VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

September 10, 2013

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Serial No. 13-423
NL&OS/RAP
Docket No. 50-339
License No. NPF-7

**VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)**
**NORTH ANNA POWER STATION UNIT 2**
**PROPOSED LICENSE AMENDMENT REQUEST (LAR)**
**TS 3.8.1 - AC SOURCES – OPERATING**
**REVISED SURVEILLANCE REQUIREMENT**

Pursuant to 10 CFR 50.90, Dominion requests an amendment, in the form of a change to the Technical Specifications (TS) to Facility Operating License Number NPF-7 for North Anna Power Station Unit 2. TS 3.8.1, "AC Sources – Operating", contains Surveillance Requirement (SR) 3.8.1.8, which requires verification of the capability to manually transfer Unit 1 4.16 kV ESF bus AC power sources from the normal offsite circuit to the alternate required offsite circuit. As currently stated in SR 3.8.1.8 Note 1 and the TS Bases, this SR is not applicable to Unit 2 because it does not have an alternate offsite power feed for the ESF buses. However, Dominion is developing a plant modification to install an alternate offsite power feed to each of the two 4.16 kV ESF buses for Unit 2, such that it will be similar to the Unit 1 design. Therefore, a change is proposed to delete Note 1 to SR 3.8.1.8 to remove the limitation that excludes Unit 2 from the SR 3.8.1.8 manual transfer verification requirement. This TS change will be implemented after the Unit 2 modification is installed. By implementing the proposed TS change, the Unit 2 SR 3.8.1.8 manual transfer verification will be performed consistent with the verification currently performed for Unit 1.

A discussion of the proposed change is in Attachment 1. The marked-up and typed pages are included in Attachments 2 and 3, respectively. A mark-up of the TS Bases is provided in Attachment 4, for information only.

We have evaluated the proposed amendment and have determined that it does not involve a significant hazards consideration as defined in 10 CFR 50.92. The basis for our determination is included in Attachment 1. We have also determined that operation with the proposed change will not result in any significant increase in the amount of effluents that may be released offsite and no significant increase in individual or cumulative occupational radiation exposure. Therefore, the proposed amendment is eligible for categorical exclusion from an environmental assessment as set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed change. The basis for our determination is also included in Attachment 1. The proposed amendment has been reviewed and approved by the Facility Safety Review Committee.

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NRR

Dominion requests approval of the proposed amendment by September 15, 2014. Once approved, the amendment will be implemented during the Unit 2 outage in 2014, after completion of the plant modification.

If you have any questions or require additional information, please contact Mr. Thomas Shaub at (804) 273-2763.

Very truly yours,

E. S. Grecheck
Vice President - Nuclear Engineering and Development

Commitments made in this letter: None

Attachments:
1. Discussion of Change
2. Marked-up Technical Specifications Page
3. Proposed Technical Specifications Page
4. Marked-up Technical Specifications Bases Changes (For Information Only)

COMMONWEALTH OF VIRGINIA

COUNTY OF HENRICO

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by E. S. Grecheck, who is Vice President - Nuclear Engineering and Development of Virginia Electric and Power Company. He has affirmed before me that he is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 10TH day of September, 2013.

My Commission Expires: 5-31-14.

Vicki L. Hull
Notary Public

VICKI L. HULL
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140542
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# Attachment 1

## Discussion of Change

**North Anna Power Station**
**Unit 2**
**Virginia Electric and Power Company**
**(Dominion)**

## 1.0 INTRODUCTION

Pursuant to 10 CFR 50.90, Virginia Electric and Power Company (Dominion) requests an Amendment to Facility Operating License Number NPF-7 in the form of a change to the Technical Specifications (TS) for North Anna Power Station Unit 2. The proposed change deletes Note 1 to Surveillance Requirement (SR) 3.8.1.8 to remove the limitation that excludes Unit 2 from the SR 3.8.1.8 verification test requirement.

SR 3.8.1.8 requires verification of the capability to manually transfer AC power sources for the Unit 1 emergency buses from the normal offsite circuit to the alternate required offsite circuit. The current Technical Specifications were established prior to alternate required offsite circuits being available to Unit 2. However, Dominion is developing a plant modification to install an alternate offsite circuit for each Unit 2 emergency bus and, as a result, the verification test will need to be performed for Unit 2.

Technical Specification Bases changes reflecting the proposed change are included in Attachment 4 for information only. The Technical Specification Bases will be revised in accordance with the Technical Specification Bases Control Program, TS 5.5.13, following approval of the proposed Technical Specification changes.

