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

Subject: Brunswick Steam Electric Plant, Unit Nos. 1 and 2  
Renewed Facility Operating License Nos. DPR-71 and DPR-62  
Docket Nos. 50-325 and 50-324  
Supplement to Response to Request for Additional Information - Application to  
Revise Technical Specifications to Adopt TSTF-439, "Eliminate Second  
Completion Times Limiting Time From Discovery of Failure To Meet an LCO"

References:

1. Letter from William R. Gideon (Duke Energy) to the U.S. Nuclear Regulatory Commission Document Control Desk, Application to Revise Technical Specifications to Adopt TSTF-439, "Eliminate Second Completion Times Limiting Time From Discovery of Failure To Meet an LCO," dated August 14, 2018, ADAMS Accession Number ML18227A535
2. E-Mail Capture from Dennis Galvin (NRC) to Art Zarembo (Duke Energy), Brunswick RAIs – LAR to Revise TSs to Adopt TSTF-439, "Eliminate Second Completion Times Limiting Time From Discovery of Failure To Meet an LCO" (EPID L 2018-LLA-0220), dated January 10, 2019, ADAMS Accession Number ML19010A387
3. Letter from William R. Gideon (Duke Energy) to the U.S. Nuclear Regulatory Commission Document Control Desk, Response to Request for Additional Information - Application to Revise Technical Specifications to Adopt TSTF-439, "Eliminate Second Completion Times Limiting Time From Discovery of Failure To Meet an LCO" dated February 8, 2019, ADAMS Accession Number ML19042A015

Ladies and Gentlemen:

By letter dated August 14, 2018 (i.e., Reference 1), Duke Energy Progress, LLC (Duke Energy), submitted a license amendment request (LAR) for the Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2. Consistent with Technical Specification Task Force Traveler 439 (TSTF-439), the proposed amendment deletes second Completion Times from the affected Required Actions contained in the Technical Specifications (TSs), along with removing the example contained in TS Section 1.3 and adding a discussion about alternating between Conditions. On January 10, 2019, (i.e., Reference 2), the NRC provided a request for additional information (RAI) regarding the LAR. Duke Energy's response to the RAI was submitted on February 8, 2019 (i.e., Reference 3).

The purpose of this submittal is to supplement the Duke Energy's February 8, 2019, RAI response. This submittal supersedes the February 8, 2019, submittal in its entirety.

This document contains no new regulatory commitments.

I declare, under penalty of perjury, that the foregoing is true and correct. Executed on May 16, 2019.

Sincerely,



William R. Gideon

MAT/mat

Enclosures:

1. Supplement to Response to Request for Additional Information
2. Proposed Technical Specification Bases Changes (Mark-Up) - Unit 1 (For Information Only)

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## **Supplement to Response to Request for Additional Information**

By letter dated August 14, 2018, Duke Energy Progress, LLC (Duke Energy), submitted a license amendment request (LAR) for the Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2. Consistent with Technical Specification Task Force Traveler 439 (TSTF-439), the proposed amendment deletes second Completion Times from the affected Required Actions contained in the Technical Specifications (TSs), along with removing the example contained in TS Section 1.3 and adding a discussion about alternating between Conditions. On January 10, 2019, the NRC provided a request for additional information (RAI) regarding the LAR. Duke Energy's response to the RAI was submitted on February 8, 2019.

The purpose of this submittal is to supplement the Duke Energy's February 8, 2019, RAI response. This submittal supersedes the February 8, 2019, submittal in its entirety.

### **Request for Additional Information**

TSTF-439, Revision 2 provides a discussion of each of the specifications affected by the TSTF that justifies deleting the second CTs from the specification in NUREG-1433. The licensee's application does not provide a comparable discussion for the proposed variations. For the specifications listed in the BSEP variations, TS 3.7.2, TS 3.8.1, and TS 3.8.7, provide a discussion similar to that in TSTF-439 for each specification to justify proposed deletions of second CTs. In particular, this plant-specific justification should address the following:

- a. For TS 3.7.2, Required Actions B.1, C.2, and E.1, the identified more restrictive change;
- b. For TS 3.8.1, Required Actions B.3, C.3, and D.5, as applicable, unique TSs due to the BSEP's shared electrical distribution systems configuration and the reference to LCO 3.8.1 NOTES a or b;
- c. For TS 3.8.7, Required Actions A.1, B.1, C.4, and D.1, as applicable, unique TSs due to the BSEP's shared electrical distribution systems configuration.

### **Response**

*TS 3.7.2, Required Actions B.1, C.2, and E.1*

#### **Service Water System Description**

The Service Water (SW) System provides water from the Cape Fear River for lubrication and cooling of equipment in the Reactor Building, Turbine Building, Diesel Generator Building, and the Circulating Water System. Each unit's SW system is subdivided into two major headers, the Nuclear Service Water (NSW) header and the Conventional Service Water (CSW) header. The NSW header normally provides cooling water for equipment in the Reactor Building and Diesel Generator Building. The CSW header normally supplies cooling water for equipment in the Turbine Building and balance of plant equipment in other areas. Each unit's SW system is assigned five pumps, of which two are designated as NSW pumps and three are designated as CSW pumps. Under normal operating conditions, two NSW pumps (i.e., one operating and one in standby) provide water to the NSW header, and three CSW pumps (i.e., two operating and one in standby) provide water to the CSW header. Each header is operated independently; however, the CSW pumps can supply the NSW header in the event of additional NSW heat load requirements or NSW pump failure. In addition, cross-connect valves allow the CSW header to supply selected equipment normally handled by the NSW header as conditions dictate.

