss of two steam supply lines to one of the turbine driven EFW pumps. The 72 hour Completion Time is reasonable, based on the redundant capabilities afforded by the EFW System, time needed for repairs, and the low probability of a DBA occurring during this time period. The second Completion Time for Required Action B.1 establishes a limit on the maximum time allowed for any combination of Conditions to be inoperable during any continuous failure to meet this LCO.

The 10 day Completion Time provides a limitation time allowed in this 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 72 hours and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.

C.1 and C.2

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

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

In MODE 4, with two EFW trains inoperable, operation is allowed to continue because only one motor driven EFW train is required in accordance with the Note that modifies the LCO. Although not required, the unit may continue to cool down and initiate DHR.

D.1

Required Action D.1 is modified by a Note indicating that all required MODE changes or power reductions are suspended until at least one EFW train is restored to OPERABLE status.

With [all] EFW trains inoperable in MODE 1, 2, or 3, the unit is in a seriously degraded condition with no safety related means for conducting a cooldown, and only limited means for conducting a cooldown with

BASES

ACTIONS (continued)

reasonable time for repairs, and the low probability of a DBA occurring during this period.

A.3

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours. With one offsite circuit inoperable, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the unit safety systems. In this Condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E Distribution System.

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.

The second Completion Time for Required Action A.3 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 72 hours. This could lead to a total of 144 hours, since initial failure to meet the LCO, to restore the offsite circuit. At this time, a DG could again become inoperable, the circuit restored OPERABLE, and an additional 72 hours (for a total of 9 days) allowed prior to complete restoration of the LCO. The 6 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 6 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.

As in Required Action A.2, 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

To ensure a highly reliable power source remains with an inoperable DG, it is necessary to verify the availability of the offsite circuits on a more

BASES

ACTIONS (continued)

B.4

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition B for a period that should not exceed 72 hours.

In Condition B, the remaining OPERABLE DG and offsite circuits 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.

The second Completion Time for Required Action B.4 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, an offsite 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 144 hours, since initial failure to meet the LCO, to restore the DG. At this time, an offsite circuit could again become inoperable, the DG restored OPERABLE, and an additional 72 hours (for a total of 9 days) allowed prior to complete restoration of the LCO. The 6 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 Condition A and Condition B are entered concurrently. The "AND" connector between the 72 hour and 6 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.

As in Required Action B.2, 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 and C.2

Required Action C.1, which applies when two offsite circuits are inoperable, is intended to provide assurance that an event with a coincident single failure will not result in a complete loss of redundant required safety functions. The Completion Time for this failure of redundant required features is reduced to 12 hours from that allowed for one train without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a

BASES

ACTIONS (continued)

buses, load centers, motor control centers, and distribution panels must be restored to OPERABLE status within 8 hours.

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

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.

Required Action A.1 is modified by a Note that requires the applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," to be entered for DC trains made inoperable by inoperable power distribution subsystems. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components. Inoperability

BASES

ACTIONS (continued)

- c. The potential for an event in conjunction with a single failure of a redundant component.

The 2 hour Completion Time takes into account the importance to safety of restoring the AC vital bus to OPERABLE status, the redundant capability afforded by the other OPERABLE vital buses, and the low probability of a DBA occurring during this period.

The second Completion Time for Required Action B.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 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 vital bus distribution system. At this time, an AC train could again become inoperable, and vital 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 or more DC buses or distribution panels inoperable, and a loss of function has not yet occurred, the remaining DC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining DC electrical power distribution subsystem could result in the minimum required ESF functions not being supported. Therefore, the [required] DC buses and distribution panels must be restored to OPERABLE status within 2 hours by powering the bus from the associated battery or charger.

Condition C represents one or more DC buses or distribution panels without adequate DC power; potentially both with the battery significantly degraded and the associated charger nonfunctioning. In this situation, the unit is significantly more vulnerable to a complete loss of all DC

BASES

ACTIONS (continued)

power. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for loss of power to the remaining trains and restoring power to the affected train.

This 2 hour limit is more conservative than Completion Times allowed for the vast majority of components that are without power. Taking exception to LCO 3.0.2 for components without adequate DC power, which would have Required Action Completion Times shorter than 2 hours, is acceptable because of:

- a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) while allowing stable operations to continue,
- b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required Actions for components without DC power and not providing sufficient time for the operators to perform the necessary evaluations and actions to restore power to the affected train, and
- c. The potential for an event in conjunction with a single failure of a redundant component.

The 2 hour Completion Time for DC buses is consistent with Regulatory Guide 1.93 (Ref. 3).

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 train 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.



### 1.3 Completion Times

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#### DESCRIPTION (continued)

- b. Must remain inoperable or not within limits after the first inoperability is resolved.

The total Completion Time allowed for completing a Required Action to address the subsequent inoperability shall be limited to the more restrictive of either:

- a. The stated Completion Time, as measured from the initial entry into the Condition, plus an additional 24 hours or
- b. The stated Completion Time as measured from discovery of the subsequent inoperability.

The above Completion Time extensions do not apply to those Specifications that have exceptions that allow completely separate re-entry into the Condition (for each train, subsystem, component, or variable expressed in the Condition) and separate tracking of Completion Times based on this re-entry. These exceptions are stated in individual Specifications.

The above Completion Time extension does not apply to a Completion Time with a modified "time zero." This modified "time zero" may be expressed as a repetitive time (i.e., "once per 8 hours," where the Completion Time is referenced from a previous completion of the Required Action versus the time of Condition entry) or as a time modified by the phrase "from discovery . . ." Example 1.3-3 illustrates one use of this type of Completion Time. The 10 day Completion Time specified for Conditions A and B in Example 1.3-3 may not be extended.

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#### EXAMPLES

The following examples illustrate the use of Completion Times with different types of Conditions and changing Conditions.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-3

ACTIONS

| CONDITION                                                                                     | REQUIRED ACTION                                                                                                           | COMPLETION TIME                                                                     |
|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| A. One Function X train inoperable.                                                           | A.1 Restore Function X train to OPERABLE status.                                                                          | 7 days<br><br><u>AND</u><br><br>10 days from discovery of failure to meet the LCO   |
| B. One Function Y train inoperable.                                                           | B.1 Restore Function Y train to OPERABLE status.                                                                          | 72 hours<br><br><u>AND</u><br><br>10 days from discovery of failure to meet the LCO |
| C. One Function X train inoperable.<br><br><u>AND</u><br><br>One Function Y train inoperable. | C.1 Restore Function X train to OPERABLE status.<br><br><u>OR</u><br><br>C.2 Restore Function Y train to OPERABLE status. | 72 hours<br><br><br><br>72 hours                                                    |

When one Function X train and one Function Y train are inoperable, Condition A and Condition B are concurrently applicable. The Completion Times for Condition A and Condition B are tracked separately for each train starting from the time each train was declared inoperable and the Condition was entered. A separate Completion Time is established for Condition C and tracked from the time the second train was declared inoperable (i.e., the time the situation described in Condition C was discovered).

### 1.3 Completion Times

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#### EXAMPLES (continued)

If Required Action C.2 is completed within the specified Completion Time, Conditions B and C are exited. If the Completion Time for Required Action A.1 has not expired, operation may continue in accordance with Condition A. The remaining Completion Time in Condition A is measured from the time the affected train was declared inoperable (i.e., initial entry into Condition A).

The Completion Times of Conditions A and B are modified by a logical connector with a separate 10 day Completion Time measured from the time it was discovered the LCO was not met. In this example, without the separate Completion Time, it would be possible to alternate between Conditions A, B, and C in such a manner that operation could continue indefinitely without ever restoring systems to meet the LCO. The separate Completion Time modified by the phrase "from discovery of failure to meet the LCO" is designed to prevent indefinite continued operation while not meeting the LCO. This Completion Time allows for an exception to the normal "time zero" for beginning the Completion Time "clock." In this instance, the Completion Time "time zero" is specified as commencing at the time the LCO was initially not met, instead of at the time the associated Condition was entered.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE ~~1.3-4~~ <sup>1.3-3</sup>

ACTIONS

| CONDITION                                                  | REQUIRED ACTION                          | COMPLETION TIME |
|------------------------------------------------------------|------------------------------------------|-----------------|
| A. One or more valves inoperable.                          | A.1 Restore valve(s) to OPERABLE status. | 4 hours         |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                        | 6 hours         |
|                                                            | <u>AND</u><br>B.2 Be in MODE 4.          | 12 hours        |

A single Completion Time is used for any number of valves inoperable at the same time. The Completion Time associated with Condition A is based on the initial entry into Condition A and is not tracked on a per valve basis. Declaring subsequent valves inoperable, while Condition A is still in effect, does not trigger the tracking of separate Completion Times.

Once one of the valves has been restored to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first valve was declared inoperable. The Completion Time may be extended if the valve restored to OPERABLE status was the first inoperable valve. The Condition A Completion Time may be extended for up to 4 hours provided this does not result in any subsequent valve being inoperable for > 4 hours.

If the Completion Time of 4 hours (including the extension) expires while one or more valves are still inoperable, Condition B is entered.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE ~~1.3-5~~

1.3-4

ACTIONS

- NOTE -

Separate Condition entry is allowed for each inoperable valve.

| CONDITION                                                  | REQUIRED ACTION                       | COMPLETION TIME |
|------------------------------------------------------------|---------------------------------------|-----------------|
| A. One or more valves inoperable.                          | A.1 Restore valve to OPERABLE status. | 4 hours         |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                     | 6 hours         |
|                                                            | <u>AND</u><br>B.2 Be in MODE 4.       | 12 hours        |

The Note above the ACTIONS Table is a method of modifying how the Completion Time is tracked. If this method of modifying how the Completion Time is tracked was applicable only to a specific Condition, the Note would appear in that Condition rather than at the top of the ACTIONS Table.

The Note allows Condition A to be entered separately for each inoperable valve, and Completion Times tracked on a per valve basis. When a valve is declared inoperable, Condition A is entered and its Completion Time starts. If subsequent valves are declared inoperable, Condition A is entered for each valve and separate Completion Times start and are tracked for each valve.

If the Completion Time associated with a valve in Condition A expires, Condition B is entered for that valve. If the Completion Times associated with subsequent valves in Condition A expire, Condition B is entered separately for each valve and separate Completion Times start and are tracked for each valve. If a valve that caused entry into Condition B is restored to OPERABLE status, Condition B is exited for that valve.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-6 <sup>1.3-5</sup>

ACTIONS

| CONDITION                                                  | REQUIRED ACTION                                           | COMPLETION TIME  |
|------------------------------------------------------------|-----------------------------------------------------------|------------------|
| A. One channel inoperable.                                 | A.1 Perform SR 3.x.x.x.                                   | Once per 8 hours |
|                                                            | <u>OR</u><br>A.2 Reduce THERMAL POWER to $\leq 50\%$ RTP. | 8 hours          |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                                         | 6 hours          |

Entry into Condition A offers a choice between Required Action A.1 or A.2. Required Action A.1 has a "once per" Completion Time, which qualifies for the 25% extension, per SR 3.0.2, to each performance after the initial performance. The initial 8 hour interval of Required Action A.1 begins when Condition A is entered and the initial performance of Required Action A.1 must be complete within the first 8 hour interval. If Required Action A.1 is followed, and the Required Action is not met within the Completion Time (plus the extension allowed by SR 3.0.2), Condition B is entered. If Required Action A.2 is followed and the Completion Time of 8 hours is not met, Condition B is entered.

If after entry into Condition B, Required Action A.1 or A.2 is met, Condition B is exited and operation may then continue in Condition A.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE ~~1.3-7~~ <sup>1.3-6</sup>

ACTIONS

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

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

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

Containment Spray and Cooling Systems (Atmospheric and Dual)  
3.6.6A

3.6 CONTAINMENT SYSTEMS

3.6.6A Containment Spray and Cooling Systems (Atmospheric and Dual) (Credit taken for iodine removal by the Containment Spray System)

LCO 3.6.6A Two containment spray trains and [two] containment cooling trains shall be OPERABLE.

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

ACTIONS

| CONDITION                                                                 | REQUIRED ACTION                                                          | COMPLETION TIME                                                             |
|---------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| A. One containment spray train inoperable.                                | A.1 Restore containment spray train to OPERABLE status.                  | 72 hours<br><u>AND</u><br>10 days from discovery of failure to meet the LCO |
| B. Required Action and associated Completion Time of Condition A not met. | B.1 Be in MODE 3.                                                        | 6 hours                                                                     |
|                                                                           | <u>AND</u><br>B.2 Be in MODE 5.                                          | 84 hours                                                                    |
| C. One [required] containment cooling train inoperable.                   | C.1 Restore [required] containment cooling train to OPERABLE status.     | 7 days<br><u>AND</u><br>10 days from discovery of failure to meet the LCO   |
| D. Two [required] containment cooling trains inoperable.                  | D.1 Restore one [required] containment cooling train to OPERABLE status. | 72 hours                                                                    |



Containment Spray and Cooling Systems (Atmospheric and Dual)  
3.6.6B

3.6 CONTAINMENT SYSTEMS

3.6.6B Containment Spray and Cooling Systems (Atmospheric and Dual (Credit not taken for iodine removal by the Containment Spray System)

LCO 3.6.6B Two containment spray trains and [two] containment cooling trains shall be OPERABLE.