## 2.0 PROPOSED CHANGE

SR 3.8.1.8 is to be revised to delete the limitation in Note 1. Deleted text is shown with a double strikethrough.

SR 3.8.1.8 ----------NOTES----------

~~1. This Surveillance is only applicable to Unit 1.~~

~~2.~~ This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced.

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Verify manual transfer of AC power sources from the normal offsite circuit to the alternate required offsite circuit.

## 3.0 BACKGROUND

As described in North Anna Power Station UFSAR Chapter 8, the station service power system sources are the station service transformers (SSTs), the reserve station service transformers (RSSTs), the Alternate AC Diesel Generator, and the Emergency Diesel Generators. The SSTs are also referred to as the normal source, the RSSTs are referred to as the preferred source, and the Emergency Diesel Generators as the standby source. Reserve station service power for start-up and emergency use is supplied by three 3-phase 34.5/4.16-kV RSSTs, via the 4.16 kV Normal and Transfer

buses. The RSSTs supply preferred power to the 4.16 kV emergency buses via the Transfer buses. The 4.16 kV emergency buses are arranged in two separate systems designated H and J. The H bus is associated with train A, while the J bus is associated with train B.

On Unit 1, normal to emergency bus ties are also provided that function as an alternate offsite AC circuit, such that two independent offsite power sources are provided to each emergency bus. These additional bus ties exist between Emergency Bus 1H and Normal 4.16 kV Bus 1B and between Normal 4.16 kV Bus 2B and Emergency Bus 1J. These bus ties have a normally open breaker at each bus.

Unit 2 does not have additional normal to emergency bus ties that provide an alternate offsite AC circuit to each emergency bus similar to Unit 1. On Unit 2, the 4.16 kV 2H and 2J Emergency Buses may be interconnected by a breaker that is normally removed from its cubicle located on the 2H bus. The breaker on Unit 2 is under strict operational supervision and is provided for maintenance purposes.

Improved Standard Technical Specifications (ISTS) SR 3.8.1.8 requires verification of the automatic or manual transfer of the AC power sources from the normal offsite circuit to each alternate offsite circuit every 18 months. As described above, the Unit 2 design does not have alternate circuits from the offsite AC sources that can be tested under SR 3.8.1.8. Therefore, at the time North Anna implemented the ISTS, Note 1 was added to TS SR 3.8.1.8 to state: "The Surveillance is only applicable to Unit 1."

Dominion is presently developing a plant modification to install an alternate offsite AC circuit to each Unit 2 Emergency Bus 2H and 2J, which will be required to be in service simultaneously to ensure two qualified offsite power sources are available per TS 3.8.1.a. In addition, the existing manual cross-tie between Buses 2H and 2J will be permanently removed. The plant modification will be evaluated in accordance with 10 CFR 50.59. The additional offsite circuits permit testing in accordance with TS SR 3.8.1.8. As a result, the limitation in SR 3.8.1.8, Note 1, is no longer necessary and Dominion proposes that it be removed.

## 4.0 TECHNICAL ANALYSIS & SAFETY CONSIDERATIONS

The design function of the alternate required offsite circuit is the same as the preferred offsite power source. It provides sufficient power to support all Class 1E systems, structures, and components (SSCs), and station auxiliaries in the event of a loss of the normal offsite AC power source. Therefore, the additional circuits that will feed the Unit 2 emergency buses from offsite AC power will be designed in accordance with 10 CFR 50, Appendix A, General Design Criteria (GDC) 17.

The modified Unit 2 configuration will be similar to the existing Unit 1 configuration. Interconnections will be provided between normal and emergency buses such that each emergency bus is capable of being powered from: (a) the preferred offsite source (normally assigned RSST), (b) the alternate required offsite circuit (assigned normal bus

which can be powered from either an SST or from an RSST which is different than the normally assigned RSST), or (c) the assigned Emergency Diesel Generator.

A normally open cross-tie connection will be provided from Unit 1 Normal Bus 1A to Unit 2 Emergency Bus 2J and a separate normally open cross tie connection will be provided from Normal Bus 2C to Emergency Bus 2H. The assigned alternate supply from each normal bus is associated with an RSST that is different from the existing emergency bus preferred RSST supply. This will allow maintenance on an RSST without the need for an outage and allow greater electrical bus configuration flexibility. The transfer of each 4.16 kV emergency bus to the 4.16 kV normal bus is a manual action that requires interlocks and permissives to be met for the connection to be made. This connection to the alternate required offsite circuit for each Unit 2 emergency bus will be analogous to the preferred offsite power source and will be required to be in service simultaneously to ensure two qualified offsite power sources are available per TS 3.8.1.a.

