

10 CFR 50.90

RS-02-110

July 8, 2002

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

Subject: LaSalle County Station, Units 1 and 2
Facility Operating License Nos. NPF-11 and NPF-18
NRC Docket Nos. 50-373 and 50-374

Request for Amendment to Technical Specifications
Table 3.3.8.1-1, "Loss of Power Instrumentation"

In accordance with 10 CFR 50.90, Exelon Generation Company (EGC), LLC, hereby requests the following amendment to Appendix A, Technical Specifications (TS), of Facility Operating License Nos. NPF-11 and NPF-18. Specifically, the proposed changes add two footnotes to TS Table 3.3.8.1-1, "Loss of Power Instrumentation," Functions 1.e and 2.e, "Degraded Voltage – Time Delay, LOCA," and makes an editorial change to the heading of TS Table 3.3.8.1-1.

The Degraded Voltage – Time Delay, LOCA, function is currently required to be OPERABLE during plant configurations when the ECCS instrumentation that generates the Loss of Coolant Accident (LOCA) signal is not required to be OPERABLE. The proposed changes correct this inconsistency by adding two new footnotes to TS Table 3.3.8.1-1 that modify the required OPERABILITY of the Degraded Voltage – Time Delay, LOCA, function.

The information supporting the proposed TS changes is subdivided as follows.

- Attachment 1 is the notarized affidavit.
- Attachment 2 provides our evaluation supporting the proposed changes.
- Attachment 3 contains the copies of the marked up TS pages.
- Attachment 4 provides the retyped TS pages and Bases pages for information only.

Accol

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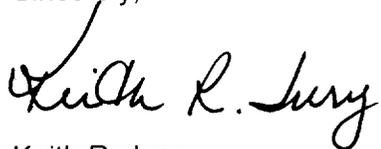
The proposed TS changes have been reviewed by the LaSalle County Station Plant Operations Review Committee (PORC) and approved by the Nuclear Safety Review Board (NSRB) in accordance with the Quality Assurance Program.

EGC is notifying the State of Illinois of this application for amendment by transmitting a copy of this letter and its attachments to the designated State Official.

We request approval of the proposed changes by February 15, 2003 with an implementation period of 30 days.

Should you have any questions concerning this submittal, please contact Mr. T. W. Simpkin at (630) 657-2821.

Sincerely,



Keith R. Jury
Director-Licensing
Mid-West Regional Operating Group

Attachments:

- Attachment 1. Notarized Affidavit
- Attachment 2. Licensee's Evaluation
- Attachment 3. Markup of Technical Specification pages
- Attachment 4. Retyped Technical Specification pages and Bases (for information only) pages

cc: Regional Administrator – NRC Region III
NRC Project Manager, NRR - LaSalle County Station
NRC Senior Resident Inspector – LaSalle County Station
Office of Nuclear Facility Safety – Illinois Department of Nuclear Safety

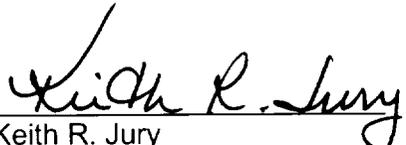
ATTACHMENT 1
Affidavit

STATE OF ILLINOIS)
COUNTY OF DUPAGE)
IN THE MATTER OF:)
EXELON GENERATION COMPANY (EGC), LLC) Docket Numbers
LASALLE COUNTY STATION - UNIT 1 and UNIT 2) 50-373 and 50-374

SUBJECT: Request for Amendment to Technical Specifications
Table 3.3.8.1-1, "Loss of Power Instrumentation"

AFFIDAVIT

I affirm that the content of this transmittal is true and correct to the best of my knowledge, information, and belief.



Keith R. Jury
Director-Licensing
Mid-West Regional Operating Group

Subscribed and sworn to before me, a Notary Public in and

for the State above named, this 8th day of

July, 2002





Notary Public

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Evaluation of Proposed Changes
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- 1.0 INTRODUCTION
- 2.0 DESCRIPTION OF PROPOSED AMENDMENT
- 3.0 BACKGROUND
- 4.0 REGULATORY REQUIREMENTS & GUIDANCE
- 5.0 TECHNICAL ANALYSIS
- 6.0 REGULATORY ANALYSIS
- 7.0 NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC)
- 8.0 ENVIRONMENTAL CONSIDERATION
- 9.0 PRECEDENT
- 10.0 REFERENCES

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1.0 INTRODUCTION

In accordance with 10 CFR 50.90, Exelon Generation Company (EGC), LLC, hereby requests the following amendment to Appendix A, Technical Specifications (TS), of Facility Operating License Nos. NPF-11 and NPF-18. Specifically, the proposed changes add two footnotes to TS Table 3.3.8.1-1, "Loss of Power Instrumentation," Functions 1.e and 2.e, "Degraded Voltage – Time Delay, LOCA," and makes an editorial change to the heading of TS Table 3.3.8.1-1.