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

ACTIONS

| CONDITION                                                                               | REQUIRED ACTION                                                                   | COMPLETION TIME                                                           |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| A. One containment spray train inoperable.                                              | A.1 Restore containment spray train to OPERABLE status.                           | 7 days<br><u>AND</u><br>14 days from discovery of failure to meet the LCO |
| B. One [required] containment cooling train inoperable.                                 | B.1 Restore [required] containment cooling train to OPERABLE status.              | 7 days<br><u>AND</u><br>14 days from discovery of failure to meet the LCO |
| C. Two containment spray trains inoperable.                                             | C.1 Restore one containment spray train to OPERABLE status.                       | 72 hours                                                                  |
| D. One containment spray train and one [required] containment cooling train inoperable. | D.1 Restore containment spray train to OPERABLE status.                           | 72 hours                                                                  |
|                                                                                         | <u>OR</u><br>D.2 Restore [required] containment cooling train to OPERABLE status. | 72 hours                                                                  |

## 3.7 PLANT SYSTEMS

## 3.7.5 Auxiliary Feedwater (AFW) System

LCO 3.7.5 [Three] AFW trains shall be OPERABLE.

**- NOTE -**[ Only one AFW train, which includes a motor driven pump,  
is required to be OPERABLE in MODE 4. ]APPLICABILITY: MODES 1, 2, and 3,  
MODE 4 when steam generator is relied upon for heat removal.

## ACTIONS

| CONDITION                                                                                                                                                                                                                                                                                  | REQUIRED ACTION                                           | COMPLETION TIME                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| <p>A. [ One steam supply to turbine driven AFW pump inoperable.</p> <p><u>OR</u></p> <p>-----</p> <p><b>- NOTE -</b><br/>Only applicable if MODE 2 has not been entered following refueling.</p> <p>-----</p> <p>One turbine driven AFW pump inoperable in MODE 3 following refueling.</p> | <p>A.1 Restore affected equipment to OPERABLE status.</p> | <p>7 days ]</p> <p><del>AND</del></p> <p>10 days from discovery of failure to meet the LCO ]</p>   |
| <p>B. One AFW train inoperable in MODE 1, 2 or 3 [for reasons other than Condition A].</p>                                                                                                                                                                                                 | <p>B.1 Restore AFW train to OPERABLE status.</p>          | <p>72 hours</p> <p><del>AND</del></p> <p>[ 10 days from discovery of failure to meet the LCO ]</p> |

## ACTIONS (continued)

| CONDITION                        | REQUIRED ACTION                                                                                                                                                                                                                                                                                                                                                                                                             | COMPLETION TIME                                                                                                                                                                                                    |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                  | A.3 Restore [required] offsite circuit to OPERABLE status.                                                                                                                                                                                                                                                                                                                                                                  | 72 hours<br><del>AND<br/>6 days from discovery of failure to meet LCO</del>                                                                                                                                        |
| B. One [required] DG inoperable. | <p>B.1 Perform SR 3.8.1.1 for the [required] offsite circuit(s).</p> <p><u>AND</u></p> <p>B.2 Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.</p> <p><u>AND</u></p> <p>B.3.1 Determine OPERABLE DG(s) is not inoperable due to common cause failure.</p> <p><u>OR</u></p> <p>B.3.2 Perform SR 3.8.1.2 for OPERABLE DG(s).</p> <p><u>AND</u></p> | <p>1 hour</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</p> <p>4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)</p> <p>[24] hours</p> <p>[24] hours</p> |



3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems - Operating

LCO 3.8.9 Train A and Train B AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE.

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

ACTIONS

| CONDITION                                                                     | REQUIRED ACTION                                                                                                                                                                                                                                                                                                                                                                | COMPLETION TIME                                                                                              |
|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <p>A. One or more AC electrical power distribution subsystems inoperable.</p> | <p style="text-align: center;">-----<br/> <b>- NOTE -</b><br/>                     Enter applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," for DC trains made inoperable by inoperable power distribution subsystems.<br/>                     -----</p> <p>A.1 Restore AC electrical power distribution subsystem(s) to OPERABLE status.</p> | <p>8 hours</p> <p><del>AND</del><br/>                     16 hours from discovery of failure to meet LCO</p> |
| <p>B. One or more AC vital buses inoperable.</p>                              | <p>B.1 Restore AC vital bus subsystem(s) to OPERABLE status.</p>                                                                                                                                                                                                                                                                                                               | <p>2 hours</p> <p><del>AND</del><br/>                     16 hours from discovery of failure to meet LCO</p> |

ACTIONS (continued)

| CONDITION                                                                                                    | REQUIRED ACTION                                                               | COMPLETION TIME                                                             |
|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| C. One or more DC electrical power distribution subsystems inoperable.                                       | C.1 Restore DC electrical power distribution subsystem(s) to OPERABLE status. | 2 hours<br><del>AND</del><br>16 hours from discovery of failure to meet LCO |
| D. Required Action and associated Completion Time not met.                                                   | D.1 Be in MODE 3.                                                             | 6 hours                                                                     |
|                                                                                                              | <u>AND</u><br>D.2 Be in MODE 5.                                               | 36 hours                                                                    |
| E. Two or more electrical power distribution subsystems inoperable that result in a loss of safety function. | E.1 Enter LCO 3.0.3.                                                          | Immediately                                                                 |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE                                                                                                                              | FREQUENCY |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| SR 3.8.9.1 Verify correct breaker alignments and voltage to [required] AC, DC, and AC vital bus electrical power distribution subsystems. | 7 days    |

## BASES

## LCO

During a DBA, a minimum of one containment cooling train and one containment spray train are required to maintain the containment peak pressure and temperature below the design limits (Ref. 7). Additionally, one containment spray train is also required to remove iodine from the containment atmosphere and maintain concentrations below those assumed in the safety analysis. To ensure that these requirements are met, two containment spray trains and two containment cooling trains must be OPERABLE. Therefore, in the event of an accident, at least one train in each system operates, assuming the worst case single active failure occurs.

Each Containment Spray System typically includes a spray pump, spray headers, nozzles, valves, piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWST upon an ESF actuation signal and automatically transferring suction to the containment sump.

Each Containment Cooling System typically includes demisters, cooling coils, dampers, fans, instruments, and controls to ensure an OPERABLE flow path.

## APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment and an increase in containment pressure and temperature requiring the operation of the containment spray trains and containment cooling trains.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Thus, the Containment Spray System and the Containment Cooling System are not required to be OPERABLE in MODES 5 and 6.

## ACTIONS

A.1

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

The 10 day portion of the Completion Time for Required Action A.1 is based upon engineering judgment. It takes into account the low

## BASES

## ACTIONS (continued)

~~probability of coincident entry into two Conditions in this Specification coupled with the low probability of an accident occurring during this time. Refer to Section 1.3, "Completion Times," for a more detailed discussion of the purpose of the "from discovery of failure to meet the LCO" portion of the Completion Time.~~

B.1 and B.2

If the inoperable containment spray train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 84 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 plant systems. The extended interval to reach MODE 5 allows additional time for attempting restoration of the containment spray train and is reasonable when considering the driving force for a release of radioactive material from the Reactor Coolant System is reduced in MODE 3.

C.1

With one of the required containment cooling trains inoperable, the inoperable required containment cooling train must be restored to OPERABLE status within 7 days. The components in this degraded condition provide iodine removal capabilities and are capable of providing at least 100% of the heat removal needs. The 7 day Completion Time was developed taking into account the redundant heat removal capabilities afforded by combinations of the Containment Spray System and Containment Cooling System and the low probability of DBA occurring during this period.

~~The 10 day portion of the Completion Time for Required Action C.1 is based upon engineering judgment. It takes into account the low probability of coincident entry into two Conditions in this Specification coupled with the low probability of an accident occurring during this time. Refer to Section 1.3 for a more detailed discussion of the purpose of the "from discovery of failure to meet the LCO" portion of the Completion Time.~~



## BASES

## LCO (continued)

Each Containment Cooling System typically includes demisters, cooling coils, dampers, instruments, and controls to ensure an OPERABLE flow path.

## APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment and an increase in containment pressure and temperature requiring the operation of the containment spray trains and containment cooling trains.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Thus, the Containment Spray System and the Containment Cooling System are not required to be OPERABLE in MODES 5 and 6.

## ACTIONS

A.1

If one containment spray train is inoperable, it must be restored to OPERABLE status within 7 days. The components in this degraded condition are capable of providing at least 100% of the heat removal needs (for the condition of one containment spray train inoperable) after an accident. The 7 day Completion Time was chosen in light of the redundant heat removal capabilities afforded by combinations of the Containment Spray System and Containment Cooling System and the low probability of DBA occurring during this period.

The 14 day portion of the Completion Time for Required Action A.1 is based upon engineering judgment. It takes into account the low probability of coincident entry into two Conditions in this LCO coupled with the low probability of an accident occurring during this time. Refer to Section 1.3, Completion Times, for a more detailed discussion of the purpose of the "from discovery of failure to meet the LCO" portion of the Completion Time.

B.1

If one of the required containment cooling trains is inoperable, it must be restored to OPERABLE status within 7 days. The components in this degraded condition are capable of providing at least 100% of the heat removal needs (for the Condition of one containment cooling train inoperable) after an accident. The 7 day Completion Time was chosen based on the same reasons as given in Required Action A.1.

## BASES

## ACTIONS (continued)

The 14 day portion of the Completion Time for Required Action B.1 is based upon engineering judgment. It takes into account the low probability of coincident entry into two Conditions in this Specification coupled with the low probability of an accident occurring during this time. Refer to Section 1.3 for a more detailed discussion of the purpose of the "from discovery of failure to meet the LCO" portion of the Completion Time.

C.1

With two of the required containment spray trains inoperable, one must be restored to OPERABLE status within 72 hours. The components in this degraded condition are capable of providing at least 100% of the heat removal needs after an accident. The 72 hour Completion Time was chosen in light of the redundant heat removal capabilities afforded by combinations of the Containment Spray System and Containment Cooling System, reasonable time for repairs, and low probability of DBA occurring during this period.

D.1 and D.2

If one required containment spray train is inoperable and one of the required containment cooling trains is inoperable, the inoperable containment spray train or the inoperable containment cooling train must be restored to OPERABLE status within 72 hours. The components in this degraded condition are capable of providing at least 100% of the heat removal needs after an accident. The 72 hour Completion Time was chosen based on the same reasons as those given in Required Action C.1.

E.1

If two required containment cooling trains are inoperable, one of the required containment cooling trains must be restored to OPERABLE status within 72 hours. The components in this degraded condition are capable of providing at least 100% of the heat removal needs after an accident. The 72 hour Completion Time was chosen based on the same reasons as those given in Required Action C.1.

F.1 and F.2

If any of the Required Actions or associated Completion Times for Condition A, B, C, D, or E of this LCO are not met, the plant must be

## BASES

## APPLICABILITY

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

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

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

## ACTIONS

## [ A.1

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

- a. For the inoperability of a steam supply to the turbine driven AFW pump, the 7 day Completion Time is reasonable since there is a redundant steam supply line for the turbine driven pump.
- b. For the inoperability of a turbine driven AFW pump while in MODE 3 immediately subsequent to a refueling, the 7 day Completion Time is reasonable due to the minimal decay heat levels in this situation.
- c. For both the inoperability of a steam supply line to the turbine driven pump and an inoperable turbine driven AFW pump while in MODE 3 immediately following a refueling outage, the 7 day Completion Time is reasonable due to the availability of redundant OPERABLE motor driven AFW pumps, and due to the low probability of an event requiring the use of the turbine driven AFW pump.

~~The second Completion Time for Required Action A.1 establishes a limit on the maximum time allowed for any combination of Conditions to be inoperable during any continuous failure to meet this LCO.~~

~~The 10-day Completion Time provides a limitation time allowed in this 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 7 days and 10 days~~

BASES

ACTIONS (continued)

~~dictates that both Completion Times apply simultaneously, and the more restrictive must be met.~~

Condition A is modified by a Note which limits the applicability of the Condition to when the unit has not entered MODE 2 following a refueling. Condition A allows one AFW train to be inoperable for 7 days vice the 72 hour Completion Time in Condition B. This longer Completion Time is based on the reduced decay heat following refueling and prior to the reactor being critical. ]

B.1

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

~~The second Completion Time for Required Action B.1 establishes a limit on the maximum time allowed for any combination of Conditions to be inoperable during any continuous failure to meet this LCO.~~

~~The 10 day Completion Time provides a limitation time allowed in this 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 72 hours and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.~~

C.1 and C.2

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

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

## BASES

## ACTIONS (continued)

reasonable time for repairs, and the low probability of a DBA occurring during this period.