The SW system is considered operable when it has two operable CSW pumps (i.e., unit dependent) and three of the four site NSW pumps (i.e., any combination of Unit 1 and Unit 2 NSW pumps).

- TS 3.7.2

Required Action B.1, One required Nuclear Service Water (NSW) pump inoperable.

TS 3.7.2, "Service Water (SW) System and Ultimate Heat Sink (UHS)," Required Action B.1 has a 7-day Completion Time for one required NSW pump inoperable. Required Action B.1 has a second Completion Time of 14 days from discovery of failure to meet the Limiting Condition for Operation (LCO).

The second Completion Time for Required Action B.1 establishes a limit on the maximum time allowed for any combination of required NSW and CSW pumps to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition B is entered while, for instance, a required CSW pump is inoperable, and that CSW pump is subsequently returned operable, the LCO may already have been not met for up to 7 days. This situation could lead to a total of 14 days, since initial failure to meet the LCO, to restore the NSW pump. At this time, a required CSW pump could again become inoperable, the NSW pump restored operable, and an additional 7 days, for a total of 21 days, allowed prior to complete restoration of the LCO. The 14-day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet the LCO. The "AND" connector between the 7-day and the 14-day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met. The second 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 LCO 3.7.2 was initially not met, instead of at the time that Condition B was entered.

The Reactor Oversight Process monitors the availability of mitigating systems, including the cooling water system (i.e., Service Water system). Such frequent, repeated failures or extended unavailability of the Service Water pumps would be reported to the NRC and this represents a strong disincentive to such operation. Additionally, 10 CFR 50.65 (a)(1), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," (i.e., the Maintenance Rule) requires a comprehensive program which provides much greater assurance of safe plant operation than the second Completion Times in the TSs. Therefore, the second Completion Time for Required Action B.1 is not required.

- TS 3.7.2

Required Action C.2, One required Conventional Service Water (CSW) pump inoperable.

TS 3.7.2, Required Action C.2 has a 7-day Completion Time for one required CSW pump inoperable. Required Action C.2 has a second Completion Time of 14 days from discovery of failure to meet the LCO.

The second Completion Time for Required Action C.2 establishes a limit on the maximum time allowed for any combination of required NSW and CSW pumps to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition C is entered while, for instance, a required NSW pump is inoperable, and that NSW pump is subsequently returned

operable, the LCO may already have been not met for up to 7 days. This situation could lead to a total of 14 days, since initial failure to meet the LCO, to restore the CSW pump. At this time, a required NSW pump could again become inoperable, the CSW pump restored operable, and an additional 7 days, for a total of 21 days, allowed prior to complete restoration of the LCO. The 14-day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet the LCO. The "AND" connector between the 7-day and the 14-day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met. The second 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 LCO 3.7.2 was initially not met, instead of at the time that Condition C was entered.

The Reactor Oversight Process monitors the availability of mitigating systems, including the cooling water system (i.e., Service Water system). Such frequent, repeated failures or extended unavailability of the Service Water pumps would be reported to the NRC and this represents a strong disincentive to such operation. Additionally, the Maintenance Rule requires a comprehensive program which provides much greater assurance of safe plant operation than the second Completion Times in the TS. Therefore, the second Completion Time for Required Action C.2 is not required.

- TS 3.7.2

Required Action E.1, Two required CSW pumps inoperable.

TS 3.7.2, Required Action E.1 has a 72-hour Completion Time for two required CSW pumps inoperable. Required Action E.1 has a second Completion Time of 14 days from discovery of failure to meet the LCO.

The second Completion Time for Required Action E.1 establishes a limit on the maximum time allowed for any combination of required NSW and CSW pumps to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition E is entered while, for instance, a required NSW pump is inoperable, and that NSW pump is subsequently returned operable, the LCO may already have been not met for up to 7 days. This situation could lead to a total of 14 days, since initial failure to meet the LCO, to restore the CSW pump. At this time, a required NSW pump could again become inoperable, the CSW pump restored operable, and an additional 7 days, for a total of 21 days, allowed prior to complete restoration of the LCO. The 14-day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet the LCO. The "AND" connector between the 7-day and the 14-day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met. The second 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 LCO 3.7.2 was initially not met, instead of at the time that Condition E was entered.

The Reactor Oversight Process monitors the availability of mitigating systems, including the cooling water system (i.e., Service Water system). Such frequent, repeated failures or extended unavailability of the Service Water pumps would be reported to the NRC and this represents a strong disincentive to such operation. Additionally, the Maintenance Rule requires a comprehensive program which provides much greater assurance of safe plant operation than the second Completion Times in the TSs. Therefore, the second Completion Time for Required Action E.1 is not required.

*TS 3.8.1, Required Actions B.3, C.3, and D.5*

### **AC Sources Description**

Offsite power is supplied to the 230 kV switchyards from the transmission network by eight transmission lines. From the 230 kV switchyards, two qualified electrically and physically separated circuits provide AC power, through either a startup auxiliary transformer (SAT) or backfeeding via a unit auxiliary transformer (UAT), to 4.16 kV balance of plant (BOP) buses. A single circuit path (master/slave breakers and interconnecting cables) from each BOP bus provides offsite power to its associated downstream 4.16 kV emergency bus. A qualified offsite circuit consists of all breakers, transformers, switches, interrupting devices, cabling, and controls required to transmit power from either 230 kV bus (bus A or B) to the onsite Class 1E emergency buses. The Unit 1 main generator provides the normal source of power to 4.16 kV emergency buses E1 and E2 via its respective UAT. The Unit 2 main generator provides the normal source of power to 4.16 kV emergency buses E3 and E4 via its respective UAT.