2.0 DESCRIPTION OF PROPOSED AMENDMENT

The proposed changes add two new footnotes to TS Table 3.3.8.1-1 that modify the required OPERABILITY of the Degraded Voltage – Time Delay, LOCA, Functions 1.e and 2.e. The proposed footnotes are as follows.

(a) In MODES 4 and 5, when associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, "ECCS – Shutdown."

(b) With no fuel in the vessel, not required to be OPERABLE.

Proposed footnote (a) is consistent with footnote (a) on TS Table 3.3.5.1-1 for the Reactor Vessel Water Level – Low Low Low, Level 1 and the Reactor Vessel Water Level – Low Low, Level 2 Emergency Core Cooling System (ECCS) instrumentation. Additionally, it is consistent with the OPERABILITY requirements for the Drywell Pressure – High ECCS instrumentation.

Proposed footnote (b) removes the OPERABILITY requirement for the Degraded Voltage – Time Delay, LOCA, function during movement of irradiated fuel assemblies in the secondary containment when the plant is not in a defined MODE. This is consistent with the OPERABILITY requirements for the Drywell Pressure – High, Reactor Vessel Water Level – Low Low Low, Level 1 and the Reactor Vessel Water Level – Low Low, Level 2 ECCS instrumentation.

The TS Table 3.3.8.1-1 Function column heading is editorially changed to add the reference to the Opposite Unit Division 2. It was always the intent and practice of LaSalle County Station to apply TS requirements from this column to the opposite unit Division 2 4.16 kV emergency bus.

In summary, the proposed change to TS Table 3.3.8.1-1 will modify the OPERABILITY of the Degraded Voltage – Time Delay, LOCA, functions 1.e and 2.e, to be consistent with the OPERABILITY of the ECCS instrumentation that generate the associated loss of coolant accident (LOCA) signal.

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3.0 BACKGROUND

Successful operation of the required safety functions of the ECCS is dependent upon the availability of adequate power sources for energizing the various components such as pump motors, motor operated valves, and the associated control components. The loss of power (LOP) instrumentation monitors the 4.16 kilovolt (kV) emergency buses. Offsite power is the preferred source of power for the 4.16 kV emergency buses. If the instrumentation determines that insufficient voltage is available, the buses are automatically disconnected from the offsite power sources and connected to the onsite diesel generator (DG) power sources.

Each 4.16 kV emergency bus has its own independent LOP instrumentation and associated trip logic. The voltage for the Division 1, 2, and 3 buses is monitored at two levels, which can be considered as two different undervoltage functions: loss of voltage and degraded voltage.

For Division 1, 2 and 3, each degraded voltage function is monitored by two instruments per bus whose output trip contacts are arranged in a two-out-of-two logic configuration per bus. The degraded voltage signal is generated when a degraded voltage occurs for a specified time interval; the time interval is dependent upon whether a LOCA signal is present. A degraded voltage signal results in the start of the associated DG, the trip of the normal and alternate offsite power supply breakers to the associated 4.16 kV emergency bus, and, for Divisions 1 and 2 only, the shedding of the appropriate 4.16 kV bus loads.

Currently, the Degraded Voltage – Time Delay, LOCA, function is required to be OPERABLE in MODES 1, 2, 3, 4, 5 and during movement of irradiated fuel assemblies in the secondary containment in accordance with the APPLICABILITY of TS 3.3.8.1.

TS 3.3.8.1, "Loss of Power (LOP) Instrumentation," requires the LOP instrumentation for each function in Table 3.3.8.1-1 to be OPERABLE in MODES 1, 2, 3 and when the associated DG is required to be OPERABLE by LCO 3.8.2, "AC Sources – Shutdown."