A.3

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours. With one offsite circuit inoperable, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the unit safety systems. In this Condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E Distribution System.

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.

The second Completion Time for Required Action A.3 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 72 hours. This could lead to a total of 144 hours, since initial failure to meet the LCO, to restore the offsite circuit. At this time, a DG could again become inoperable, the circuit restored OPERABLE, and an additional 72 hours (for a total of 9 days) allowed prior to complete restoration of the LCO. The 6 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 6 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.

As in Required Action A.2, 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

To ensure a highly reliable power source remains with an inoperable DG, it is necessary to verify the availability of the offsite circuits on a more

## BASES

## ACTIONS (continued)

B.4

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition B for a period that should not exceed 72 hours.

In Condition B, the remaining OPERABLE DG and offsite circuits 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.

The second Completion Time for Required Action B.4 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, an offsite 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 144 hours, since initial failure to meet the LCO, to restore the DG. At this time, an offsite circuit could again become inoperable, the DG restored OPERABLE, and an additional 72 hours (for a total of 9 days) allowed prior to complete restoration of the LCO. The 6 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 72 hour and 6 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.

As in Required Action B.2, 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 and C.2

Required Action C.1, which applies when two offsite circuits are inoperable, is intended to provide assurance that an event with a coincident single failure will not result in a complete loss of redundant required safety functions. The Completion Time for this failure of redundant required features is reduced to 12 hours from that allowed for one train without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable,

## BASES

## ACTIONS (continued)

buses, load centers, motor control centers, and distribution panels must be restored to OPERABLE status within 8 hours.

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

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.

Required Action A.1 is modified by a Note that requires the applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," to be entered for DC trains made inoperable by inoperable power distribution subsystems. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components. Inoperability

## BASES

## ACTIONS (continued)

- c. The potential for an event in conjunction with a single failure of a redundant component.

The 2 hour Completion Time takes into account the importance to safety of restoring the AC vital bus to OPERABLE status, the redundant capability afforded by the other OPERABLE vital buses, and the low probability of a DBA occurring during this period.

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 vital bus distribution system. At this time, an AC train could again become inoperable, and vital 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 or more DC buses or distribution panels inoperable, and a loss of function has not yet occurred, the remaining DC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining DC electrical power distribution subsystem could result in the minimum required ESF functions not being supported. Therefore, the [required] DC buses and distribution panels must be restored to OPERABLE status within 2 hours by powering the bus from the associated battery or charger.

Condition C represents one or more DC buses or distribution panels without adequate DC power; potentially both with the battery significantly degraded and the associated charger nonfunctioning. In this situation, the unit is significantly more vulnerable to a complete loss of all DC



## BASES

## ACTIONS (continued)

power. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for loss of power to the remaining trains and restoring power to the affected train.

This 2 hour limit is more conservative than Completion Times allowed for the vast majority of components that would be without power. Taking exception to LCO 3.0.2 for components without adequate DC power, which would have Required Action Completion Times shorter than 2 hours, is acceptable because of:

- a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) while allowing stable operations to continue,
- b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required Actions for components without DC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train, and
- c. The potential for an event in conjunction with a single failure of a redundant component.

The 2 hour Completion Time for DC buses is consistent with Regulatory Guide 1.93 (Ref. 3). 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 train 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.

## 1.3 Completion Times

## DESCRIPTION (continued)

- b. Must remain inoperable or not within limits after the first inoperability is resolved.

The total Completion Time allowed for completing a Required Action to address the subsequent inoperability shall be limited to the more restrictive of either:

- a. The stated Completion Time, as measured from the initial entry into the Condition, plus an additional 24 hours or
- b. The stated Completion Time as measured from discovery of the subsequent inoperability.

The above Completion Time extensions do not apply to those Specifications that have exceptions that allow completely separate re-entry into the Condition (for each train, subsystem, component, or variable expressed in the Condition) and separate tracking of Completion Times based on this re-entry. These exceptions are stated in individual Specifications.

The above Completion Time extension does not apply to a Completion Time with a modified "time zero." This modified "time zero" may be expressed as a repetitive time (i.e., "once per 8 hours," where the Completion Time is referenced from a previous completion of the Required Action versus the time of Condition entry) or as a time modified by the phrase "from discovery . . ." Example 1.3-3 illustrates one use of this type of Completion Time. The 10 day Completion Time specified for Conditions A and B in Example 1.3-3 may not be extended.

## EXAMPLES

The following examples illustrate the use of Completion Times with different types of Conditions and changing Conditions.

1.3 Completion Times

EXAMPLES (continued)

On restoring one of the pumps to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first pump was declared inoperable. This Completion Time may be extended if the pump restored to OPERABLE status was the first inoperable pump. A 24 hour extension to the stated 7 days is allowed, provided this does not result in the second pump being inoperable for > 7 days.

EXAMPLE 1.3.3

ACTIONS

| CONDITION                                                                             | REQUIRED ACTION                                                                                                   | COMPLETION TIME                                                             |
|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| A. One Function X train inoperable.                                                   | A.1 Restore Function X train to OPERABLE status.                                                                  | 7 days<br><u>AND</u><br>10 days from discovery of failure to meet the LCO   |
| B. One Function Y train inoperable.                                                   | B.1 Restore Function Y train to OPERABLE status.                                                                  | 72 hours<br><u>AND</u><br>10 days from discovery of failure to meet the LCO |
| C. One Function X train inoperable.<br><u>AND</u><br>One Function Y train inoperable. | C.1 Restore Function X train to OPERABLE status.<br><u>OR</u><br>C.2 Restore Function Y train to OPERABLE status. | 72 hours<br><br>72 hours                                                    |

When one Function X train and one Function Y train are inoperable,

### 1.3 Completion Times

#### EXAMPLES (continued)

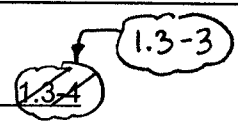
Condition A and Condition B are concurrently applicable. The Completion Times for Condition A and Condition B are tracked separately for each train starting from the time each train was declared inoperable and the Condition was entered. A separate Completion Time is established for Condition C and tracked from the time the second train was declared inoperable (i.e., the time the situation described in Condition C was discovered).

If Required Action C.2 is completed within the specified Completion Time, Conditions B and C are exited. If the Completion Time for Required Action A.1 has not expired, operation may continue in accordance with Condition A. The remaining Completion Time in Condition A is measured from the time the affected train was declared inoperable (i.e., initial entry into Condition A).

The Completion Times of Conditions A and B are modified by a logical connector, with a separate 10 day Completion Time measured from the time it was discovered the LCO was not met. In this example, without the separate Completion Time, it would be possible to alternate between Conditions A, B, and C in such a manner that operation could continue indefinitely without ever restoring systems to meet the LCO. The separate Completion Time modified by the phrase "from discovery of failure to meet the LCO" is designed to prevent indefinite continued operation while not meeting the LCO. This Completion Time allows for an exception to the normal "time zero" for beginning the Completion Time "clock." In this instance, the Completion Time "time zero" is specified as commencing at the time the LCO was initially not met, instead of at the time the associated Condition was entered.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-4 

ACTIONS

| CONDITION                                                  | REQUIRED ACTION                          | COMPLETION TIME |
|------------------------------------------------------------|------------------------------------------|-----------------|
| A. One or more valves inoperable.                          | A.1 Restore valve(s) to OPERABLE status. | 4 hours         |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                        | 6 hours         |
|                                                            | <u>AND</u><br>B.2 Be in MODE 4.          | 12 hours        |

A single Completion Time is used for any number of valves inoperable at the same time. The Completion Time associated with Condition A is based on the initial entry into Condition A and is not tracked on a per valve basis. Declaring subsequent valves inoperable, while Condition A is still in effect, does not trigger the tracking of separate Completion Times.

Once one of the valves has been restored to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first valve was declared inoperable. The Completion Time may be extended if the valve restored to OPERABLE status was the first inoperable valve. The Condition A Completion Time may be extended for up to 4 hours provided this does not result in any subsequent valve being inoperable for > 4 hours.

If the Completion Time of 4 hours (including the extension) expires while one or more valves are still inoperable, Condition B is entered.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE

1.3-4  
 1.3-5

ACTIONS

- NOTE -

Separate Condition entry is allowed for each inoperable valve.

| CONDITION                                                  | REQUIRED ACTION                       | COMPLETION TIME |
|------------------------------------------------------------|---------------------------------------|-----------------|
| A. One or more valves inoperable.                          | A.1 Restore valve to OPERABLE status. | 4 hours         |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                     | 6 hours         |
|                                                            | <u>AND</u><br>B.2 Be in MODE 4.       | 12 hours        |

The Note above the ACTIONS Table is a method of modifying how the Completion Time is tracked. If this method of modifying how the Completion Time is tracked was applicable only to a specific Condition, the Note would appear in that Condition rather than at the top of the ACTIONS Table.

The Note allows Condition A to be entered separately for each inoperable valve, and Completion Times tracked on a per valve basis. When a valve is declared inoperable, Condition A is entered and its Completion Time starts. If subsequent valves are declared inoperable, Condition A is entered for each valve and separate Completion Times start and are tracked for each valve.

If the Completion Time associated with a valve in Condition A expires, Condition B is entered for that valve. If the Completion Times associated with subsequent valves in Condition A expire, Condition B is entered separately for each valve and separate Completion Times start and are tracked for each valve. If a valve that caused entry into Condition B is restored to OPERABLE status, Condition B is exited for that valve.

## 1.3 Completion Times

## EXAMPLES (continued)

Since the Note in this example allows multiple Condition entry and tracking of separate Completion Times, Completion Time extensions do not apply.

## EXAMPLE

1.3-6  
1.3-5

## ACTIONS

| CONDITION                                                  | REQUIRED ACTION                                           | COMPLETION TIME  |
|------------------------------------------------------------|-----------------------------------------------------------|------------------|
| A. One channel inoperable.                                 | A.1 Perform SR 3.x.x.x.                                   | Once per 8 hours |
|                                                            | <u>OR</u><br>A.2 Reduce THERMAL POWER to $\leq 50\%$ RTP. | 8 hours          |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                                         | 6 hours          |

Entry into Condition A offers a choice between Required Action A.1 or A.2. Required Action A.1 has a "once per" Completion Time, which qualifies for the 25% extension, per SR 3.0.2, to each performance after the initial performance. The initial 8 hour interval of Required Action A.1 begins when Condition A is entered and the initial performance of Required Action A.1 must be complete within the first 8 hour interval. If Required Action A.1 is followed and the Required Action is not met within the Completion Time (plus the extension allowed by SR 3.0.2), Condition B is entered. If Required Action A.2 is followed and the Completion Time of 8 hours is not met, Condition B is entered.

If after entry into Condition B, Required Action A.1 or A.2 is met, Condition B is exited and operation may then continue in Condition A.

1.3 Completion Times

EXAMPLES (continued)

1.3-6

EXAMPLE ~~1.3-7~~

ACTIONS

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

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

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



Containment Spray and Cooling Systems (Atmospheric and Dual)  
3.6.6A

## 3.6 CONTAINMENT SYSTEMS

3.6.6A Containment Spray and Cooling Systems (Atmospheric and Dual)  
(Credit taken for iodine removal by the Containment Spray System)

LCO 3.6.6A Two containment spray trains and two containment cooling trains shall be OPERABLE.

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

## ACTIONS

| CONDITION                                                                 | REQUIRED ACTION                                               | COMPLETION TIME                                                             |
|---------------------------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------|
| A. One containment spray train inoperable.                                | A.1 Restore containment spray train to OPERABLE status.       | 72 hours<br><u>AND</u><br>10 days from discovery of failure to meet the LCO |
| B. Required Action and associated Completion Time of Condition A not met. | B.1 Be in MODE 3.                                             | 6 hours                                                                     |
|                                                                           | <u>AND</u><br>B.2 Be in MODE 5.                               | 84 hours                                                                    |
| C. One containment cooling train inoperable.                              | C.1 Restore containment cooling train to OPERABLE status.     | 7 days<br><u>AND</u><br>10 days from discovery of failure to meet the LCO   |
| D. Two containment cooling trains inoperable.                             | D.1 Restore one containment cooling train to OPERABLE status. | 72 hours                                                                    |

Containment Spray and Cooling Systems (Atmospheric and Dual)  
3.6.6B

## 3.6 CONTAINMENT SYSTEMS

3.6.6B Containment Spray and Cooling Systems (Atmospheric and Dual) (Credit not taken for iodine removal by the Containment Spray System)

LCO 3.6.6B Two containment spray trains and two containment cooling trains shall be OPERABLE.