The onsite standby power source for 4.16 kV emergency buses E1, E2, E3, and E4 consists of four diesel generators (DGs). Each DG is dedicated to its associated emergency bus. A DG starts automatically on a loss of coolant accident (LOCA) signal from either Unit 1 or Unit 2 or under emergency bus degraded voltage or undervoltage conditions. After the DG has started, it automatically ties to its respective bus after offsite power is tripped as a consequence of emergency bus undervoltage or degraded voltage, independent of or coincident with a LOCA signal (refer to LCO 3.3.8.1, "Loss of Power (LOP) Instrumentation"). The DGs also start and operate in the standby mode without tying to the emergency bus on a LOCA signal alone. Following the trip of offsite power, all loads are stripped from the emergency bus except the 480 V emergency bus. When the DG is tied to the emergency bus, select safety related loads are then sequentially connected to their respective emergency bus by individual timers associated with each auto-connected load following a permissive from a voltage relay monitoring each emergency bus.

The capability is provided to connect a supplemental diesel generator (SUPP-DG) to supply power to any of the four 4.16 kV emergency buses via a BOP circuit path. This BOP circuit path consists of the BOP bus and the associated circuit path (master/slave breakers and interconnecting cables) to a 4.16 kV emergency bus. The SUPP-DG is commercial-grade and not designed to meet Class 1E requirements. The SUPP-DG is made available to support extended Completion Times in the event of an inoperable DG. The SUPP-DG is made available as a defense-in-depth alternate source of AC power to one emergency bus.

The Class 1E AC electrical distribution system is divided into four load groups. Each load group consists of a primary emergency bus, its downstream secondary emergency bus, 120 VAC vital bus, and transformers and interconnecting cables. The buses associated with each of the four load groups are defined as follows:

- Load group E1 consists of 4.16 kV bus E1, 480 V bus E5, and 120 VAC vital bus 1E5.
- Load group E2 consists of 4.16 kV bus E2, 480 V bus E6, and 120 VAC vital bus 1E6
- Load group E3 consists of 4.16 kV bus E3, 480 V bus E7, and 120 VAC vital bus 2E7.
- Load group E4 consists of 4.16 kV bus E4, 480 V bus E8, and 120 VAC vital bus 2E8.

The E1 and E2 load groups are supplied from Unit 1 balance of plant (BOP) buses and primarily serve Unit 1 loads. The E3 and E4 load groups are supplied from Unit 2 BOP buses and

primarily serve Unit 2 loads. In some instances, loads associated with one unit are supplied from the opposite unit's load group buses.

The following discussions reflect the wording of the Unit 1 TSs and TS Bases. They are equally applicable to the Unit 2 TSs and TS Bases.

- TS 3.8.1

Required Action B.3, Two Unit 2 offsite circuits inoperable due to one Unit 2 balance of plant circuit path to the downstream 4.16 kV emergency bus inoperable for planned maintenance.

AND

DG associated with the affected downstream 4.16 kV emergency bus inoperable for planned maintenance.

Due to the shared configuration of the BSEP electrical distribution system, two Unit 1 and two Unit 2 qualified circuits between the offsite transmission network and the onsite Class 1E Distribution System and four separate and independent DGs both Unit 1 and Unit 2 are required to be operable when a unit is in Mode 1, 2, or 3. To perform maintenance on the 4.16 kV emergency bus, the associated DG must be rendered inoperable. TS 3.8.1, Condition B was established to allow sufficient time to perform maintenance on the BOP buses and the associated 4.16 kV emergency bus of the opposite, shutdown unit without placing an operating unit in an unduly restrictive Completion Time. As a result, TS 3.8.1, "AC Sources Operating," Required Action B.3 established a 7-day Completion Time to allow the planned maintenance. Required Action B.3 has a second Completion Time of 14 days from discovery of failure to meet the LCO.

The second Completion Time for Required Action B.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 LCO 3.8.1.a or b. 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 10 days from initial failure of the LCO to restoration of the BOP circuit path to the downstream 4.16 kV emergency bus and DG associated with the affected 4.16 kV emergency bus. At this time, a second offsite circuit could again become inoperable, the BOP circuit path to the downstream 4.16 kV emergency bus and DG associated with the affected 4.16 kV emergency bus restored operable, and an additional 72 hours, for a total of 13 days, allowed prior to complete restoration of the LCO. The 10-day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet LCO 3.8.1.a or b. The "AND" connector between the 7-day and 10-day Completion Time means that both Completion Times apply simultaneously, and the more restrictive must be met.

The Reactor Oversight Process monitors the availability of mitigating systems, including the AC sources. Such frequent, repeated failures or extended unavailability of the AC electrical distribution system would be reported to the NRC and this represents a strong disincentive to such operation. Additionally, the Maintenance Rule requires a comprehensive program which provides much greater assurance of safe plant operation than the second Completion Times in the TSs. Therefore, the second Completion Time for Required Action B.3 is not required.