TS 3.8.2 is applicable in MODES 4, 5 and during movement of irradiated fuel assemblies in the secondary containment. TS 3.8.2 requires one DG to be OPERABLE which is capable of supplying one division of the Division 1 or 2 onsite Class 1E alternating current (AC) electrical power distribution subsystem(s) required by the Limiting Condition for Operation (LCO) of TS 3.8.8, "Distribution System – Shutdown." Additionally, TS 3.8.2 requires the Division 3 DG to be OPERABLE when the Division 3 onsite Class 1E AC electrical power distribution subsystem is required by the LCO of TS 3.8.8.

TS 3.8.8 is applicable in MODES 4, 5 and during movement of irradiated fuel assemblies in the secondary containment. TS 3.8.8 requires the necessary portions of the Division 1, Division 2, opposite unit Division 2 and Division 3 AC, and direct current (DC) electrical power distribution subsystems to be OPERABLE to support equipment required to be OPERABLE.

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Thus, the Degraded Voltage – Time Delay, LOCA, function is currently required to be OPERABLE in MODES 1, 2, 3, 4, 5 and during movement of irradiated fuel assemblies in the secondary containment.

The Degraded Voltage – Time Delay, LOCA, function relies on ECCS instrumentation that is required to be OPERABLE in accordance with TS 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation." The LOCA signal for Division 1 and 2 buses is generated by either the Reactor Vessel Water Level – Low Low Low, Level 1, or Drywell Pressure – High, ECCS instrumentation. The LOCA signal for Division 3 buses is generated by either Reactor Vessel Water Level – Low Low, Level 2, or Drywell Pressure – High, ECCS instrumentation.

TS 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation," requires the ECCS instrumentation for each function listed in TS Table 3.3.5.1-1 to be OPERABLE in the MODE(S) specified in TS Table 3.3.5.1-1.

TS Table 3.3.5.1-1 requires the Drywell Pressure—High instrumentation to be OPERABLE in MODES 1, 2 and 3. The Reactor Vessel Water Level – Low Low Low, Level 1 and the Reactor Vessel Water Level – Low Low, Level 2 ECCS instrumentation is required to be OPERABLE in MODES 1, 2, 3, and in MODES 4 and 5 when associated ECCS subsystems are required to be OPERABLE per LCO 3.5.2, "ECCS – Shutdown."

TS 3.5.2 requires the ECCS subsystems to be OPERABLE in MODE 4, and MODE 5 except with the spent fuel storage pool gates removed and the water level \geq 22 feet over the top of the reactor pressure vessel flange.

As such, the ECCS instrumentation that is required to be OPERABLE to support the Degraded Voltage – Time Delay, LOCA, function is required to be OPERABLE in MODES 1, 2 and 3, and in MODES 4 and 5, when associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2. The ECCS instrumentation is not required to be OPERABLE when the plant is in a configuration that is not a defined MODE (i.e., no fuel in the vessel).

Therefore, the Degraded Voltage – Time Delay, LOCA, function is currently required to be OPERABLE during plant configurations when the ECCS instrumentation that generates the LOCA signal is not required to be OPERABLE. The proposed changes correct this inconsistency by adding two new footnotes to TS Table 3.3.8.1-1 that modify the required OPERABILITY of the Degraded Voltage – Time Delay, LOCA, Function.

4.0 REGULATORY REQUIREMENTS & GUIDANCE

10 CFR 50.36, "Technical specifications," provides the regulatory requirements for the content required in a licensee's TS. The proposed changes are consistent with 10 CFR 50.36.

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5.0 TECHNICAL ANALYSIS

5.1 Design Bases

A reduced voltage condition on a 4.16 kV emergency bus indicates that while offsite power may not be completely lost to the respective emergency bus, power may be insufficient for starting large motors without risking damage to the motors that could disable the ECCS function. Therefore, power supplied to the bus is transferred from offsite power to an onsite DG. This ensures that adequate power will be available to the required equipment.

The Degraded Voltage Time Delay circuitry is composed of two time delay components. Upon detection of a degraded voltage condition, the Degraded Voltage - Time Delay LOCA, function timer is initiated with an Allowable Value of ≥ 9.4 seconds and ≤ 10.9 seconds. If a LOCA signal is present after the time delay setting of the Degraded Voltage - Time Delay LOCA, the Loss of Power trip logic is initiated. If no LOCA signal is present, the Degraded Voltage - Time Delay LOCA, function is bypassed while the Degraded Voltage Time Delay, NO LOCA timer is initiated with an Allowable Value of ≥ 270.1 seconds and ≤ 329.9 seconds. The Time Delay Allowable Values are long enough to provide time for the offsite power supply to recover to normal voltages, but short enough to ensure that sufficient power is available to the required equipment. The shorter time delay associated with a coincident LOCA signal is required to ensure that the ECCS injection assumptions of the LOCA analyses are met.