Breakers will be provided to prevent fault current propagating through the system and to provide equipment protection in case of a fault. Relaying will ensure breakers trip for various conditions such as overcurrent, directional overcurrent, or load shedding. Breaker control will be provided in the Control Room.

Because the new Unit 2 alternate offsite AC power source configuration will be similar to the Unit 1 configuration in both design and fault protection, the new Unit 2 circuits may be tested in the same manner and on the same frequency as the Unit 1 circuits. Therefore, the proposed change to SR 3.8.1.8 that will subject the Unit 2 alternate required offsite circuits to the same manual transfer Surveillance Requirement as the Unit 1 alternate required offsite circuits is considered acceptable.

The verification test consists of a manual transfer between two offsite power circuits. The conditions under which the manual transfer is verified will be limited to those that will not challenge steady state operation or challenge the safety of the unit consistent with the conditions applied to manual transfer for Unit 1. TS Bases Section 3.8.1.8, which currently describes the plant conditions under which manual transfer testing is conducted for Unit 1, will be revised to apply to Unit 2, as well.

## 5.0 REGULATORY EVALUATION

### No Significant Hazards Consideration

The proposed change deletes Note 1 to SR 3.8.1.8 to remove the limitation that excludes Unit 2 from the SR 3.8.1.8 verification test requirement. Dominion has evaluated the proposed changes to the Technical Specifications (TS) using the criteria in 10 CFR 50.92 and has determined that the proposed changes do not involve a significant hazards consideration.

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

   Response: No

   The previously evaluated accident that could be affected is a complete loss of offsite power (LOOP). Analyses have been performed to confirm that power distribution system voltages and currents with both of the new Unit 2 alternate normal to emergency bus ties in service are adequate during a unit trip scenario. The conditions under which the Unit 2 manual transfer capability is verified are the same as Unit 1. The verification test may only be performed under conditions that will not challenge steady state operation or challenge the safety of the unit. Therefore, the Unit 2 verification test (manual transfer between Unit 2 normal offsite circuit and alternate required offsite circuit) will not significantly increase the probability of a LOOP.

   Should a LOOP occur, the consequences are unaffected by availability of offsite power (normal offsite circuit and alternate required offsite circuit). Therefore, the Unit 2 verification test (normal offsite circuit and alternate required offsite circuit) will not affect the consequences of an accident previously evaluated.

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

   Response: No

   The purpose of the surveillance test is to verify the capability to manually transfer AC power sources from the normal offsite circuit to the alternate required offsite circuit.

   The only effect of the change is to permit the new Unit 2 required offsite circuits to be tested in the same manner and frequency as the corresponding Unit 1 circuits. Since the Unit 2 circuits are similar to the Unit 1 circuits, and the Unit 1 test is a required TS Surveillance to demonstrate operability of the alternate offsite circuits, permitting the Unit 2 circuits to undergo the same surveillance test will not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

   Response: No

   The proposed change enables SR testing of the new Unit 2 alternate offsite AC circuits to verify the capability to manually transfer AC power sources from the

normal offsite circuit to the alternate required offsite circuit as is performed in Unit 1.

The margin of safety is related to the confidence in the ability of the fission product barriers to perform their design functions during and following an accident situation and the ability of the ECCS to provide adequate core cooling. These barriers include the fuel cladding, the reactor coolant system, and the containment system. The proposed change does not directly affect these barriers, nor does it involve any adverse impact on the Class 1E circuits or SSCs supplied by Class 1E power. In fact, it enhances the ability to power the required ECCS equipment during accident conditions. Therefore, the proposed change will not involve a significant reduction in a margin of safety.

**Regulatory Requirements**

10 CFR 50.36 (c) (2) (ii) requires that a technical specification limiting condition for operation must be established for each item meeting one or more of the following criteria.

1. Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.
2. A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of, or presents a challenge to the integrity of a fission product barrier.
3. A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
4. A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

North Anna Power Station Unit 2 was issued construction permit No. CPPR-78 dated February 1971, based on the station design being in conformance with the *General Design Criteria for Nuclear Power Plants,* published in 1966. However, to facilitate review by the AEC, the FSAR discussed the design of the station relative to the new design criteria published in 1971. The General Design Criteria that are relevant to the TS SR change include Criterion 17 - Electric Power Systems, and Criterion 18 - Inspection and Testing of Electric Power Systems.

Criterion 17 - Electric Power Systems, requires that an onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other

vital functions are maintained in the event of postulated accidents. The onsite electric power supplies, including the batteries and the onsite electric distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure. Electric power from the transmission network to the onsite electric distribution system shall be supplied by two physically independent circuits (not necessarily on separate rights of way) designed and located so as to minimize to the extent practical the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. A switchyard common to both circuits is acceptable. Each of these circuits shall be designed to be available in sufficient time following a loss of all onsite ac power supplies and the other offsite electric power circuits, to ensure that specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded. One of these circuits shall be designed to be available within a few seconds following a LOCA to ensure that core cooling, containment integrity, and other vital safety functions are maintained. Provisions shall be included to minimize the probability of losing electric power from any of the remaining supplies as a result of, or coincident with, the loss of power from the transmission network, or the loss of power from the onsite electric power supplies.

Criterion 18 - Inspection and Testing of Electric Power systems, requires that electric power systems important to safety shall be designed to permit appropriate periodic inspection and testing of important areas and features, such as wiring, insulation, connections, and switchboards, to assess the continuity of the systems and the condition of their components. The systems shall be designed with a capability to test periodically (1) the operability and functional performance of the components of the systems, such as onsite power sources, relays, switches, and buses, and (2) the operability of the systems as a whole and, under conditions as close to design as practical, the full operation sequence that brings the systems into operation, including operation of applicable portions of the protection system, and the transfer of power among the nuclear power unit, the offsite power system, and the onsite power system.

The proposed change will enable TS SR testing of the new Unit 2 alternate offsite AC circuits to verify the capability to manually transfer AC power sources from the normal offsite circuit to the alternate required offsite circuit. The proposed change will not remove any TS SR requirements for test criteria or test schedules. Thus, General Design Criteria 17 and 18 continue to be met.

**Environmental Consideration**

A review has determined that the proposed amendment 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 amendment 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.

## 6.0 CONCLUSION

Based on the above discussion, Dominion concludes that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

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

## 7.0 PRECEDENT

North Anna Power Station is unique in that the emergency bus power feed configuration is different for Units 1 and 2. A directly applicable similar precedent was not identified.

# Attachment 2

## Marked-up Technical Specifications Page

**North Anna Power Station**
**Unit 2**
**Virginia Electric and Power Company**
**(Dominion)**

SURVEILLANCE REQUIREMENTS

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.8.1.7 | ----------NOTE----------<br>All EDG starts may be preceded by an engine prelube period.<br>----------<br><br>Verify each required EDG starts from standby condition and achieves<br><br>a. In ≤ 10 seconds, voltage ≥ 3960 V and frequency ≥ 59.5 Hz; and<br><br>b. Steady state voltage ≥ 3740 V and ≤ 4580 V, and frequency ≥ 59.5 Hz and ≤ 60.5 Hz. | In accordance with the Surveillance Frequency Control Program |
| SR 3.8.1.8 | ----------NOTES----------<br>~~1. This Surveillance is only applicable to Unit 1.~~<br>~~2.~~ This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced.<br>----------<br><br>Verify manual transfer of AC power sources from the normal offsite circuit to the alternate required offsite circuit. | In accordance with the Surveillance Frequency Control Program |

# Attachment 3

# Proposed Technical Specifications Page

**North Anna Power Station**
**Unit 2**
**Virginia Electric and Power Company**
**(Dominion)**

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.7 | ----------NOTE----------<br>All EDG starts may be preceded by an engine prelube period.<br>----------<br><br>Verify each required EDG starts from standby condition and achieves<br><br>a. In ≤ 10 seconds, voltage ≥ 3960 V and frequency ≥ 59.5 Hz; and<br><br>b. Steady state voltage ≥ 3740 V and ≤ 4580 V, and frequency ≥ 59.5 Hz and ≤ 60.5 Hz. | In accordance with the Surveillance Frequency Control Program |
| SR 3.8.1.8 | ----------NOTE----------<br>This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced.<br>----------<br><br>Verify manual transfer of AC power sources from the normal offsite circuit to the alternate required offsite circuit. | In accordance with the Surveillance Frequency Control Program |

**Attachment 4**

**Marked-up Technical Specifications Bases Changes**
**(For Information Only)**

**North Anna Power Station**
**Unit 2**
**Virginia Electric and Power Company**
**(Dominion)**

BASES

LCO (continued)

availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an anticipated operational occurrence (AOO) or a postulated DBA.