Condition B is modified by two notes. Note 1 only allows this Condition to be used when the opposite unit is in MODE 4 or 5. When two offsite circuits are inoperable, due to one Unit 2 BOP circuit path and the DG associated with the downstream 4.16 kV emergency bus inoperable, while Unit 2 is in MODE 1, 2, or 3, Condition I of Unit 1 Specification 3.8.1 must be entered and the associated Required Actions performed. Note 2 prevents Condition B from being entered coincident with Condition A (i.e., the SAT and UAT feeds to the operable BOP circuit path shall both be operable). The Unit 2 BOP buses 2C and 2D are supplied from the Unit 2 SAT and UAT. Inoperability of the Unit 2 SAT or UAT, as provided for in Condition A, would result in the loss of redundancy of offsite power to the operable BOP bus if Condition A and B were allowed to be entered coincidentally. Some maintenance activities may require isolating the SAT and/or UAT from the inoperable BOP circuit path (removing connectors in the non-segregated bus, for example). This is permissible because no additional equipment is rendered inoperable and there is no loss of redundancy to the operable BOP circuit. If at any time Condition A is entered coincident with Condition B, Condition I of Unit 1 Specification 3.8.1 must be entered and the associated Required Actions performed. Elimination of the second Completion Time of Required Action B.3 does not impact the applicability of these Notes.

- TS 3.8.1

Required Action C.3, One offsite circuit inoperable for reasons other than Conditions A or B.

This change is the same as the change made by TSTF-439 to TS 3.8.1, Required Action A.3. In each case the second completion time is associated with the inoperability of one offsite circuit. BSEP Condition C includes the qualifier that the offsite circuit is inoperable for reasons other than Conditions A or B. Due to the shared configuration of the BSEP electrical distribution system, BSEP Conditions A and B are plant specific and were included in the TSs to allow sufficient time to perform maintenance on the opposite, shutdown unit without placing an operating unit in an unduly restrictive Completion Time. Therefore, the justification provided in TSTF-439 for "AC Sources – Operating (BWRs and PWRs)" is applicable to the BSEP change.

Based on the above, the second Completion Time for Required Action C.3 is not required.

- TS 3.8.1

Required Action D.5, One DG inoperable for reasons other than Condition B.

This change is the same as the change made by TSTF-439 to TS 3.8.1, Required Action B.4. In each case the second completion time is associated with the inoperability of one DG. BSEP Condition D includes the qualifier that the DG is inoperable for reasons other than Condition A. Due to the shared configuration of the BSEP electrical distribution system, BSEP Condition A is plant specific and was included in the TSs to allow sufficient time to perform maintenance on the opposite, shutdown unit without placing an operating unit in an unduly restrictive Completion Time. Therefore, the justification provided in TSTF-439 for "AC Sources – Operating (BWRs and PWRs)" is applicable to BSEP.

Based on the above, the second Completion Time for Required Action D.5 is not required.



*TS 3.8.7, Required Actions A.1, B.1, C.4, and D.1*

### **Electrical Distribution System Description**

The onsite Class 1E AC and DC electrical power distribution system is divided into redundant and independent AC and DC electrical power distribution subsystems.

The Class 1E AC electrical distribution system is divided into four load groups. Each load group consists of a primary emergency bus, its downstream secondary emergency bus, 120 VAC vital bus, and transformers and interconnecting cables. The buses associated with each of the four load groups are defined as follows:

- Load group E1 consists of 4.16 kV bus E1, 480 V bus E5, and 120 VAC vital bus 1E5.
- Load group E2 consists of 4.16 kV bus E2, 480 V bus E6, and 120 VAC vital bus 1E6
- Load group E3 consists of 4.16 kV bus E3, 480 V bus E7, and 120 VAC vital bus 2E7.
- Load group E4 consists of 4.16 kV bus E4, 480 V bus E8, and 120 VAC vital bus 2E8.

The E1 and E2 load groups are supplied from Unit 1 balance of plant (BOP) buses and primarily serve Unit 1 loads. The E3 and E4 load groups are supplied from Unit 2 BOP buses and primarily serve Unit 2 loads. In some instances, loads associated with one unit are supplied from the opposite unit's load group buses.

Each primary emergency bus (4.16 kV emergency bus) has access to two offsite sources of power via a common circuit path from its associated upstream BOP bus (master/slave breakers and interconnecting cables). In addition, each 4.16 kV emergency bus can be provided power from an onsite diesel generator (DG) source. The upstream BOP bus associated with each 4.16 kV emergency bus is normally connected to the main generator output via the unit auxiliary transformer. During a loss of the normal power source to the 4.16 kV BOP bus, the preferred source supply breaker attempts to close. If all offsite sources are unavailable, the affected 4.16 kV emergency bus is isolated from its associated upstream 4.16 kV BOP bus and the onsite emergency DG will supply power to the 4.16 kV emergency bus. Control power for each 4.16 kV emergency bus is supplied from a Class 1E battery with manual transfer capability to another Class 1E battery.

The secondary plant distribution system includes 480 VAC emergency buses E5, E6, E7, and E8 and associated motor control centers (MCCs), transformers, and interconnecting cables. Secondary emergency buses E5, E6, E7, and E8 are supplied from primary emergency buses E1, E2, E3, and E4, respectively. Control power for each 480 VAC emergency bus is supplied from a Class 1E battery with manual transfer capability to another Class 1E battery.

The 120 VAC vital buses 1E5, 1E6, 2E7, and 2E8 are arranged in four load groups and are powered from secondary emergency buses E5, E6, E7, and E8, respectively.

There are two independent 125/250 VDC electrical power distribution subsystems consisting of the necessary batteries, chargers and distribution network to satisfy the design separation and redundancy criteria for the site. Each battery contains its own dedicated charger. The loss of any single piece of equipment in the DC distribution system will not prevent the containment isolation system or the core standby cooling systems from performing their intended functions. This single piece of equipment lost can be any component including a battery, charger, breaker, distribution center, interconnecting wiring or cabling.

The following discussions reflect the wording of the Unit 1 TSs and TS Bases. They are equally applicable to the Unit 2 TSs and TS Bases.