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

## ACTIONS

| CONDITION                                                                    | REQUIRED ACTION                                                                                                                   | COMPLETION TIME                                                           |
|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| A. One containment spray train inoperable.                                   | A.1 Restore containment spray train to OPERABLE status.                                                                           | 7 days<br><u>AND</u><br>14 days from discovery of failure to meet the LCO |
| B. One containment cooling train inoperable.                                 | B.1 Restore containment cooling train to OPERABLE status.                                                                         | 7 days<br><u>AND</u><br>14 days from discovery of failure to meet the LCO |
| C. Two containment spray trains inoperable.                                  | C.1 Restore one containment spray train to OPERABLE status.                                                                       | 72 hours                                                                  |
| D. One containment spray train and one containment cooling train inoperable. | D.1 Restore containment spray train to OPERABLE status.<br><u>OR</u><br>D.2 Restore containment cooling train to OPERABLE status. | 72 hours<br><br>72 hours                                                  |

3.7 PLANT SYSTEMS

3.7.5 Auxiliary Feedwater (AFW) System

LCO 3.7.5 [Three] AFW trains shall be OPERABLE.

**- NOTE -**

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

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

ACTIONS

| CONDITION                                                                                                                                                                                                                                                        | REQUIRED ACTION                                           | COMPLETION TIME                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------|
| <p>A. [ One steam supply to turbine driven AFW pump inoperable.</p> <p><u>OR</u></p> <p><b>- NOTE -</b><br/>Only applicable if MODE 2 has not been entered following refueling.</p> <p>One turbine driven AFW pump inoperable in MODE 3 following refueling.</p> | <p>A.1 Restore affected equipment to OPERABLE status.</p> | <p>7 days ]</p> <p>AND</p> <p>10 days from discovery of failure to meet the LCO ]</p> |
| <p>B. One AFW train inoperable [for reasons other than Condition A] in MODE 1, 2, or 3.</p>                                                                                                                                                                      | <p>B.1 Restore AFW train to OPERABLE status.</p>          | <p>72 hours</p> <p>AND</p> <p>[10 days from discovery of failure to meet the LCO]</p> |

## ACTIONS (continued)

| CONDITION                        | REQUIRED ACTION                                                                                                                                                                                                                                                                                                                                                                                                                      | COMPLETION TIME                                                                                                                                                                                                    |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                  | A.3 Restore [required] offsite circuit to OPERABLE status.                                                                                                                                                                                                                                                                                                                                                                           | 72 hours<br><del>AND<br/>6 days from discovery of failure to meet LCO</del>                                                                                                                                        |
| B. One [required] DG inoperable. | <p>B.1 Perform SR 3.8.1.1 for the OPERABLE [required] offsite circuit(s).</p> <p><u>AND</u></p> <p>B.2 Declare required feature(s) supported by the inoperable DG inoperable when its redundant required feature(s) is inoperable.</p> <p><u>AND</u></p> <p>B.3.1 Determine OPERABLE DG(s) is not inoperable due to common cause failure.</p> <p><u>OR</u></p> <p>B.3.2 Perform SR 3.8.1.2 for OPERABLE DG(s).</p> <p><u>AND</u></p> | <p>1 hour</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</p> <p>4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)</p> <p>[24] hours</p> <p>[24] hours</p> |

ACTIONS (continued)

| CONDITION                                                                                            | REQUIRED ACTION                                                                                                                                                                                                                                                                                                                             | COMPLETION TIME                                                                                                       |
|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
|                                                                                                      | B.4 Restore [required] DG to OPERABLE status.                                                                                                                                                                                                                                                                                               | 72 hours<br><del>AND<br/>           6 days from discovery of failure to meet LCO</del>                                |
| C. Two [required] offsite circuits inoperable.                                                       | C.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.<br><br><u>AND</u><br><br>C.2 Restore one [required] offsite circuit to OPERABLE status.                                                                                                                                                    | 12 hours from discovery of Condition C concurrent with inoperability of redundant required feature(s)<br><br>24 hours |
| D. One [required] offsite circuit inoperable.<br><br><u>AND</u><br><br>One [required] DG inoperable. | -----<br>- NOTE -<br>Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition D is entered with no AC power source to any train.<br>-----<br><br>D.1 Restore [required] offsite circuits to OPERABLE status.<br><br><u>OR</u><br><br>D.2 Restore [required] DG to OPERABLE status. | 12 hours<br><br>12 hours                                                                                              |
| E. Two [required] DGs inoperable.                                                                    | E.1 Restore one [required] DG to OPERABLE status.                                                                                                                                                                                                                                                                                           | 2 hours                                                                                                               |

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems - Operating

LCO 3.8.9 Train A and Train B AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE.

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

ACTIONS

| CONDITION                                                                     | REQUIRED ACTION                                                                                                                                                                                                                                                                                                                                                                | COMPLETION TIME                                                                                          |
|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| <p>A. One or more AC electrical power distribution subsystems inoperable.</p> | <p style="text-align: center;">-----<br/> <b>- NOTE -</b><br/>                     Enter applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," for DC trains made inoperable by inoperable power distribution subsystems.<br/>                     -----</p> <p>A.1 Restore AC electrical power distribution subsystem(s) to OPERABLE status.</p> | <p>8 hours</p> <p><u>AND</u><br/>                     16 hours from discovery of failure to meet LCO</p> |
| <p>B. One or more AC vital bus inoperable.</p>                                | <p>B.1 Restore AC vital bus subsystem(s) to OPERABLE status.</p>                                                                                                                                                                                                                                                                                                               | <p>2 hours</p> <p><u>AND</u><br/>                     16 hours from discovery of failure to meet LCO</p> |

## ACTIONS (continued)

| CONDITION                                                                                                    | REQUIRED ACTION                                                               | COMPLETION TIME                                                         |
|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| C. One or more DC electrical power distribution subsystem inoperable.                                        | C.1 Restore DC electrical power distribution subsystem(s) to OPERABLE status. | 2 hours<br><u>AND</u><br>16 hours from discovery of failure to meet LCO |
| D. Required Action and associated Completion Time not met.                                                   | D.1 Be in MODE 3.<br><u>AND</u><br>D.2 Be in MODE 5.                          | 6 hours<br><br>36 hours                                                 |
| E. Two or more electrical power distribution subsystems inoperable that result in a loss of safety function. | E.1 Enter LCO 3.0.3.                                                          | Immediately                                                             |

## SURVEILLANCE REQUIREMENTS

| SURVEILLANCE                                                                                                                              | FREQUENCY |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| SR 3.8.9.1 Verify correct breaker alignments and voltage to [required] AC, DC, and AC vital bus electrical power distribution subsystems. | 7 days    |

Containment Spray and Cooling Systems (Atmospheric and Dual)  
B 3.6.6A

BASES

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APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment and an increase in containment pressure and temperature, requiring the operation of the containment spray trains and containment cooling trains.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Thus, the Containment Spray and Containment Cooling systems are not required to be OPERABLE in MODES 5 and 6.

---

ACTIONS

A.1

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

~~The 10 day portion of the Completion Time for Required Action A.1 is based upon engineering judgment. It takes into account the low probability of coincident entry into two Conditions in this Specification coupled with the low probability of an accident occurring during this time. Refer to Section 1.3, "Completion Times," for a more detailed discussion of the purpose of the "from discovery of failure to meet the LCO" portion of the Completion Time.~~

B.1 and B.2

If the inoperable containment spray train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 84 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 plant systems. The extended interval to reach MODE 5 allows additional time for the restoration of the containment spray train and is reasonable when considering that the driving force for a release of radioactive material from the Reactor Coolant System is reduced in MODE 3.

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## BASES

## ACTIONS (continued)

C.1

With one required containment cooling train inoperable, the inoperable containment cooling train must be restored to OPERABLE status within 7 days. The remaining OPERABLE containment spray and cooling components provide iodine removal capabilities and are capable of providing at least 100% of the heat removal needs after an accident. The 7 day Completion Time was developed taking into account the redundant heat removal capabilities afforded by combinations of the Containment Spray System and Containment Cooling System and the low probability of a DBA occurring during this period.

The 10 day portion of the Completion Time for Required Action C.1 is based upon engineering judgment. It takes into account the low probability of coincident entry into two Conditions in this Specification coupled with the low probability of an accident occurring during this time. Refer to Section 1.3 for a more detailed discussion of the purpose of the "from discovery of failure to meet the LCO" portion of the Completion Time.

D.1

With two required containment cooling trains inoperable, one of the required containment cooling trains must be restored to OPERABLE status within 72 hours. The components in this degraded condition provide iodine removal capabilities and are capable of providing at least 100% of the heat removal needs after an accident. The 72 hour Completion Time was developed taking into account the redundant heat removal capabilities afforded by combinations of the Containment Spray System and Containment Cooling System, the iodine removal function of the Containment Spray System, and the low probability of a DBA occurring during this period.

E.1 and E.2

If the Required Actions and associated Completion Times of Condition C or D of this LCO are not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

## BASES

## ACTIONS (continued)

containment spray train inoperable) after an accident. The 7 day Completion Time was developed taking into account the redundant heat removal capabilities afforded by combinations of the Containment Spray System and Containment Cooling System and the low probability of a DBA occurring during this period.

The 14 day portion of the Completion Time for Required Action A.1 is based upon engineering judgment. It takes into account the low probability of coincident entry into two Conditions in this Specification coupled with the low probability of an accident occurring during this time. Refer to Section 1.3, "Completion Times," for a more detailed discussion of the purpose of the "from discovery of failure to meet the LCO" portion of the Completion Time.

B.1

With one required containment cooling train inoperable, the inoperable containment cooling train must be restored to OPERABLE status within 7 days. The components in this degraded condition are capable of providing greater than 100% of the heat removal needs (for the condition of one containment cooling train inoperable) after an accident. The 7 day Completion Time was developed based on the same reasons as those for Required Action A.1.

The 14 day portion of the Completion Time for Required Action B.1 is based upon engineering judgment. It takes into account the low probability of coincident entry into two Conditions in this Specification coupled with the low probability of an accident occurring during this time. Refer to Section 1.3 for a more detailed discussion of the purpose of the "from discovery of failure to meet the LCO" portion of the Completion Time.

C.1

With two required containment spray trains inoperable, one of the required containment spray trains must be restored to OPERABLE status within 72 hours. The components in this degraded condition are capable of providing greater than 100% of the heat removal needs after an accident. The 72 hour Completion Time was developed taking into account the redundant heat removal capabilities afforded by combinations of the Containment Spray System and Containment Cooling System and the low probability of a DBA occurring during this period.

## BASES

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APPLICABILITY (continued)

generator secondary inventory, lost as the unit cools to MODE 4 conditions.

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

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

---

ACTIONS[ A.1

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

- a. For the inoperability of a steam supply to the turbine driven AFW pump, the 7 day Completion time is reasonable since there is a redundant steam supply line for the turbine driven pump.
- b. For the inoperability of a turbine driven AFW pump while in MODE 3 immediately subsequent to a refueling outage, the 7 day Completion time is reasonable due to the minimal decay heat levels in this situation.
- c. For both the inoperability of a steam supply line to the turbine driven pump and an inoperable turbine driven AFW pump while in MODE 3 immediately following a refueling outage, the 7 day Completion time is reasonable due to the availability of redundant OPERABLE motor driven AFW pumps; and due to the low probability of an event requiring the use of the turbine driven AFW pump.

The second Completion Time for Required Action A.1 establishes a limit on the maximum time allowed for any combination of Conditions to be inoperable during any continuous failure to meet this LCO.

The 10 day Completion Time provides a limitation time allowed in this 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 7 days and 10 days dictates that both Completion Times apply simultaneously and the more restrictive must be met.

## BASES

## ACTIONS (continued)

Condition A is modified by a Note which limits the applicability of the Condition to when the unit has not entered MODE 2 following a refueling. Condition A allows one AFW train to be inoperable for 7 days vice the 72 hour Completion Time in Condition B. This longer Completion Time is based on the reduced decay heat following refueling and prior to the reactor being critical. ]

B.1

With one of the required AFW trains (pump or flow path) inoperable, action must be taken to restore OPERABLE status within 72 hours. This Condition includes the loss of two steam supply lines to the turbine driven AFW pump. The 72 hour Completion Time is reasonable based on the redundant capabilities afforded by the AFW System, the time needed for repairs, and the low probability of a DBA event occurring during this period. Two AFW pumps and flow paths remain to supply feedwater to the steam generators. The second Completion Time for Required Action B.1 establishes a limit on the maximum time allowed for any combination of Conditions to be inoperable during any continuous failure to meet this LCO.

The 10 day Completion Time provides a limitation time allowed in this 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 72 hours and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.

C.1 and C.2

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

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

In MODE 4, with [two AFW trains inoperable in MODES 1, 2, and 3], operation is allowed to continue because only one motor driven AFW pump is required in accordance with the Note that modifies the LCO.