Qualified offsite circuits include the two 500-34.5 kV transformers and one 230-34.5 kV transformers (collectively referred to as the SRTs) that feed three independent 34.5 kV buses which supply the RSSTs. In addition, there are two 500 kV lines from the switchyard to the Unit 1 and Unit 2 generator step-up transformers and SSTs. These circuits are described in the UFSAR and are part of the licensing basis for the unit.

In addition, the required automatic load sequencing timing relays must be OPERABLE. A "required" load sequencing timing relay is one whose host component is capable of automatically loading onto an emergency bus.

Each independent qualified offsite source must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the ESF buses.

Normally, the qualified offsite sources for the Unit 1 and 2 ESF buses are from the 34.5 kV buses 3, 4, and 5 which supply the RSSTs which feed the transfer buses. RSSTs A and B may be fed from the same 34.5 kV bus, but RSST C must be fed from a different 34.5 kV bus than RSST A and RSST B. The D, E, and F transfer buses supply the onsite electrical power to the four ESF buses for the two units. In addition to the normal alignment, the D and E transfer buses can be tied together via the 4160 V bus OL installed as part of the AAC modifications.

ESF bus 1H is normally fed through the F transfer bus from RSST C. ESF bus 1J is normally fed through the D transfer bus from RSST A. Station service bus 1B can provide an alternate preferred feed for the ESF 1H bus, while the ESF 1J has an alternate preferred feed from station service bus 2B. ESF bus 2H is normally fed through the E transfer bus from RSST B. In addition, ESF bus 2H can also be fed through E transfer bus from RSST A with breakers 05L1 and 05L3 on AAC bus OL closed. ESF bus 2J is normally fed through the F transfer bus from RSST C.

Station service bus 2C can provide an alternate preferred feed for the ESF 2H Bus, while the ESF 2J has an alternate preferred feed from station service bus 1A.

(continued)

BASES

LCO (continued)

The two 500 kV lines connecting each unit's main step-up and SSTs with the switchyard are the remaining qualified sources of offsite (preferred) power that are available to power ESF buses. For Unit 1, this source is normally available following a unit trip since there is an installed main generator breaker. ~~Therefore, station service bus 1B, which provides the alternate preferred feed to the 1H ESF bus, normally will not be affected.~~ For Unit 2, where there is no installed main generator breaker, ~~station service bus 2B, which provides the alternate preferred feed to ESF bus 1J, will automatically transfer to RSST B following a unit trip~~.

Therefore, station service bus 1A and 1B, which provide the alternate preferred feeds to the 2J and 1H ESF bus, respectively, normally will not be affected.

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

Proper sequencing of loads is a required function for EDG OPERABILITY.

In the event of a loss of offsite (preferred) power supply to the emergency bus, the EDG will auto start and re-energize its associated bus. In this configuration the EDG will become inoperable due to the defeat of load sequencing timers. Upon completion of guidance in abnormal procedures for reconfiguration of the affected electrical bus to control loads, TS 3.8.1 Condition K may be exited as sequencing timing relays are no longer required as long as the associated emergency bus is not subsequently paralleled to another bus. The diesel can be considered operable which would allow exiting TS 3.8.1 Conditions B and H and remaining in TS 3.8.1 Condition A.

station service bus 2B and 2C, which provide the alternate preferred feeds to ESF bus 1J and 2H, respectively, will automatically transfer to RSST B and RSST C following a unit trip. If bus 2H or 2J alternate feed is in service, then both Unit 2 alternate feeds must be in service for both buses (2H and 2J) to be considered operable. This satisfies the requirement for two qualified circuits between the offsite transmission network and the onsite Class 1E AC electrical power distribution system per TS 3.8.1.a.

The other unit's offsite circuit(s) and EDG(s) are required to be OPERABLE to support the SW, MCR/ESGR EVS, Auxiliary Building central exhaust, and CC functions needed for this unit. These functions share components, pump or fans, which are electrically powered from both units.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure that distribution buses and loads are connected to the preferred or alternate power sources for Unit 1 or ~~the preferred power source for~~ Unit 2, and that appropriate independence of offsite circuits is maintained. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

SR 3.8.1.2 and SR 3.8.1.7

These SRs help to ensure the availability of the standby electrical power supply to mitigate DBAs and transients and to maintain the unit in a safe shutdown condition.