The LOCA signal to the Degraded Voltage – Time Delay, LOCA, function timer is generated by the Drywell Pressure – High, Reactor Vessel Water Level – Low Low Low, Level 1 and the Reactor Vessel Water Level – Low Low, Level 2 ECCS instrumentation. The OPERABILITY of this ECCS instrumentation is required by TS 3.3.5.1.

High pressure in the drywell could indicate a break in the reactor coolant pressure boundary. The LOCA signal is initiated upon receipt of the Drywell Pressure – High indication in order to minimize the possibility of fuel damage. The core cooling function of the ECCS, along with the scram action of the Reactor Protection System (RPS), ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors." The Drywell Pressure – High instrumentation is required to be OPERABLE in MODES 1, 2 and 3. In MODES 4 and 5, the Drywell Pressure – High instrumentation is not required to be OPERABLE since there is insufficient energy in the reactor to pressurize the drywell to the Drywell Pressure—High setpoint.

Low reactor pressure vessel (RPV) water level indicates that the capability to cool the fuel may be threatened. Should RPV water level decrease too far, fuel damage could result. The low pressure ECCS and associated DGs are initiated

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at Level 1 to ensure that core spray and flooding functions are available to prevent or minimize fuel damage. The Reactor Vessel Water Level – Low Low Low, Level 1 is one of the indications assumed to be OPERABLE and capable of initiating the ECCS during the LOCA transients analyzed. The Reactor Vessel Water Level – Low Low, Level 2 is one of the indications assumed to be OPERABLE and capable of initiating HPCS during the LOCA transients analyzed. The core cooling function of the ECCS, along with the scram action of the RPS ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46. The Reactor Vessel Water Level – Low Low Low, Level 1 and Reactor Vessel Water Level – Low Low, Level 2 ECCS Instrumentation is required to be OPERABLE in MODES 1, 2, 3 and 4. In MODE 5, the ECCS Instrumentation is required to be OPERABLE except with the spent fuel storage pool gates removed and the water level \geq 22 feet over the top of the reactor pressure vessel flange. In this situation, the water level provides sufficient coolant inventory to allow operator action to terminate the inventory loss prior to fuel uncover in case of an inadvertent draindown.

The Drywell Pressure – High, Reactor Vessel Water Level – Low Low Low, Level 1 and the Reactor Vessel Water Level – Low Low, Level 2 ECCS instrumentation are not required to be OPERABLE when not in MODES 1, 2, 3, 4, and 5 (i.e., no fuel in the vessel).

Thus, OPERABILITY of this ECCS instrumentation is consistent with the ECCS injection assumptions of the LOCA analyses.

The proposed changes will modify the OPERABILITY of the Degraded Voltage – Time Delay, LOCA, function to be consistent with the OPERABILITY of the above described ECCS instrumentation that generate the timer initiating LOCA signal. Thus, the proposed changes are consistent with the ECCS injection assumptions of the LOCA analyses.

The Degraded Voltage – Time Delay, No LOCA, function provides adequate protection to ensure that other required systems powered from the DGs function as designed in any non-LOCA accident in which a loss of power is assumed when the Degraded Voltage – Time Delay, LOCA, function is not required to be OPERABLE.

TS Table 3.3.8.1-1 Degraded Voltage – Time Delay, LOCA, functions require two operable channels for each Division 1, 2 and 3 emergency bus, for the degraded voltage time delay associated with a LOCA. The Allowable Value is \geq 9.4 seconds and \leq 10.9 seconds. The proposed changes do not affect the Allowable Values.

5.2 Risk Information

This submittal is not based on risk informed decision making.

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6.0 REGULATORY ANALYSIS

10 CFR 36(c)(2)(ii)(B), "Criterion 2," requires that 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. The Degraded Voltage – Time Delay, LOCA, function provides assurance that adequate electrical voltage is available from either off site or on site electrical power sources to power the components of the ECCS when the ECCS is required operable. Thus, Degraded Voltage – Time Delay, LOCA, function is required to be included in the LaSalle County Station TS.