## BASES

## ACTIONS (continued)

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.

A.3

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours. With one offsite circuit inoperable, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the unit safety systems. In this Condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E Distribution System.

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.

The second Completion Time for Required Action A.3 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 72 hours. This could lead to a total of 144 hours, since initial failure to meet the LCO, to restore the offsite circuit. At this time, a DG could again become inoperable, the circuit restored OPERABLE, and an additional 72 hours (for a total of 9 days) allowed prior to complete restoration of the LCO. The 6 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 6 day Completion Time means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.

As in Required Action A.2, 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.

## BASES

## ACTIONS (continued)

According to Generic Letter 84-15 (Ref. 7), [24] hours is reasonable to confirm that the OPERABLE DG(s) is not affected by the same problem as the inoperable DG.

B.4

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition B for a period that should not exceed 72 hours.

In Condition B, the remaining OPERABLE DG and offsite circuits 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.

The second Completion Time for Required Action B.4 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, an offsite circuit is inoperable and that circuit is subsequently returned OPERABLE, the LCO may already have been not met for up to 72 hours. This could lead to a total of 144 hours, since initial failure to meet the LCO, to restore the DG. At this time, an offsite circuit could again become inoperable, the DG restored OPERABLE, and an additional 72 hours (for a total of 9 days) allowed prior to complete restoration of the LCO. The 6 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 72 hour and 6 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.

As in Required Action B.2, 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 and C.2

Required Action C.1, which applies when two offsite circuits are inoperable, is intended to provide assurance that an event with a coincident single failure will not result in a complete loss of redundant required safety functions. The Completion Time for this failure of

## BASES

## ACTIONS (continued)

buses, load centers, motor control centers, and distribution panels must be restored to OPERABLE status within 8 hours.

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

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.

Required Action A.1 is modified by a Note that requires the applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," to be entered for DC trains made inoperable by inoperable power distribution subsystems. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components. Inoperability

## BASES

## ACTIONS (continued)

- c. The potential for an event in conjunction with a single failure of a redundant component.

The 2 hour Completion Time takes into account the importance to safety of restoring the AC vital bus to OPERABLE status, the redundant capability afforded by the other OPERABLE vital buses, and the low probability of a DBA occurring during this period.

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 vital bus distribution system. At this time, an AC train could again become inoperable, and vital 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 or more DC buses or distribution panels inoperable, and a loss of function has not yet occurred, the remaining DC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining DC electrical power distribution subsystem could result in the minimum required ESF functions not being supported. Therefore, the [required] DC buses and distribution panels must be restored to OPERABLE status within 2 hours by powering the bus from the associated battery or charger.

Condition C represents one or more DC buses or distribution panels without adequate DC power; potentially both with the battery significantly degraded and the associated charger nonfunctioning. In this situation, the unit is significantly more vulnerable to a complete loss of all DC



## BASES

## ACTIONS (continued)

power. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for loss of power to the remaining trains and restoring power to the affected train.

This 2 hour limit is more conservative than Completion Times allowed for the vast majority of components which would be without power. Taking exception to LCO 3.0.2 for components without adequate DC power, which would have Required Action Completion Times shorter than 2 hours, is acceptable because of:

- a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) while allowing stable operations to continue,
- b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required Actions for components without DC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train, and
- c. The potential for an event in conjunction with a single failure of a redundant component.

The 2 hour Completion Time for DC buses is consistent with Regulatory Guide 1.93 (Ref. 3).

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 train 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.

### 1.3 Completion Times

---

#### DESCRIPTION (continued)

- b. Must remain inoperable or not within limits after the first inoperability is resolved.

The total Completion Time allowed for completing a Required Action to address the subsequent inoperability shall be limited to the more restrictive of either:

- a. The stated Completion Time, as measured from the initial entry into the Condition, plus an additional 24 hours or
- b. The stated Completion Time as measured from discovery of the subsequent inoperability.

The above Completion Time extensions do not apply to those Specifications that have exceptions that allow completely separate re-entry into the Condition (for each division, subsystem, component, or variable expressed in the Condition) and separate tracking of Completion Times based on this re-entry. These exceptions are stated in individual Specifications.

The above Completion Time extension does not apply to a Completion Time with a modified "time zero." This modified "time zero" may be expressed as a repetitive time (i.e., "once per 8 hours," where the Completion Time is referenced from a previous completion of the Required Action versus the time of Condition entry) or as a time modified by the phrase "from discovery . . ." Example 1.3-3 illustrates one use of this type of Completion Time. The 10 day Completion Time specified for Condition A and B in Example 1.3-3 may not be extended.

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#### EXAMPLES

The following examples illustrate the use of Completion Times with different types of Conditions and changing Conditions.

1.3 Completion Times

EXAMPLES (continued)

On restoring one of the pumps to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first pump was declared inoperable. This Completion Time may be extended if the pump restored to OPERABLE status was the first inoperable pump. A 24 hour extension to the stated 7 days is allowed, provided this does not result in the second pump being inoperable for > 7 days.

EXAMPLE 1.3-3

ACTIONS

| CONDITION                                                                                         | REQUIRED ACTION                                                                                                               | COMPLETION TIME                                                             |
|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| A. One Function X subsystem inoperable.                                                           | A.1 Restore Function X subsystem to OPERABLE status.                                                                          | 7 days<br><u>AND</u><br>10 days from discovery of failure to meet the LCO   |
| B. One Function Y subsystem inoperable.                                                           | B.1 Restore Function Y subsystem to OPERABLE status.                                                                          | 72 hours<br><u>AND</u><br>10 days from discovery of failure to meet the LCO |
| C. One Function X subsystem inoperable.<br><br><u>AND</u><br>One Function Y subsystem inoperable. | C.1 Restore Function X subsystem to OPERABLE status.<br><br><u>OR</u><br>C.2 Restore Function Y subsystem to OPERABLE status. | 72 hours<br><br><br>72 hours                                                |

When one Function X subsystem and one Function Y subsystem are

### 1.3 Completion Times

#### EXAMPLES (continued)

inoperable, Condition A and Condition B are concurrently applicable. The Completion Times for Condition A and Condition B are tracked separately for each subsystem starting from the time each subsystem was declared inoperable and the Condition was entered. A separate Completion Time is established for Condition C and tracked from the time the second subsystem was declared inoperable (i.e., the time the situation described in Condition C was discovered).

If Required Action C.2 is completed within the specified Completion Time, Conditions B and C are exited. If the Completion Time for Required Action A.1 has not expired, operation may continue in accordance with Condition A. The remaining Completion Time in Condition A is measured from the time the affected subsystem was declared inoperable (i.e., initial entry into Condition A).

The Completion Times of Conditions A and B are modified by a logical connector with a separate 10 day Completion Time measured from the time it was discovered the LCO was not met. In this example, without the separate Completion Time, it would be possible to alternate between Conditions A, B, and C in such a manner that operation could continue indefinitely without ever restoring systems to meet the LCO. The separate Completion Time modified by the phrase "from discovery of failure to meet the LCO" is designed to prevent indefinite continued operation while not meeting the LCO. This Completion Time allows for an exception to the normal "time zero" for beginning the Completion Time "clock." In this instance, the Completion Time "time zero" is specified as commencing at the time the LCO was initially not met, instead of at the time the associated Condition was entered.

## 1.3 Completion Times

## EXAMPLES (continued)

EXAMPLE

1.3-4

1.3-3

## ACTIONS

| CONDITION                                                  | REQUIRED ACTION                          | COMPLETION TIME |
|------------------------------------------------------------|------------------------------------------|-----------------|
| A. One or more valves inoperable.                          | A.1 Restore valve(s) to OPERABLE status. | 4 hours         |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                        | 12 hours        |
|                                                            | <u>AND</u><br>B.2 Be in MODE 4.          | 36 hours        |

A single Completion Time is used for any number of valves inoperable at the same time. The Completion Time associated with Condition A is based on the initial entry into Condition A and is not tracked on a per valve basis. Declaring subsequent valves inoperable, while Condition A is still in effect, does not trigger the tracking of separate Completion Times.

Once one of the valves has been restored to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first valve was declared inoperable. The Completion Time may be extended if the valve restored to OPERABLE status was the first inoperable valve. The Condition A Completion Time may be extended for up to 4 hours provided this does not result in any subsequent valve being inoperable for > 4 hours.

If the Completion Time of 4 hours (plus the extension) expires while one or more valves are still inoperable, Condition B is entered.

## 1.3 Completion Times

## EXAMPLES (continued)

EXAMPLE ~~1.3-5~~

1.3-4

## ACTIONS

**- NOTE -**

Separate Condition entry is allowed for each inoperable valve.

| CONDITION                                                  | REQUIRED ACTION                       | COMPLETION TIME |
|------------------------------------------------------------|---------------------------------------|-----------------|
| A. One or more valves inoperable.                          | A.1 Restore valve to OPERABLE status. | 4 hours         |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                     | 12 hours        |
|                                                            | <u>AND</u><br>B.2 Be in MODE 4.       | 36 hours        |

The Note above the ACTIONS Table is a method of modifying how the Completion Time is tracked. If this method of modifying how the Completion Time is tracked was applicable only to a specific Condition, the Note would appear in that Condition rather than at the top of the ACTIONS Table.

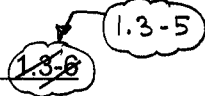
The Note allows Condition A to be entered separately for each inoperable valve, and Completion Times tracked on a per valve basis. When a valve is declared inoperable, Condition A is entered and its Completion Time starts. If subsequent valves are declared inoperable, Condition A is entered for each valve and separate Completion Times start and are tracked for each valve.

If the Completion Time associated with a valve in Condition A expires, Condition B is entered for that valve. If the Completion Times associated with subsequent valves in Condition A expire, Condition B is entered separately for each valve and separate Completion Times start and are tracked for each valve. If a valve that caused entry into Condition B is restored to OPERABLE status, Condition B is exited for that valve.

1.3 Completion Times

EXAMPLES (continued)

Since the Note in this example allows multiple Condition entry and tracking of separate Completion Times, Completion Time extensions do not apply.

EXAMPLE  1.3-6

ACTIONS

| CONDITION                                                  | REQUIRED ACTION                                     | COMPLETION TIME  |
|------------------------------------------------------------|-----------------------------------------------------|------------------|
| A. One channel inoperable.                                 | A.1 Perform SR 3.x.x.x.                             | Once per 8 hours |
|                                                            | <u>OR</u><br>A.2 Reduce THERMAL POWER to ≤ 50% RTP. | 8 hours          |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                                   | 12 hours         |

Entry into Condition A offers a choice between Required Action A.1 or A.2. Required Action A.1 has a "once per" Completion Time, which qualifies for the 25% extension, per SR 3.0.2, to each performance after the initial performance. The initial 8 hour interval of Required Action A.1 begins when Condition A is entered and the initial performance of Required Action A.1 must be complete within the first 8 hour interval. If Required Action A.1 is followed and the Required Action is not met within the Completion Time (plus the extension allowed by SR 3.0.2), Condition B is entered. If Required Action A.2 is followed and the Completion Time of 8 hours is not met, Condition B is entered.