- TS 3.8.7

Required Action A.1, One AC electrical power distribution subsystem inoperable for planned maintenance due to either inoperable load group E3 bus(es) or inoperable load group E4 bus(es).

As discussed above, the E1 and E2 load groups are supplied from Unit 1 BOP buses and primarily serve Unit 1 loads. The E3 and E4 load groups are supplied from Unit 2 BOP buses and primarily serve Unit 2 loads. TS 3.8.7, "Distribution System – Operating," Condition A, was established to allow for maintenance on an electrical power distribution subsystem primarily associated with the opposite, shutdown unit without placing an operating unit in an unduly restrictive Completion Time. As a result, Required Action A.1 established a 7-day Completion Time to allow the planned maintenance. Required Action A.1 has a second Completion Time of 176 hours from discovery of failure to meet the LCO.

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, an AC bus in a load group in a different division is inoperable and subsequently returned operable, this LCO may already have been not met for up to 8 hours. This situation could lead to a total duration of 176 hours, since initial failure to meet the LCO, to restore the AC Electrical Power Distribution System. At this time an AC bus in a load group in a different division could again become inoperable, and the load group removed under Condition A 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. If while in Condition A, emergency buses associated with another load group become inoperable (e.g., buses in load groups E3 and E4 are concurrently inoperable), Condition B and F must be entered, as appropriate.

The Reactor Oversight Process monitors the availability of mitigating systems, including the AC electrical distribution system. Such frequent, repeated failures or extended unavailability of the AC electrical distribution system would be reported to the NRC and this represents a strong disincentive to such operation. Additionally, the Maintenance Rule requires a comprehensive program which provides much greater assurance of safe plant operation than the second Completion Times in the TSs. Therefore, the second Completion Time for Required Action A.1 is not required.

- TS 3.8.7

Required Action B.1, One or more AC electrical power distribution subsystems inoperable for reasons other than Condition A.

TS 3.8.7, Required Action B.1 has an 8-hour Completion Time for one or more AC electrical power distribution subsystems inoperable for reasons other than Condition A. Required Action B.1 has a second Completion Time of 176 hours from discovery of failure to meet the LCO.

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, a DC bus is inoperable and subsequently returned operable, this LCO may already have been not met for up to 7 days. This situation could lead to a total duration of 176 hours, since initial failure to meet the LCO, to restore the AC electrical power distribution system. At this time a DC bus could again become inoperable, and the AC electrical power distribution system 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 B was entered.

The Reactor Oversight Process monitors the availability of mitigating systems, including the AC electrical distribution system. Such frequent, repeated failures or extended unavailability of the AC electrical distribution system would be reported to the NRC and this represents a strong disincentive to such operation. Additionally, the Maintenance Rule requires a comprehensive program which provides much greater assurance of safe plant operation than the second Completion Times in the TSs. Therefore, the second Completion Time for Required Action B.1 is not required.

- TS 3.8.7

Required Action C.4, One or more DC electrical power distribution subsystems inoperable due to loss of Normal DC source.

TS 3.8.7, Required Action C.4 has a 7-day Completion Time for one or more DC electrical power distribution subsystems inoperable due to loss of normal DC source. Required Action C.4 has a second Completion Time of 176 hours from discovery of failure to meet the LCO.

The second Completion Time for Required Action C.4 establishes a limit on the maximum time allowed for any combination of required electrical power 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 176 hours, since initial failure to meet the LCO, to restore the DC electrical power distribution system. At this time, an AC bus could again become inoperable, and the DC electrical power distribution system 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 at the time Condition C was entered.

The Maintenance Rule requires a comprehensive program which provides much greater assurance of safe plant operation than the second Completion Times in the TSs. Therefore, the second Completion Time for Required Action C.4 is not required.

- TS 3.8.7

Required Action D.1, One or more DC electrical power distribution subsystems inoperable for reasons other than Condition C.

TS 3.8.7, Required Action D.1 has a 7-day Completion Time for one or more DC electrical power distribution subsystems inoperable due to loss of normal DC source. Required Action D.1 has a second Completion Time of 176 hours from discovery of failure to meet the LCO.

The second Completion Time for Required Action D.1 establishes a limit on the maximum time allowed for any combination of required electrical power distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition D 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 176 hours, since initial failure to meet the LCO, to restore the DC electrical power distribution system. At this time, an AC bus could again become inoperable, and the DC electrical power distribution system 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 at the time Condition D was entered.

The Maintenance Rule requires a comprehensive program which provides much greater assurance of safe plant operation than the second Completion Times in the TSs. Therefore, the second Completion Time for Required Action D.1 is not required.

### **Revised Bases Revisions**

Subsequent to the August 14, 2018, submittal of the BSEP TSTF-439 LAR, additional bases changes resulting from the proposed TS revisions were identified. Enclosure 2 provides a complete set of the existing Unit 1 TS Bases pages marked to show the proposed changes for information only.

Technical Specification Bases Pages (Mark-Up) – Unit 1  
(For Information Only)

BASES

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ACTIONS

A.1 (continued)

capability is unavailable to one or more DGs, ACTIONS for LCO 3.8.1, "AC Sources—Operating," must be immediately entered. This allows Condition A to provide requirements for an inoperable NSW pump without regard to whether a cooling water supply is available to the DGs. LCO 3.8.1 provides the appropriate restrictions for one or more inoperable DGs.