To minimize the wear on moving parts that do not get lubricated when the engine is not running, these SRs are modified by a Note (Note 1 for SR 3.8.1.2) to indicate that all EDG starts for these Surveillances may be preceded by an engine prelube period and followed by a warmup period prior to loading.

For the purposes of SR 3.8.1.2 and SR 3.8.1.7 testing, the EDGs are started from standby conditions. Standby conditions for an EDG mean that the diesel engine coolant and oil are being continuously circulated, as required, and temperature is being maintained consistent with manufacturer recommendations.

In order to reduce stress and wear on diesel engines, the manufacturer recommends a modified start in which the starting speed of EDGs is limited, warmup is limited to this lower speed, and the EDGs are gradually accelerated to synchronous speed prior to loading. These start procedures are the intent of Note 2.

SR 3.8.1.7 requires that the EDG starts from standby conditions and achieves required voltage and frequency within 10 seconds. The 10 second start requirement supports the assumptions of the design basis LOCA analysis in the UFSAR, Chapter 15 (Ref. 5).

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.5 (continued)

oil system. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program. This SR is for preventative maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during the performance of this Surveillance.

SR 3.8.1.6

This Surveillance demonstrates that each required fuel oil transfer pump operates and transfers fuel oil from its associated storage tank to its associated day tank. This is required to support continuous operation of standby power sources. This Surveillance provides assurance that the fuel oil transfer pump is OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and the controls and control systems for fuel transfer systems are OPERABLE. Only one fuel oil transfer subsystem is required to support an OPERABLE EDG.

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

SR 3.8.1.7

See SR 3.8.1.2.

SR 3.8.1.8

Transfer of each 4.16 kV ESF bus power supply from the normal offsite circuit to the alternate offsite circuit demonstrates the OPERABILITY of the alternate circuit distribution network to power the shutdown loads. ~~for Unit 1 only.~~ The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

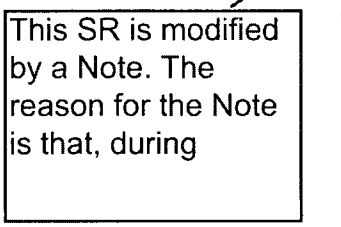
(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.8 (continued)

~~This SR is modified by two Notes. Note 1 states that the SR is applicable to Unit 1 only. The SR is not applicable to Unit 2 because it does not have an alternate offsite feed for the emergency buses. The reason for Note 2 is that, during~~ operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines unit safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a unit shutdown and startup to determine that unit safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment.




SR 3.8.1.9

Each EDG is provided with an engine overspeed trip to prevent damage to the engine. Recovery from the transient caused by the loss of a large load could cause diesel engine overspeed, which, if excessive, might result in a trip of the engine. This Surveillance demonstrates the EDG load response characteristics and capability to reject the largest single load without exceeding predetermined voltage and frequency and while maintaining a specified margin to the overspeed trip. For this unit, the single load for each EDG is 610 kW. This Surveillance may be accomplished by:

a. Tripping the EDG output breaker with the EDG carrying greater than or equal to its associated single largest post-accident load while paralleled to offsite power, or while solely supplying the bus; or

(continued)

BASES

LCO (continued)

powered from offsite power. An OPERABLE EDG, associated with the distribution system trains required to be OPERABLE by LCO 3.8.10, ensures a diverse power source is available to provide electrical power support, assuming a loss of the offsite circuit. Together, OPERABILITY of the required offsite circuit and EDG ensures the availability of sufficient AC sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents involving handling recently irradiated fuel).

The qualified offsite circuit must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the Engineered Safety Feature (ESF) bus(es). Qualified offsite circuits are those that are described in the UFSAR and are part of the licensing basis for the unit.

Offsite circuits consist of 34.5 kV buses 3, 4, and 5 supplying the Reserve Station Service Transformer(s) (RSST) which feed the transfer buses. The D, E, and F transfer buses supply the onsite electrical power to the four emergency buses for the two units. Unit 1 emergency bus H is fed through the F transfer bus from the C RSST. Unit 1 emergency bus J is fed through the D transfer bus from the A RSST. Unit 1 station service bus 1B can be an alternate feed for Unit 1 H emergency bus, while Unit 1 J bus may be fed from Unit 2 station service bus 2B. Unit 2 emergency bus H is fed through the E transfer bus from the B RSST. Unit 2 emergency bus J is fed through the F transfer bus from the C RSST. The RSSTs can be fed by any 34.5 kV bus (3, 4, or 5) provided RSSTs A and B are fed from a different 34.5 kV bus than RSST C.