7.0 NO SIGNIFICANT HAZARDS CONSIDERATION

EGC has evaluated the proposed changes to the TS for LaSalle County Station, Unit 1 and Unit 2, and has determined that the proposed changes do not involve a significant hazards consideration and is providing the following information to support a finding of no significant hazards consideration.

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

Response: No

The TS Table 3.3.8.1-1 Function column heading change to add the reference to the Opposite Unit Division 2 is an editorial change. It was always the intent and practice of LaSalle County Station to apply TS requirements from this column to the Opposite Unit Division 2 4.16 kV emergency bus.

The operation of the Degraded Voltage – Time Delay, LOCA, function is not a precursor to any accident previously evaluated. Thus, the proposed changes to modify the OPERABILITY of the Degraded Voltage – Time Delay, LOCA, function to be consistent with the OPERABILITY of the ECCS instrumentation that generate the timer initiating LOCA signal do not have any affect on the probability of an accident previously evaluated.

Successful operation of the required safety functions of the ECCS is dependent upon the availability of adequate power sources for energizing the various components such as pump motors, motor operated valves, and the associated control components. Offsite power is the preferred source of power for the 4.16 kV emergency buses. The Degraded Voltage – Time Delay, LOCA, function does provide assurance that the ECCS will perform as designed by initiating the disconnect of the 4.16 kV emergency buses from the offsite power sources and connected to the onsite DG power sources, if it is determined that insufficient offsite voltage is available. Thus, the radiological consequences of any accident previously evaluated are not increased.

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

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

Response: No

The proposed changes to modify the OPERABILITY of the Degraded Voltage – Time Delay, LOCA, function to be consistent with the OPERABILITY of the ECCS instrumentation that generate the timer initiating LOCA signal, will not affect the control parameters governing unit operation or the response of plant equipment to transient conditions. The proposed changes do not introduce any new equipment, modes of system operation or failure mechanisms.

Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any previously evaluated.

Does the change involve a significant reduction in a margin of safety?

Response: No

The Degraded Voltage Time Delay circuitry is composed of two time delay components. Upon detection of a degraded voltage condition, the Degraded Voltage – Time Delay, No LOCA, function timer is initiated with a TS Allowable Value of ≥ 270.1 seconds and ≤ 329.9 seconds. If a coincident LOCA signal is detected, the Degraded Voltage – Time Delay, No LOCA, function timer is bypassed and the Degraded Voltage – Time Delay, LOCA, function timer is initiated. The Degraded Voltage – Time Delay, LOCA, function timer has a TS Allowable Value of ≥ 9.4 seconds and ≤ 10.9 seconds. The Time Delay Allowable Values are long enough to provide time for the offsite power supply to recover to normal voltages, but short enough to ensure that sufficient power is available to the required equipment. The shorter time delay associated with a coincident LOCA signal is required to ensure that the ECCS injection assumptions of the LOCA analyses are met. The proposed changes do not affect the Time Delay Allowable Values.

The Drywell Pressure – High instrumentation is required to be OPERABLE in MODES 1, 2 and 3. In MODES 4 and 5, the Drywell Pressure – High instrumentation is not required to be OPERABLE since there is insufficient energy in the reactor to pressurize the drywell to the Drywell Pressure—High setpoint.

The Reactor Vessel Water Level – Low Low Low, Level 1 and Reactor Vessel Water Level – Low Low, Level 2 ECCS instrumentation is required to be OPERABLE in MODES 1, 2, 3 and 4. In MODE 5, the ECCS instrumentation is

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required to be OPERABLE except with the spent fuel storage pool gates removed and the water level \geq 22 feet over the top of the reactor pressure vessel flange. In this situation, the water level provides sufficient coolant inventory to allow operator action to terminate the inventory loss prior to fuel uncovering in case of an inadvertent draindown.

The Drywell Pressure – High, Reactor Vessel Water Level – Low Low Low, Level 1 and the Reactor Vessel Water Level – Low Low, Level 2 ECCS instrumentation are not required to be OPERABLE when not in MODES 1, 2, 3, 4, and 5 (i.e., no fuel in the vessel).