B.1

With one required NSW pump inoperable for reasons other than Condition A, one inoperable pump must be restored to OPERABLE status within 7 days ~~and 14 days from discovery of failure to meet the LCO~~. With the unit in this condition, the remaining OPERABLE NSW and CSW pumps are adequate to perform the SW heat removal function. However, the overall reliability is reduced. The 7 day Completion Time is based on the remaining SW heat removal capability, a reasonable time for repairs, and the low probability of an event occurring during this time period requiring the SW System.

~~The second Completion Time for Required Action B.1 establishes a limit on the maximum time allowed for any combination of required NSW and CSW pumps to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition B is entered while, for instance, a required CSW pump is inoperable, and that CSW pump is subsequently returned OPERABLE, the LCO may already have been not met for up to 7 days. This situation could lead to a total of 14 days, since initial failure to meet the LCO, to restore the NSW pump. At this time, a required CSW pump could again become inoperable, the NSW pump restored OPERABLE, and an additional 7 days (for a total of 21 days) allowed prior to complete restoration of the LCO. The 14 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 B and C or Conditions B and D are entered concurrently. The "AND" connector between the 7 day and the 14 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.~~

(continued)

BASES

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ACTIONS

B.1 (continued)

~~The second 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 LCO 3.7.2 was initially not met, instead of at the time that Condition B was entered.~~

Pursuant to LCO 3.0.6, the AC Sources—Operating ACTIONS would not be entered even if cooling capability were lost to the DGs, resulting in one or more inoperable DGs. Therefore, Required Action B.1 is modified by a Note to indicate that when Condition B is entered and NSW cooling capability is unavailable to one or more DGs, ACTIONS for LCO 3.8.1, "AC Sources—Operating," must be immediately entered. This allows Condition B to provide requirements for an inoperable NSW pump without regard to whether a cooling water supply is available to the DGs. LCO 3.8.1 provides the appropriate restrictions for one or more inoperable DGs.

C.1 and C.2

With one required CSW pump inoperable, the inoperable pump must be restored to OPERABLE status within 7 days ~~and 14 days from discovery of failure to meet the LCO~~. With the unit in this condition, the OPERABLE CSW pump and NSW pumps are adequate to perform the heat removal function. However, the overall reliability is reduced. The 7 day Completion Time is based on the availability of two Unit 1 SW pumps (an OPERABLE CSW pump and an OPERABLE Unit 1 NSW pump), each powered from separate 4.16 kV emergency buses, to support the unit's service water loads. Immediate verification that the OPERABLE CSW pump and one OPERABLE Unit 1 NSW pump are powered from separate emergency buses is therefore required when one required CSW pump is inoperable. If the OPERABLE CSW pump and one Unit 1 NSW pump can not be immediately verified to be powered from separate 4.16 kV emergency buses, Condition D must be immediately entered. The 7 day Completion Time is based on the remaining SW heat removal capability, a reasonable time for repairs, and the low probability of an event occurring during this time period requiring the SW System.

(continued)

BASES

ACTIONS

C.1 and C.2 (continued)

~~The second Completion Time for Required Action C.1 establishes a limit on the maximum time allowed for any combination of required NSW and GSW pumps to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition C is entered while, for instance, a required NSW pump is inoperable, and that NSW pump is subsequently returned OPERABLE, the LCO may already have been not met for up to 7 days. This situation could lead to a total of 14 days, since initial failure to meet the LCO, to restore the GSW pump. At this time, a required NSW pump could again become inoperable, the GSW pump restored OPERABLE, and an additional 7 days (for a total of 21 days) allowed prior to complete restoration of the LCO. The 14 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 B and C are entered concurrently. The "AND" connector between the 7 day and the 14 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met. The second 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 LCO 3.7.2 was initially not met, instead of at the time that Condition C was entered.~~

D.1

If Required Action C.1 cannot be completed within the associated Completion Time or if the status of the Unit 1 SW pumps changes after Required Action C.1 is initially met, one required CSW pump must be restored to OPERABLE status within 72 hours. With the unit in this condition, the OPERABLE SW pumps are adequate to perform the heat removal function. However, overall reliability is reduced as compared to Condition C and a reduced Completion Time of 72 hours is provided. The 72 hour Completion Time is based on the remaining SW System heat removal capability, a reasonable time for repairs, and the low probability of an event occurring during the time period requiring the SW System.

(continued)



BASES

ACTIONS  
(continued)

E.1

With two required CSW pumps inoperable, the one required inoperable pump must be restored to OPERABLE status within 72 hours ~~and 14 days from discovery of failure to meet the LCO~~. With the unit in this condition, the OPERABLE NSW pumps are adequate to perform the heat removal function. The 72 hour Completion Time is based on the availability of the remaining NSW pumps to support the unit's service water loads. The 72 hour Completion Time is based on the remaining SW System heat removal capability, a reasonable time for repairs, and the low probability of an event occurring during this time period requiring the SW System.

~~The second Completion Time for Required Action E.1 establishes a limit on the maximum time allowed for any combination of required NSW and CSW pumps to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition E is entered while, for instance, a required NSW pump is inoperable, and that NSW pump is subsequently returned OPERABLE, the LCO may already have been not met for up to 7 days. This situation could lead to a total of 14 days, since initial failure to meet the LCO, to restore the CSW pump. At this time, a required NSW pump could again become inoperable, the CSW pump restored OPERABLE, and an additional 7 days (for a total of 21 days) allowed prior to complete restoration of the LCO. The 14 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 B and E are entered concurrently. The "AND" connector between the 7 day and the 14 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met. The second 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 LCO 3.7.2 was initially not met, instead of at the time that Condition E was entered.~~

Pursuant to LCO 3.0.6, the RHRSW ACTIONS would not be entered even if cooling capability were lost to the RHRSW heat exchangers, resulting in one or more inoperable RHRSW subsystems. Therefore, Required

(continued)

BASES

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ACTIONS

B.2 (continued)

To ensure highly reliable power sources remain with one Unit 2 balance of plant circuit path to the downstream 4.16 kV emergency bus inoperable and the DG associated with the downstream 4.16 kV emergency bus inoperable, it is necessary to verify the availability of the remaining offsite circuits 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 the Required Action not met. However, if a second circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition E, for two or more offsite circuits inoperable, is entered.