If after entry into Condition B, Required Action A.1 or A.2 is met, Condition B is exited and operation may then continue in Condition A.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE ~~1.3.7~~ <sup>1.3-6</sup>

ACTIONS

| CONDITION                                                  | REQUIRED ACTION                                         | COMPLETION TIME                                     |
|------------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------|
| A. One subsystem inoperable.                               | A.1 Verify affected subsystem isolated.                 | 1 hour<br><u>AND</u><br>Once per 8 hours thereafter |
|                                                            | <u>AND</u><br>A.2 Restore subsystem to OPERABLE status. | 72 hours                                            |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                                       | 12 hours                                            |
|                                                            | <u>AND</u><br>B.2 Be in MODE 4.                         | 36 hours                                            |

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

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



## 3.1 REACTIVITY CONTROL SYSTEMS

## 3.1.7 Standby Liquid Control (SLC) System

LCO 3.1.7 Two SLC subsystems shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

## ACTIONS

| CONDITION                                                              | REQUIRED ACTION                                                  | COMPLETION TIME                                                          |
|------------------------------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------------------------------|
| A. [ Concentration of boron in solution not within limits but > [ ] .  | A.1 Restore concentration of boron in solution to within limits. | 72 hours ]<br>AND<br>10 days from discovery of failure to meet the LCO ] |
| B. One SLC subsystem inoperable [for reasons other than Condition A].  | B.1 Restore SLC subsystem to OPERABLE status.                    | 7 days<br>AND<br>10 days from discovery of failure to meet the LCO ]     |
| C. Two SLC subsystems inoperable [for reasons other than Condition A]. | C.1 Restore one SLC subsystem to OPERABLE status.                | 8 hours                                                                  |
| D. Required Action and associated Completion Time not met.             | D.1 Be in MODE 3.                                                | 12 hours                                                                 |

## ACTIONS (continued)

| CONDITION                        | REQUIRED ACTION                                                                                                                                                                                                                                                                                                                                                                                                   | COMPLETION TIME                                                                                                                                                                                         |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                  | A.3 Restore [required] offsite circuit to OPERABLE status.                                                                                                                                                                                                                                                                                                                                                        | 72 hours<br><u>AND</u><br>6 days from discovery of failure to meet LCO                                                                                                                                  |
| B. One [required] DG inoperable. | B.1 Perform SR 3.8.1.1 for OPERABLE [required] offsite circuit(s).<br><br><u>AND</u><br>B.2 Declare required feature(s), supported by the inoperable DG, inoperable when the redundant required feature(s) are inoperable.<br><br><u>AND</u><br>B.3.1 Determine OPERABLE DG(s) are not inoperable due to common cause failure.<br><br><u>OR</u><br>B.3.2 Perform SR 3.8.1.2 for OPERABLE DG(s).<br><br><u>AND</u> | 1 hour<br><br><u>AND</u><br>Once per 8 hours thereafter<br><br>4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)<br><br>[24] hours<br><br>[24] hours |

## ACTIONS (continued)

| CONDITION                                      | REQUIRED ACTION                                                                                                                                                                                                                                                                                                                       | COMPLETION TIME                                                                                                       |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
|                                                | B.4 Restore [required] DG to OPERABLE status.                                                                                                                                                                                                                                                                                         | 72 hours<br><u>AND</u><br>6 days from discovery of failure to meet LCO                                                |
| C. Two [required] offsite circuits inoperable. | C.1 Declare required feature(s) inoperable when the redundant required feature(s) are inoperable.<br><br><u>AND</u><br>C.2 Restore one [required] offsite circuit to OPERABLE status.                                                                                                                                                 | 12 hours from discovery of Condition C concurrent with inoperability of redundant required feature(s)<br><br>24 hours |
| D. One [required] offsite circuit inoperable.  | -----<br>- NOTE -<br>Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition D is entered with no AC power source to any division.<br>-----<br>D.1 Restore [required] offsite circuit to OPERABLE status.<br><br><u>OR</u><br>D.2 Restore [required] DG to OPERABLE status. | 12 hours<br><br>12 hours                                                                                              |
| E. Two [or three] [required] DGs inoperable.   | E.1 Restore one [required] DG to OPERABLE status.                                                                                                                                                                                                                                                                                     | 2 hours                                                                                                               |

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems - Operating

LCO 3.8.9 [Division 1] and [Division 2] AC, DC, [and AC vital bus] electrical power distribution subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION                                                                     | REQUIRED ACTION                                                                                                                                                                                                                                                                                                                                                                   | COMPLETION TIME                                                                                                          |
|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <p>A. One or more AC electrical power distribution subsystems inoperable.</p> | <p style="text-align: center;">-----<br/> <b>- NOTE -</b><br/>                     Enter applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," for DC divisions made inoperable by inoperable power distribution subsystems.<br/>                     -----</p> <p>A.1 Restore AC electrical power distribution subsystem(s) to OPERABLE status.</p> | <p>8 hours<br/>                     AND<br/>                     16 hours from discovery of failure to meet LCO</p>      |
| <p>B. [ One or more AC vital buses inoperable.</p>                            | <p>B.1 Restore AC vital bus distribution subsystem(s) to OPERABLE status.</p>                                                                                                                                                                                                                                                                                                     | <p>2 hours ]<br/>                     AND<br/>                     16 hours from discovery of failure, to meet LCO ]</p> |

ACTIONS (continued)

| CONDITION                                                                                             | REQUIRED ACTION                                                               | COMPLETION TIME                                                                  |
|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| C. One or more [station service] DC electrical power distribution subsystems inoperable.              | C.1 Restore DC electrical power distribution subsystem(s) to OPERABLE status. | 2 hours<br><br><del>AND<br/>18 hours from discovery of failure to meet LCO</del> |
| D. Required Action and associated Completion Time of Condition A, B, or C not met.                    | D.1 Be in MODE 3.                                                             | 12 hours                                                                         |
|                                                                                                       | <u>AND</u><br>D.2 Be in MODE 4.                                               | 36 hours                                                                         |
| E. [ One or more DG DC electrical power distribution subsystems inoperable.                           | E.1 Declare associated DG(s) inoperable.                                      | Immediately ]                                                                    |
| F. Two or more electrical power distribution subsystems inoperable that result in a loss of function. | F.1 Enter LCO 3.0.3.                                                          | Immediately                                                                      |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |                                                                                                                                  | FREQUENCY |
|--------------|----------------------------------------------------------------------------------------------------------------------------------|-----------|
| SR 3.8.9.1   | Verify correct breaker alignments and voltage to [required] AC, DC, [and AC vital bus] electrical power distribution subsystems. | 7 days    |

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**BASES**

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**LCO** The OPERABILITY of the SLC System provides backup capability for reactivity control independent of normal reactivity control provisions provided by the control rods. The OPERABILITY of the SLC System is based on the conditions of the borated solution in the storage tank and the availability of a flow path to the RPV, including the OPERABILITY of the pumps and valves. Two SLC subsystems are required to be OPERABLE; each contains an OPERABLE pump, an explosive valve, and associated piping, valves, and instruments and controls to ensure an OPERABLE flow path.

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**APPLICABILITY** In MODES 1 and 2, shutdown capability is required. In MODES 3 and 4, control rods are not able to be withdrawn since the reactor mode switch is in shutdown and a control rod block is applied. This provides adequate controls to ensure that the reactor remains subcritical. In MODE 5, only a single control rod can be withdrawn from a core cell containing fuel assemblies. Demonstration of adequate SDM (LCO 3.1.1, "SHUTDOWN MARGIN (SDM)") ensures that the reactor will not become critical. Therefore, the SLC System is not required to be OPERABLE when only a single control rod can be withdrawn.

---

**ACTIONS**A.1

If the boron solution concentration is less than the required limits for mitigation but greater than the concentration required for cold shutdown (original licensing basis), the concentration must be restored to within limits in 72 hours. It is not necessary under these conditions to enter Condition C for both SLC subsystems inoperable since they are capable of performing their original design basis function. Because of the low probability of an event and the fact that the SLC System capability still exists for vessel injection under these conditions, the allowed Completion Time of 72 hours is acceptable and provides adequate time to restore concentration to within limits.

The second Completion Time for Required Action A.1 establishes a limit on the maximum time allowed for any combination of concentration out of limits or inoperable SLC subsystems during any single contiguous occurrence of failing to meet the LCO. If Condition A is entered while, for instance, an SLC subsystem is inoperable and that subsystem is subsequently returned the OPERABLE, the LCO may already have been not met for up to 7 days. This situation could lead to a total duration of 10 days (7 days in Condition B, followed by 3 days in Condition A), since initial failure of the LCO, to restore the SLC System. Then an SLC subsystem could be found inoperable again, and concentration could be restored to within limits. This could continue indefinitely.

## BASES

## ACTIONS (continued)

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock," resulting in establishing the "time zero" at the time the LCO was initially not met instead of at the time Condition A was entered. The 10 day Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.

B.1

If one SLC subsystem is inoperable for reasons other than Condition A, the inoperable subsystem must be restored to OPERABLE status within 7 days. In this condition, the remaining OPERABLE subsystem is adequate to perform the shutdown function. However, the overall reliability is reduced because a single failure in the remaining OPERABLE subsystem could result in reduced SLC System shutdown capability. The 7 day Completion Time is based on the availability of an OPERABLE subsystem capable of performing the intended SLC System function and the low probability of a Design Basis Accident (DBA) or severe transient occurring concurrent with the failure of the Control Rod Drive (CRD) System to shut down the plant.

The second Completion Time for Required Action B.1 establishes a limit on the maximum time allowed for any combination of concentration out of limits or inoperable SLC subsystems during any single contiguous occurrence of failing to meet the LCO. If Condition B is entered while, for instance, concentration is out of limits, and is subsequently returned to within limits, the LCO may already have been not met for up to 3 days. This situation could lead to a total duration of 10 days (3 days in Condition A, followed by 7 days in Condition B), since initial failure of the LCO, to restore the SLC System. Then concentration could be found out of limits again, and the SLC subsystem could be restored to OPERABLE. This could continue indefinitely.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock," resulting in establishing the "time zero" at the time the LCO was initially not met instead of at the time Condition B was entered. The 10 day Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.

C.1

If both SLC subsystems are inoperable for reasons other than Condition A, at least one subsystem must be restored to OPERABLE status within 8 hours. The allowed Completion Time of 8 hours is

BASES

ACTIONS (continued)

Completion Time takes into account the component OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 24 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.

A.3

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours. With one offsite circuit inoperable, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the plant safety systems. In this condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E Distribution System.

The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, reasonable time for repairs, and the low probability of a DBA occurring during this period.

The second Completion Time for Required Action A.3 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 72 hours. This situation could lead to a total of 144 hours, since initial failure to meet the LCO, to restore the offsite circuit. At this time, a DG could again become inoperable, the circuit restored OPERABLE, and an additional 72 hours (for a total of 9 days) allowed prior to complete restoration of the LCO. The 6 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 hours and 6 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.

As in Required Action A.2, the Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This exception results in establishing the "time zero" at the time the LCO was initially not met, instead of at the time that Condition A was entered.



## BASES

## ACTIONS (continued)

The second Completion Time for Required Action B.4 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, an offsite circuit is inoperable and that circuit is subsequently restored OPERABLE, the LCO may already have been not met for up to 72 hours. This situation could lead to a total of 144 hours, since initial failure of the LCO, to restore the DG. At this time, an offsite circuit could again become inoperable, the DG restored OPERABLE, and an additional 72 hours (for a total of 9 days) allowed prior to complete restoration of the LCO. The 6 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 6 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive must be met.

As in Required Action B.2, the Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This exception results in establishing the "time zero" at the time that the LCO was initially not met, instead of the time that Condition B was entered.

C.1 and C.2

Required Action C.1 addresses actions to be taken in the event of inoperability of redundant required features concurrent with inoperability of two offsite circuits. Required Action C.1 reduces the vulnerability to a loss of function. The Completion Time for taking these actions is reduced to 12 hours from that allowed with one division without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that two complete safety divisions are OPERABLE. When a concurrent redundant required feature failure exists, this assumption is not the case, and a shorter Completion Time of 12 hours is appropriate. These features are designed with redundant safety related divisions, (i.e., single division systems are not included in the list). Redundant required features failures consist of any of these features that are inoperable because any inoperability is on a division redundant to a division with inoperable offsite circuits.

## BASES

## ACTIONS (continued)

minimum required ESF functions not being supported. Therefore, the required AC buses, load centers, motor control centers, and distribution panels must be restored to OPERABLE status within 8 hours.

The 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 operators' 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:

- a. There is a potential for decreased safety if the unit operators' 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.
- b. The potential for an event in conjunction with a single failure of a redundant component in the division with AC power. (The redundant component is verified OPERABLE in accordance with Specification 5.5.12, "Safety Function Determination Program (SFDP).")

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 returned OPERABLE, this LCO may already have been not met for up to 2 hours. This situation could lead to a total duration 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 could be 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 results in establishing the "time zero" at the time this LCO was initially not met, instead of at 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.

Required Action A.1 is modified by a Note that requires the applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources -

## BASES

## ACTIONS (continued)

sufficient time for the operators to perform the necessary evaluations and actions to restore power to the affected division, and

- c. The potential for an event in conjunction with a single failure of a redundant component.

The 2 hour Completion Time takes into account the importance to safety of restoring the AC vital bus to OPERABLE status, the redundant capability afforded by the other OPERABLE vital buses, and the low probability of a DBA occurring during this period. ]

The second Completion Time for Required Action B.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 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 situation could lead to a total duration of 10 hours, since initial failure of the LCO, to restore the vital bus distribution system. At this time an AC division could again become inoperable, and vital bus distribution could be 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 allowance results in establishing the "time zero" at the time that the LCO was initially not met, instead of at the time that 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 or more station service DC bus or distribution panel inoperable, and a loss of function has not yet occurred, 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 required DC buses and distribution panels must be restored to OPERABLE status within 2 hours by powering the bus from the associated battery or charger.

## BASES

## ACTIONS (continued)

Condition C represents one or more DC buses or distribution panels without adequate DC power, potentially with both the battery significantly degraded and the associated charger nonfunctioning. In this situation the plant is significantly more vulnerable to a complete loss of all DC power. It is, therefore, imperative that the operator's attention focus on stabilizing the plant, minimizing the potential for loss of power to the remaining divisions, and restoring power to the affected division.