Unit 2 station service bus 2C can be an alternate feed for Unit 2 H emergency bus, while Unit 2 J bus may be fed from Unit 1 station service bus 1A. If bus 2H or 2J alternate feed is in service, then both Unit 2 alternate feeds must be in service for both buses (2H and 2J) to be considered operable. This satisfies the requirement for two qualified circuits between the offsite transmission network and the onsite Class 1E AC electrical power distribution system per TS 3.8.1.a.

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

Proper sequencing of loads is a required function for EDG OPERABILITY.

(continued)

BASES

ACTIONS (continued)

In addition, the following compensatory measure will be established and implemented prior to entry and while in the extended AOT:

1. The condition of the offsite power supply and switchyard will be evaluated prior to entering the extended EDG UFOST CT for elective maintenance.

2. Determine acceptable grid conditions for entering an extended EDG UFOST CT to perform elective maintenance. An extended EDG UFOST CT will not be entered to perform elective maintenance when grid stress conditions are high.

3. No elective maintenance will be scheduled in the switchyard that would challenge offsite power availability and no elective maintenance will be scheduled on the main, auxiliary [station service], or startup [reserve station service] transformers associated with the unit during the proposed extended EDG UFOST CT.

4. The system dispatcher will be contacted once per day to ensure no significant grid perturbations are expected during the extended EDG UFOST CT.

5. The turbine-driven AFW pump will not be removed from service for planned maintenance activities during the extended EDG UFOST CT.

6. Operating crews will be briefed on the EDG UFOST work plan and procedural actions regarding:

   LOOP and Station Black Out
   ~~4 kV safeguards bus cross-tie [Unit 2 emergency bus cross-tie]~~
   Reactor Coolant System bleed and feed

7. Weather conditions will be evaluated prior to entering the extended EDG CT for elective maintenance. An extended EDG UFOST CT will not be entered for elective maintenance purposes if official weather forecasts are predicting severe conditions (tornado or thunderstorm warnings).

8. No elective maintenance will be scheduled for the plant DC system.

(continued)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.9 Distribution Systems–Operating

BASES

BACKGROUND

The onsite Class 1E AC, DC, and AC vital bus electrical power distribution systems are divided by train into two redundant and independent AC, DC, and AC vital bus electrical power distribution subsystems.

and Unit 2 each have

The ~~AC~~ electrical power subsystem for each train consists of a primary ~~Engineered~~ Safety Feature (ESF) 4.16 kV bus and secondary 480 ~~V~~ buses and load centers. Each 4.16 kV ESF bus has at least one separate and independent offsite source of power as well as a dedicated onsite emergency diesel generator (EDG) source. Unit 1 ~~has~~ a normal offsite source and an alternate offsite source. Transfer to the alternate offsite source is a manual operation. ~~Unit 2 has a normal offsite source, and no alternate source.~~ In the event of a loss of offsite power, the EDGs for the affected buses will start and load. The EDGs for Unit 1 will continue to run until (a) the safety bus is transferred to the alternate offsite source, or (b) the normal offsite source is restored. ~~The Unit 2 EDGs will continue to run until the normal offside source is restored.~~ If offsite sources are unavailable, the onsite EDG supplies power to the 4.16 kV ESF bus. Control power for the 4.16 kV breakers is supplied from the Class 1E batteries. Additional description of this system may be found in the Bases for LCO 3.8.1, "AC Sources–Operating," and the Bases for LCO 3.8.4, "DC Sources–Operating."

and Unit 2

The secondary AC electrical power distribution subsystem for each train includes the safety related buses and load centers shown in Table B 3.8.9-1.

The 120 VAC vital buses are arranged in two load groups per train and are normally powered from the inverters. The alternate power supply for the vital buses are constant voltage source transformers powered from the same train as the associated inverter, and its use is governed by LCO 3.8.7, "Inverters–Operating." Each constant voltage source transformer is powered from a Class 1E AC bus.

There are two independent 125 VDC electrical power distribution subsystems for each train.

(continued)