B.3

This Required Action provides a 7 day time period to perform planned maintenance on one of these BOP buses and the circuit path to its associated 4.16 kV emergency bus when Unit 2 is in MODE 4 or 5. During the planned maintenance of the BOP bus, the associated emergency bus and the associated DG, if a condition is discovered on these buses or the DG requiring corrective maintenance, this maintenance may be performed within the 7 day time period of Required Action B.3. (If Unit 2 is in MODE 1, 2, or 3, then the Unit 2 ACTIONS of Specification 3.8.1, "AC Sources—Operating," require entry into LCO 3.0.3 for this condition.) The 7 day Completion Time takes into account the capacity and capability of the remaining AC sources and a reasonable time frame for performance of planned maintenance. This is acceptable because maintenance on each BOP bus and the circuit path to its associated emergency bus will increase the reliability of the offsite circuits to the downstream 4.16 kV emergency buses. It should be noted that while in this condition each of the remaining three 4.16 kV emergency buses will have their standby emergency source and two sources of offsite power OPERABLE. If one or both sources of offsite power are lost to an additional 4.16 kV emergency bus then Condition E is entered.

~~The second Completion Time for Required Action B.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 LCO 3.8.1.a or b. If Condition B is entered while, for~~

(continued)

BASES

ACTIONS

B.3 (continued)

~~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 10 days from initial failure of the LCO to restoration of the BOP circuit path to the downstream 4.16 kV emergency bus and DG associated with the affected 4.16 kV emergency bus. At this time, a second offsite circuit could again become inoperable, the BOP circuit path to the downstream 4.16 kV emergency bus and DG associated with the affected 4.16 kV emergency bus restored OPERABLE, and an additional 72 hours (for a total of 13 days) allowed prior to complete restoration of the LCO. The 10 day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet LCO 3.8.1.a or b. This limit is considered reasonable for situations in which Condition B and Condition C or D are entered concurrently. The "AND" connector between the 7 day and 10 day Completion Time means that both Completion Times apply simultaneously, and the more restrictive must be met.~~

~~As in Required Action B.1, the second 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 LCO 3.8.1.a or b was initially not met, instead of the time that Condition B was entered.~~

C.1

To ensure a highly reliable power source remains with one offsite circuit inoperable, it is necessary to verify the availability of the remaining offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action not met. However, if a second circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition E, for two or more offsite circuits inoperable, is entered.

(continued)

BASES

ACTIONS

C.2 (continued)

The remaining OPERABLE offsite circuits and DGs are adequate to supply electrical power to the onsite Class 1E Distribution System. Thus, on a component basis, single failure protection may have been lost for the required feature's function; however, function is not lost. The 24 hour 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.

C.3

According to Regulatory Guide 1.93 (Ref. 9), operation may continue in Condition C 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 circuits and DGs are adequate to supply electrical power to the onsite Class 1E Distribution System.

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

~~The second Completion Time for Required Action C.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 LCO 3.8.1.a or b. If Condition C is entered while, for instance, a DG is inoperable, and that DG is subsequently returned OPERABLE, the LCO may already have been not met for up to 14 days. This situation could lead to a total of 17 days, 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 14 days (for a total of 31 days) allowed prior to complete restoration of the LCO. The 17 day Completion Time provides a limit on the time allowed~~

(continued)

BASES

ACTIONS

C.3 (continued)

~~in a specified condition after discovery of failure to meet LCO 3.8.1.a or b. This limit is considered reasonable for situations in which Conditions C and D are entered concurrently. The "AND" connector between the 72 hours and 17 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.~~

~~As in Required Action C.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 LCO 3.8.1.a or b was initially not met, instead of at the time that Condition C was entered.~~

D.1

To ensure a highly reliable power source remains with one DG inoperable, it is necessary to verify the availability of the offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure to meet 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.

D.2

In order to extend the Required Action D.5 Completion Time for an inoperable DG from 7 days to 14 days inoperable, it is necessary to verify the availability of the SUPP-DG within 2 hours on entry into TS 3.8.1 LCO and every 12 hours thereafter. Since Required Action D.2 only specifies "evaluate," discovering the SUPP-DG unavailable does not result in the Required Action being not met (i.e., the evaluation is performed). However, on discovery of an unavailable SUPP-DG, the Completion Time for Required Action D.5 starts the 7 day and/or 24 hour clock.

SUPP-DG availability requires that:

- 1) The load test has been performed within 30 days of entry into the extended Completion Time. The Required Action evaluation is met with an administrative verification of this prior testing;
- 2) SUPP-DG fuel tank test is verified locally to be  $\geq$  24-hour supply; and
- 3) SUPP-DG supporting system parameters for starting and operating are verified to be within required limits for functional availability (e.g., battery state of charge, starting air system pressure).

The SUPP-DG is not used to extend the Completion Time for more than one inoperable DG at any one time.

(continued)

BASES

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ACTIONS

A.1 (continued)

Load group E1 consists of 4.16 kV bus E1, 480 V bus E5, and 120 VAC vital bus 1E5.