This 2 hour limit is more conservative than Completion Times allowed for the majority of components that would be without power. Taking exception to LCO 3.0.2 for components without adequate DC power, which would have Required Action Completion Times shorter than 2 hours, is acceptable because of:

- a. The potential for decreased safety when requiring a change in plant conditions (i.e., requiring a shutdown) while not allowing stable operations to continue,
- b. The potential for decreased safety when requiring entry into numerous applicable Conditions and Required Actions for components without DC power, while not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected division,
- c. The potential for an event in conjunction with a single failure of a redundant component.

The 2 hour Completion Time for DC buses is consistent with Regulatory Guide 1.93 (Ref. 3).

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 restored OPERABLE, the LCO may already have been not met for up to 8 hours. This situation could lead to a total duration of 10 hours, since initial failure of the LCO, to restore the DC distribution system. At this time, an AC division could again become inoperable, and DC distribution could be 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 allowance results in

## BASES

## ACTIONS (continued)

establishing the "time zero" at the time the LCO was initially not met, instead of at the time Condition C was entered. The 16 hour Completion Time is an acceptable limitation on this potential of failing to meet the LCO indefinitely.

D.1 and D.2

If the inoperable distribution subsystem cannot be restored to OPERABLE status within the associated Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

E.1

With one or more DG DC buses inoperable, the associated DG(s) may be incapable of performing their intended functions. In this situation the DG(s) must be immediately declared inoperable. This action also requires entry into applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources - Operating."

F.1

Condition F corresponds to a level of degradation in the electrical distribution system that causes a required safety function to be lost. When more than one AC or DC electrical power distribution subsystem is lost, and this results in the loss of a required function, the plant is in a condition outside the accident analysis. Therefore, no additional time is justified for continued operation. LCO 3.0.3 must be entered immediately to commence a controlled shutdown.

SURVEILLANCE  
REQUIREMENTSSR 3.8.9.1

This Surveillance verifies that the AC and DC, electrical power distribution systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical buses are maintained, and the appropriate voltage is available to each required bus. The verification of proper voltage availability on the buses ensures that the required voltage is readily available for motive as well as control functions for

### 1.3 Completion Times

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#### DESCRIPTION (continued)

- b. Must remain inoperable or not within limits after the first inoperability is resolved.

The total Completion Time allowed for completing a Required Action to address the subsequent inoperability shall be limited to the more restrictive of either:

- a. The stated Completion Time, as measured from the initial entry into the Condition, plus an additional 24 hours or
- b. The stated Completion Time as measured from discovery of the subsequent inoperability.

The above Completion Time extensions do not apply to those Specifications that have exceptions that allow completely separate re-entry into the Condition (for each division, subsystem, component, or variable expressed in the Condition) and separate tracking of Completion Times based on this re-entry. These exceptions are stated in individual Specifications.

The above Completion Time extension does not apply to a Completion Time with a modified "time zero." This modified "time zero" may be expressed as a repetitive time (i.e., "once per 8 hours," where the Completion Time is referenced from a previous completion of the Required Action versus the time of Condition entry) or as a time modified by the phrase "from discovery . . ." Example 1.3-3 illustrates one use of this type of Completion Time. The 10 day Completion Time specified for Conditions A and B in Example 1.3-3 may not be extended.

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#### EXAMPLES

The following examples illustrate the use of Completion Times with different types of Conditions and changing Conditions.

1.3 Completion Times

EXAMPLES (continued)

**EXAMPLE 1.3-3**

| ACTIONS                                                                                           |                                                                                                                               |                                                                             |
|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| CONDITION                                                                                         | REQUIRED ACTION                                                                                                               | COMPLETION TIME                                                             |
| A. One Function X subsystem inoperable.                                                           | A.1 Restore Function X subsystem to OPERABLE status.                                                                          | 7 days<br><u>AND</u><br>10 days from discovery of failure to meet the LCO   |
| B. One Function Y subsystem inoperable.                                                           | B.1 Restore Function Y subsystem to OPERABLE status.                                                                          | 72 hours<br><u>AND</u><br>10 days from discovery of failure to meet the LCO |
| C. One Function X subsystem inoperable.<br><br><u>AND</u><br>One Function Y subsystem inoperable. | C.1 Restore Function X subsystem to OPERABLE status.<br><br><u>OR</u><br>C.2 Restore Function Y subsystem to OPERABLE status. | 72 hours<br><br>72 hours                                                    |

When one Function X subsystem and one Function Y subsystem are inoperable, Condition A and Condition B are concurrently applicable. The Completion Times for Condition A and Condition B are tracked separately for each subsystem starting from the time each subsystem was declared inoperable and the Condition was entered. A separate Completion Time is established for Condition C and tracked from the time the second subsystem was declared inoperable (i.e., the time the situation described in Condition C was discovered).

### 1.3 Completion Times

#### EXAMPLES (continued)

If Required Action C.2 is completed within the specified Completion Time, Conditions B and C are exited. If the Completion Time for Required Action A.1 has not expired, operation may continue in accordance with Condition A. The remaining Completion Time in Condition A is measured from the time the affected subsystem was declared inoperable (i.e., initial entry into Condition A).

The Completion Times of Conditions A and B are modified by a logical connector with a separate 10 day Completion Time measured from the time it was discovered the LCO was not met. In this example, without the separate Completion Time, it would be possible to alternate between Conditions A, B, and C in such a manner that operation could continue indefinitely without ever restoring systems to meet the LCO. The separate Completion Time modified by the phrase "from discovery of failure to meet the LCO" is designed to prevent indefinite continued operation while not meeting the LCO. This Completion Time allows for an exception to the normal "time zero" for beginning the Completion Time "clock." In this instance, the Completion Time "time zero" is specified as commencing at the time the LCO was initially not met, instead of at the time the associated Condition was entered.



1.3 Completion Times

EXAMPLES (continued)

EXAMPLE ~~1.3-4~~ <sup>1.3-3</sup>

ACTIONS

| CONDITION                                                  | REQUIRED ACTION                          | COMPLETION TIME |
|------------------------------------------------------------|------------------------------------------|-----------------|
| A. One or more valves inoperable.                          | A.1 Restore valve(s) to OPERABLE status. | 4 hours         |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                        | 12 hours        |
|                                                            | <u>AND</u><br>B.2 Be in MODE 4.          | 36 hours        |

A single Completion Time is used for any number of valves inoperable at the same time. The Completion Time associated with Condition A is based on the initial entry into Condition A and is not tracked on a per valve basis. Declaring subsequent valves inoperable, while Condition A is still in effect, does not trigger the tracking of separate Completion Times.

Once one of the valves has been restored to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first valve was declared inoperable. The Completion Time may be extended if the valve restored to OPERABLE status was the first inoperable valve. The Condition A Completion Time may be extended for up to 4 hours provided this does not result in any subsequent valve being inoperable for > 4 hours.

If the Completion Time of 4 hours (plus the extension) expires while one or more valves are still inoperable, Condition B, is entered.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE ~~1.3-5~~ <sup>1.3-4</sup>

ACTIONS

- NOTE -

Separate Condition entry is allowed for each inoperable valve.

| CONDITION                                                  | REQUIRED ACTION                       | COMPLETION TIME |
|------------------------------------------------------------|---------------------------------------|-----------------|
| A. One or more valves inoperable.                          | A.1 Restore valve to OPERABLE status. | 4 hours         |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                     | 12 hours        |
|                                                            | <u>AND</u><br>B.2 Be in MODE 4.       | 36 hours        |

The Note above the ACTIONS Table is a method of modifying how the Completion Time is tracked. If this method of modifying how the Completion Time is tracked was applicable only to a specific Condition, the Note would appear in that Condition rather than at the top of the ACTIONS Table.

The Note allows Condition A to be entered separately for each inoperable valve, and Completion Times tracked on a per valve basis. When a valve is declared inoperable, Condition A is entered and its Completion Time starts. If subsequent valves are declared inoperable, Condition A is entered for each valve and separate Completion Times start and are tracked for each valve.

If the Completion Time associated with a valve in Condition A expires, Condition B is entered for that valve. If the Completion Times associated with subsequent valves in Condition A expire, Condition B is entered separately for each valve and separate Completion Times start and are tracked for each valve. If a valve that caused entry into Condition B is restored to OPERABLE status, Condition B is exited for that valve.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE ~~1.3-6~~ 1.3-5

ACTIONS

| CONDITION                                                  | REQUIRED ACTION                                           | COMPLETION TIME  |
|------------------------------------------------------------|-----------------------------------------------------------|------------------|
| A. One channel inoperable.                                 | A.1 Perform SR 3.x.x.x.                                   | Once per 8 hours |
|                                                            | <u>OR</u><br>A.2 Reduce THERMAL POWER to $\leq 50\%$ RTP. | 8 hours          |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                                         | 12 hours         |

Entry into Condition A offers a choice between Required Action A.1 or A.2. Required Action A.1 has a "once per" Completion Time, which qualifies for the 25% extension, per SR 3.0.2, to each performance after the initial performance. The initial 8 hour interval of Required Action A.1 begins when Condition A is entered and the initial performance of Required Action A.1 must be complete within the first 8 hour interval. If Required Action A.1 is followed and the Required Action is not met within the Completion Time (plus the extension allowed by SR 3.0.2), Condition B is entered. If Required Action A.2 is followed and the Completion Time of 8 hours is not met, Condition B is entered.

If after entry into Condition B, Required Action A.1 or A.2 is met, Condition B is exited and operation may then continue in Condition A.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE ~~1.3-2~~ <sup>1.3-6</sup>

ACTIONS

| CONDITION                                                  | REQUIRED ACTION                           | COMPLETION TIME                                             |
|------------------------------------------------------------|-------------------------------------------|-------------------------------------------------------------|
| A. One subsystem inoperable.                               | A.1 Verify affected subsystem isolated.   | 1 hour<br><br><u>AND</u><br><br>Once per 8 hours thereafter |
|                                                            | A.2 Restore subsystem to OPERABLE status. | 72 hours                                                    |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                         | 12 hours                                                    |
|                                                            | B.2 Be in MODE 4.                         | 36 hours                                                    |

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

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

## 3.1 REACTIVITY CONTROL SYSTEMS

## 3.1.7 Standby Liquid Control (SLC) System

LCO 3.1.7 Two SLC subsystems shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

## ACTIONS

| CONDITION                                                              | REQUIRED ACTION                                                  | COMPLETION TIME                                                          |
|------------------------------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------------------------------|
| A. [ Concentration of boron in solution not within limits but > [ ].   | A.1 Restore concentration of boron in solution to within limits. | 72 hours ]<br>AND<br>10 days from discovery of failure to meet the LCO ] |
| B. One SLC subsystem inoperable [for reasons other than Condition A].  | B.1 Restore SLC subsystem to OPERABLE status.                    | 7 days<br>AND<br>10 days from discovery of failure to meet the LCO ]     |
| C. Two SLC subsystems inoperable [for reasons other than Condition A]. | C.1 Restore one SLC subsystem to OPERABLE status.                | 8 hours                                                                  |
| D. Required Action and associated Completion Time not met.             | D.1 Be in MODE 3.                                                | 12 hours                                                                 |

## ACTIONS (continued)

| CONDITION                               | REQUIRED ACTION                                                                                                                                                                                                                                         | COMPLETION TIME                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         | <p>A.2 Declare required feature(s) with no offsite power available inoperable when the redundant required feature(s) are inoperable.</p> <p><u>AND</u></p> <p>A.3 Restore [required] offsite circuit to OPERABLE status.</p>                            | <p>24 hours from discovery of no offsite power to one division concurrent with inoperability of redundant required feature(s)</p> <p>72 hours</p> <p><u>AND</u></p> <p>24 hours from discovery of two divisions with no offsite power</p> <p><u>AND</u></p> <p><del>6 days from discovery of failure to meet LCO</del></p> |
| <p>B. One [required] DG inoperable.</p> | <p>B.1 Perform SR 3.8.1.1 for OPERABLE [required] offsite circuit(s).</p> <p><u>AND</u></p> <p>B.2 Declare required feature(s), supported by the inoperable DG, inoperable when the redundant required feature(s) are inoperable.</p> <p><u>AND</u></p> | <p>1 hour</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</p> <p>4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)</p>                                                                                                                                             |

ACTIONS (continued)

| CONDITION                                      | REQUIRED ACTION                                                                                                                                                                                                          | COMPLETION TIME                                                                                                               |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
|                                                | B.3.1 Determine OPERABLE DG(s) are not inoperable due to common cause failure.<br><br><u>OR</u><br><br>B.3.2 Perform SR 3.8.1.2 for OPERABLE DG(s).<br><br><u>AND</u><br><br>B.4 Restore required DG to OPERABLE status. | [24] hours<br><br>[24] hours<br><br>72 hours<br><br><del>AND</del><br><del>6 days from discovery of failure to meet LCO</del> |
| C. Two [required] offsite circuits inoperable. | C.1 Declare required feature(s) inoperable when the redundant required feature(s) are inoperable.<br><br><u>AND</u><br><br>C.2 Restore one [required] offsite circuit to OPERABLE status.                                | 12 hours from discovery of Condition C concurrent with inoperability of redundant required feature(s)<br><br>24 hours         |