Load group E2 consists of 4.16 kV bus E2, 480 V bus E6, and 120 VAC vital bus 1E6.

Load group E3 consists of 4.16 kV bus E3, 480 V bus E7, and 120 VAC vital bus 2E7.

Load group E4 consists of 4.16 kV bus E4, 480 V bus E8, and 120 VAC vital bus 2E8.

~~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, an AC bus in a load group in a different division is inoperable and subsequently returned OPERABLE, this LCO may already have been not met for up to 8 hours. This situation could lead to a total duration of 176 hours (since initial failure to meet the LCO) to restore the AC Electrical Power Distribution System. At this time an AC bus in a load group in a different division could again become inoperable, and the load group removed under Condition A 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 176-hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.~~

If while in Condition A, emergency buses associated with another load group become inoperable (e.g., buses in load groups E3 and E4 are concurrently inoperable), Condition B and F must be entered, as appropriate.

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BASES

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ACTIONS  
(continued)

B.1

With one or more required AC buses or distribution panels in one division inoperable for reasons other than Condition A, the remaining AC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining AC electrical power distribution subsystems could result in the minimum required ESF functions not being supported. Therefore, the required AC buses and distribution panels must be restored to OPERABLE status within 8 hours.

The Condition B 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 restoring power to the affected division. The 8 hour time limit before requiring a unit shutdown in this Condition is acceptable because of:

- a. The potential for decreased safety if the unit 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 low 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 5.5.11, "Safety Function Determination Program (SFDP).")

~~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, a DC bus is inoperable and subsequently returned OPERABLE, this LCO~~

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BASES

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ACTIONS

B.1 (continued)

~~may already have been not met for up to 7 days. This situation could lead to a total duration of 176 hours, since initial failure to meet the LCO, to restore the AC electrical power distribution system. At this time a DC bus could again become inoperable, and the AC electrical power distribution system 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 B was entered. The 176 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.~~

C.1, C.2, C.3 and C.4

Condition C applies to the 125 VDC buses listed in Table B 3.8.7-1 which can be supplied from either a normal or an alternate DC source. These buses are listed below:

- a. 125 VDC Control Power Buses for 4.16 kV Switchgear E1, E2, E3, and E4;
- b. 125 VDC Control Power Buses for 480 V Switchgear E5, E6, E7, and E8;
- c. 125 VDC ESS Logic Cabinets H58, H59, H60, and H61; and
- d. 125 VDC DG Panels DG-1, DG-2, DG-3, and DG-4.

Condition A permits the de-energization of the E3 load group bus(es) or the E4 load group bus(es) for planned maintenance when Unit 2 is in MODE 4 or 5. During a 4.16 kV or 480 V bus outage it is desirable to clear both the normal and alternate sources of DC control power to the bus for personnel safety. The de-energized AC bus is inoperable and not capable of supplying its loads regardless of the availability of DC control power. Hence, entry into Condition C as a result of performing maintenance under Condition A is not necessary; Condition D would apply.

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BASES

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ACTIONS

C.1, C.2, C.3 and C.4 (continued)

component and is consistent with the allowed Completion Time for an inoperable DC electrical power subsystem specified in Specification 3.8.4, "DC Sources—Operating."

~~The second Completion Time for Required Action C.4 establishes a limit on the maximum time allowed for any combination of required electrical power 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 176 hours, since initial failure to meet the LCO, to restore the DC electrical power distribution system. At this time, an AC bus could again become inoperable, and the DC electrical power distribution system 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 at the time Condition C was entered. The 176-hour Completion Time is an acceptable limitation on this potential of failing to meet the LCO indefinitely.~~

D.1

With one DC electrical power distribution subsystem inoperable for reasons other than Condition C, 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 electrical power distribution subsystem must be restored to OPERABLE status within 7 days by powering the bus from the associated batteries or chargers.

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BASES

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ACTIONS

D.1 (continued)

Condition D represents one division without adequate DC power, potentially with both the battery(s) significantly degraded and the associated charger(s) 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.

The 7 day Completion Time is consistent with the allowed Completion Time for an inoperable DC electrical power subsystem specified in Specification 3.8.4, "DC Sources—Operating". Taking exception to LCO 3.0.2 for components without adequate DC power, which would have Required Action Completion Times shorter than 7 days, 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 low potential for an event in conjunction with a single failure of a redundant component.

~~The second Completion Time for Required Action D.1 establishes a limit on the maximum time allowed for any combination of required electrical power distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition D 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 176 hours, since initial failure to meet the LCO, to restore the DC electrical power~~

(continued)

BASES

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ACTIONS

D.1 (continued)

~~distribution system. At this time, an AC bus could again become inoperable, and the DC electrical power distribution system 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 at the time Condition D was entered. The 176-hour Completion Time is an acceptable limitation on this potential of failing to meet the LCO indefinitely.~~

E.1

If the inoperable electrical power distribution subsystem(s) cannot be restored to OPERABLE status within the associated Completion Time, the unit must be brought to a MODE in which overall plant risk is minimized. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours.

Remaining in the Applicability of the LCO is acceptable because the plant risk in MODE 3 is similar to or lower than the risk in MODE 4 (Ref. 4) and because the time spent in MODE 3 to perform the necessary repairs to restore the system to OPERABLE status will be short. However, voluntary entry into MODE 4 may be made as it is also an acceptable low-risk state.

Required Action E.1 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 3. This Note prohibits the use of LCO 3.0.4.a to enter MODE 3 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 3, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

The allowed Completion Time is 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

Condition F corresponds to a level of degradation in the electrical power distribution system that causes a required safety function to be lost.

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