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems - Operating

LCO 3.8.9 [Division 1], [Division 2], and [Division 3] AC, DC, [and AC vital bus] electrical power distribution subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION                                                                                        | REQUIRED ACTION                                                                                                                                                                                                                                                                                                                                                                                                   | COMPLETION TIME                                                                     |
|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <p>A. One or more [Division 1 and 2] AC electrical power distribution subsystems inoperable.</p> | <p style="text-align: center;">-----<br/>                     - NOTE -<br/>                     Enter applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," for DC divisions made inoperable by inoperable power distribution subsystems.<br/>                     -----</p> <p>A.1 Restore [Division 1 and 2] AC electrical power distribution subsystem(s) to OPERABLE status.</p> | <p>8 hours</p> <p>AND</p> <p>16 hours from discovery of failure to meet LCO</p>     |
| <p>B. [ One or more [Division 1 and 2] AC vital buses inoperable.</p>                            | <p>B.1 Restore [Division 1 and 2] AC vital bus distribution subsystem(s) to OPERABLE status.</p>                                                                                                                                                                                                                                                                                                                  | <p>2 hours ]</p> <p>AND</p> <p>16 hours from discovery of failure to meet LCO ]</p> |



## ACTIONS (continued)

| CONDITION                                                                                                | REQUIRED ACTION                                                                                  | COMPLETION TIME                                                         |
|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| C. One or more [Division 1 and 2] DC electrical power distribution subsystem inoperable.                 | C.1 Restore [Division 1 and 2] DC electrical power distribution subsystem(s) to OPERABLE status. | 2 hours<br><u>AND</u><br>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.                                                                                | 12 hours                                                                |
|                                                                                                          | <u>AND</u><br>D.2 Be in MODE 4.                                                                  | 36 hours                                                                |
| E. One or more [Division 3] AC, DC, or AC vital bus electrical power distribution subsystems inoperable. | E.1 Declare High Pressure Core Spray System [and 2C Standby Service Water System] inoperable.    | Immediately                                                             |
| F. Two or more electrical power distribution subsystems inoperable that result in a loss of function.    | F.1 Enter LCO 3.0.3.                                                                             | Immediately                                                             |

## SURVEILLANCE REQUIREMENTS

| SURVEILLANCE                                                                                                                                | FREQUENCY |
|---------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| SR 3.8.9.1 Verify correct breaker alignments and voltage to [required] AC, DC, [and AC vital bus] electrical power distribution subsystems. | 7 days    |

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**BASES**

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**LCO** The OPERABILITY of the SLC System provides backup capability for reactivity control, independent of normal reactivity control provisions provided by the control rods. The OPERABILITY of the SLC System is based on the conditions of the borated solution in the storage tank and the availability of a flow path to the RPV, including the OPERABILITY of the pumps and valves. Two SLC subsystems are required to be OPERABLE, each containing an OPERABLE pump, an explosive valve and associated piping, valves, and instruments and controls to ensure an OPERABLE flow path.

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**APPLICABILITY** In MODES 1 and 2, shutdown capability is required. In MODES 3 and 4, control rods are not able to be withdrawn since the reactor mode switch is in shutdown and a control rod block is applied. This provides adequate controls to ensure the reactor remains subcritical. In MODE 5, only a single control rod can be withdrawn from a core cell containing fuel assemblies. Demonstration of adequate SDM (LCO 3.1.1, "SHUTDOWN MARGIN (SDM)") ensures that the reactor will not become critical. Therefore, the SLC System is not required to be OPERABLE during these conditions, when only a single control rod can be withdrawn.

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**ACTIONS**A.1

If the boron solution concentration is less than the required limits for ATWS mitigation but greater than the concentration required for cold shutdown (original licensing basis), the concentration must be restored to within limits in 72 hours. It is not necessary under these conditions to enter Condition C for both SLC subsystems inoperable, since they are capable of performing their original design basis function. Because of the low probability of an ATWS event and that the SLC System capability still exists for vessel injection under these conditions, the allowed Completion Time of 72 hours is acceptable and provides adequate time to restore concentration to within limits.

~~The second Completion Time for Required Action A.1 establishes a limit on the maximum time allowed for any combination of concentration out of limits or inoperable SLC subsystems during any single contiguous occurrence of failing to meet the LCO. If Condition A is entered while, for instance, an SLC subsystem is inoperable and that subsystem is subsequently returned to OPERABLE, the LCO may already have been not met for up to 7 days. This situation could lead to a total duration of 10 days (7 days in Condition B, followed by 3 days in Condition A), since initial failure of the LCO, to restore the SLC System. Then an SLC subsystem could be found inoperable again, and concentration could be restored to within limits. This could continue indefinitely.~~

## BASES

## ACTIONS (continued)

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock", resulting in establishing the "time zero" at the time the LCO was initially not met instead of at the time Condition A was entered. The 10 day Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.

B.1

If one SLC System subsystem is inoperable for reasons other than Condition A, the inoperable subsystem must be restored to OPERABLE status within 7 days. In this condition, the remaining OPERABLE subsystem is adequate to perform the shutdown function. However, the overall reliability is reduced because a single failure in the remaining OPERABLE subsystem could result in reduced SLC System shutdown capability. The 7 day Completion Time is based on the availability of an OPERABLE subsystem capable of performing the intended SLC System function and the low probability of a Design Basis Accident (DBA) or severe transient occurring concurrent with the failure of the Control Rod Drive System to shut down the plant.

The second Completion Time for Required Action B.1 establishes a limit on the maximum time allowed for any combination of concentration out of limits or inoperable SLC subsystems during any single contiguous occurrence of failing to meet the LCO. If Condition B is entered while, for instance, concentration is out of limits, and is subsequently returned to within limits, the LCO may already have been not met of up to 3 days. This situation could lead to a total duration of 10 days (3 days in Condition A, followed by 7 days in Condition B), since initial failure of the LCO, to restore the SLC System. Then concentration could be found out of limits again, and the SLC subsystem could be restored to OPERABLE. This could continue indefinitely.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock", resulting in establishing the "time zero" at the time the LCO was initially not met instead of at the time Condition B was entered. The 10 day Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.

C.1

If both SLC subsystems are inoperable for reasons other than Condition A, at least one subsystem must be restored to OPERABLE status within 8 hours. The allowed Completion Time of 8 hours is

## BASES

## ACTIONS (continued)

A.3

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours.

This Completion Time assumes sufficient offsite power remains to power the minimum loads needed to respond to analyzed events. In the event more than one division is without offsite power, this assumption is not met. Therefore, the optional Completion Time is specified. Should two or more divisions be affected, the 24 hour Completion Time is conservative with respect to the Regulatory Guide assumptions supporting a 24 hour Completion Time for both offsite circuits inoperable. With one offsite circuit inoperable, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the plant safety systems. In this Condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E distribution system.

The Completion Time takes into account the capacity and capability of the remaining AC sources, reasonable time for repairs, and the low probability of a DBA occurring during this period.

The third Completion Time for Required Action A.3 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 72 hours. This situation could lead to a total of 144 hours, since initial failure to meet the LCO, to restore the offsite circuit. At this time, a DG could again become inoperable, the circuit restored OPERABLE, and an additional 72 hours (for a total of 9 days) allowed prior to complete restoration of the LCO. The 6 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 6 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive must be met.

As in Required Action A.2, the Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This exception results in establishing the "time zero" at the time the

## BASES

## ACTIONS (continued)

LCO was initially not met, instead of at the time that Condition A was entered.

B.1

To ensure a highly reliable power source remains, it is necessary to verify the availability of the remaining required offsite circuit on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions must then be entered.

B.2

Required Action B.2 is intended to provide assurance that a loss of offsite power, during the period that a DG is inoperable, does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related divisions (i.e., single division systems are not included, although, for this Required Action, Division 3 is considered redundant to Division 1 and 2 Emergency Core Cooling Systems (ECCS)). Redundant required features failures consist of inoperable features associated with a division redundant to the division that has an inoperable DG.

The Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

- a. An inoperable DG exists and
- b. A required feature on another division is inoperable.

If, at any time during the existence of this Condition (one DG inoperable), a required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

Discovering one required DG inoperable coincident with one or more required support or supported features, or both, that are associated with the OPERABLE DG(s), results in starting the Completion Time for the Required Action. Four hours from the discovery of these events existing

## BASES

## ACTIONS (continued)

72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, reasonable time for repairs, and low probability of a DBA occurring during this period.

The second Completion Time for Required Action B.4 established 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, an offsite circuit is inoperable and that circuit is subsequently restored OPERABLE, the LCO may already have been not met for up to 72 hours. This situation could lead to a total of 144 hours, since initial failure to meet the LCO, to restore the DG. At this time, an offsite circuit could again become inoperable, the DG restored OPERABLE, and an additional 72 hours (for a total of 9 days) allowed prior to complete restoration of the LCO. The 6 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 6 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.

As in Required Action B.2, the Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This exception results in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition B was entered.

C.1 and C.2

Required Action C.1 addresses actions to be taken in the event of concurrent failure of redundant required features. Required Action C.1 reduces the vulnerability to a loss of function. The Completion Time for taking these actions is reduced to 12 hours from that allowed with only one division without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that two complete safety divisions are OPERABLE. When a concurrent redundant required feature failure exists, this assumption is not the case, and a shorter Completion Time of 12 hours is appropriate. These features are designed with redundant safety related divisions (i.e., single division systems are not included in the list, although, for this Required Action, Division 3 is considered redundant to Division 1 and 2 ECCS). Redundant required features

## BASES

## ACTIONS (continued)

Condition, the unit is more vulnerable to a complete loss of AC power. It is, therefore, imperative that the unit operators' 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:

- a. There is potential for decreased safety if the unit operators' 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.
- b. The potential for an event in conjunction with a single failure of a redundant component in the division with AC power. (The redundant component is verified OPERABLE in accordance with Specification 5.5.12, "Safety Function Determination Program (SFDP).")

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 returned OPERABLE, the LCO may already have been not met for up to 2 hours. This situation could lead to a total duration 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 could be 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 results in establishing the "time zero" at the time the LCO was initially not met, instead of at 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.

Required Action A.1 is modified by a Note that requires the applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," to be entered for DC divisions made inoperable by inoperable power distribution subsystems. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components. Inoperability of a distribution system can result in loss of charging power to batteries and eventual loss of DC power. This Note ensures that the appropriate

## BASES

## ACTIONS (continued)

The 2 hour Completion Time takes into account the importance to safety of restoring the AC vital bus to OPERABLE status, the redundant capability afforded by the other OPERABLE vital buses, and the low probability of a DBA occurring during this period. (1)

The second Completion Time for Required Action B.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 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 situation could lead to a total duration of 10 hours, since initial failure of the LCO, for restoring the vital bus distribution system. At this time, an AC division could again become inoperable, and vital bus distribution could be restored to 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 allowance results in establishing the "time zero" at the time the LCO was initially not met, instead of at the time that Condition B was entered. The 16 hour Completion Time is an acceptable limitation on this potential of failing to meet the LCO indefinitely. ]

C.1

With one or more Division 1 and 2 DC buses or distribution panels in one [division] inoperable, and a loss of function has not yet occurred, the remaining DC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining DC electrical power distribution subsystems could result in the minimum required ESF functions not being supported. Therefore, the required DC buses and distribution panels must be restored to OPERABLE status within 2 hours by powering the bus from the associated battery or charger.

Condition C represents one or more DC buses or distribution panels without adequate DC power, potentially with both the battery significantly degraded and the associated charger nonfunctioning. In this situation, the plant is significantly more vulnerable to a complete loss of all DC power. It is, therefore, imperative that the operator's attention focus on



## BASES

## ACTIONS (continued)

stabilizing the plant, minimizing the potential for loss of power to the remaining divisions, and restoring power to the affected division.

This 2 hour limit is more conservative than Completion Times allowed for the majority of components that could be without power. Taking exception to LCO 3.0.2 for components without adequate DC power, that would have Required Action Completion Times shorter than 2 hours, is acceptable because of:

- a. The potential for decreased safety when requiring a change in plant conditions (i.e., requiring a shutdown) while not allowing stable operations to continue,
- b. The potential for decreased safety when requiring entry into numerous applicable Conditions and Required Actions for components without DC power while not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected division, and
- c. The potential for an event in conjunction with a single failure of a redundant component.

The 2 hour Completion Time for DC buses is consistent with Regulatory Guide 1.93 (Ref. 3).

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 situation could lead to a total duration of 10 hours, since initial failure of the LCO, to restore the DC distribution system. At this time, an AC division could again become inoperable, and DC distribution could be 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 allowance results 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 of failing to meet the LCO indefinitely.