The proposed changes will modify the OPERABILITY of the Degraded Voltage – Time Delay, LOCA, function to be consistent with the OPERABILITY of the above described ECCS instrumentation that generate the timer initiating LOCA signal. Thus, the proposed changes are consistent with the ECCS injection assumptions of the LOCA analyses.

The Degraded Voltage – Time Delay, No LOCA, function provides adequate protection to ensure that other required systems powered from the diesel generators (DGs) function as designed in any non-LOCA accident in which a loss of power is assumed when the Degraded Voltage – Time Delay, LOCA, function is not required to be OPERABLE.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based upon the above, EGC concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of “no significant hazards consideration” is justified.

8.0 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.

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9.0 PRECEDENT

The proposed amendment incorporates into the LaSalle County Station changes that are specific to LaSalle County Station, and therefore, this proposed amendment does not rely upon the issuance of amendments to other licensees.

ATTACHMENT 3

MARKUP OF PROPOSED TECHNICAL SPECIFICATION PAGE CHANGES

Revised TS Pages

AND OPPOSITE
UNIT DIVISION 2

Table 3.3.8.1-1 (page 1 of 1)
Loss of Power Instrumentation

FUNCTION	REQUIRED CHANNELS PER DIVISION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Divisions 1 and 2 - 4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage - 4.16 kV Basis	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≥ 2422 V and ≤ 3091 V
b. Loss of Voltage - Time Delay	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≥ 3.1 seconds and ≤ 10.9 seconds
c. Degraded Voltage - 4.16 kV Basis	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 3814 V and ≤ 3900 V
d. Degraded Voltage - Time Delay, No LOCA	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 270.1 seconds and ≤ 329.9 seconds
e. Degraded Voltage - Time Delay, LOCA	2 (a)(b)	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 9.4 seconds and ≤ 10.9 seconds
2. Division 3-4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage - 4.16 kV Basis	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≥ 2596 V and ≤ 3137 V
b. Loss of Voltage - Time Delay	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≤ 10.9 seconds
c. Degraded Voltage - 4.16 kV Basis	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 3814 V and ≤ 3900 V
d. Degraded Voltage - Time Delay, No LOCA	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 270.1 seconds and ≤ 329.9 seconds
e. Degraded Voltage - Time Delay, LOCA	2 (a)(b)	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 9.4 seconds and ≤ 10.9 seconds

(a) IN MODES 4 AND 5, WHEN ASSOCIATED ECCS SUBSYSTEM(S) ARE REQUIRED TO BE OPERABLE PER LCO 3.5.2, "ECCS SHUTDOWN."

(b) WITH NO FUEL IN REACTOR VESSEL, NOT REQUIRED TO BE OPERABLE.

ATTACHMENT 4

**RETYPE PAGES
FOR
TECHNICAL SPECIFICATION CHANGES
AND
BASES CHANGES (FOR INFORMATION ONLY)**

Retyped TS Pages

Retyped Bases Pages

Table 3.3.8.1-1 (page 1 of 1)
Loss of Power Instrumentation

FUNCTION	REQUIRED CHANNELS PER DIVISION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Divisions 1, 2 and Opposite Unit Division 2 – 4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage – 4.16 kV Basis	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≥ 2422 V and ≤ 3091 V
b. Loss of Voltage – Time Delay	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≥ 3.1 seconds and ≤ 10.9 seconds
c. Degraded Voltage – 4.16 kV Basis	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 3814 V and ≤ 3900 V
d. Degraded Voltage – Time Delay, No LOCA	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 270.1 seconds and ≤ 329.9 seconds
e. Degraded Voltage – Time Delay, LOCA	2 ^{(a)(b)}	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 9.4 seconds and ≤ 10.9 seconds
2. Division 3-4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage – 4.16 kV Basis	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≥ 2596 V and ≤ 3137 V
b. Loss of Voltage – Time Delay	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≤ 10.9 seconds
c. Degraded Voltage – 4.16 kV Basis	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 3814 V and ≤ 3900 V
d. Degraded Voltage – Time Delay, No LOCA	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 270.1 seconds and ≤ 329.9 seconds
e. Degraded Voltage – Time Delay, LOCA	2 ^{(a)(b)}	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 9.4 seconds and ≤ 10.9 seconds

(a) In MODES 4 and 5, when associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, "ECCS-Shutdown."

(b) With no fuel in the reactor vessel, not required to be OPERABLE.

BASES

APPLICABLE
SAFETY ANALYSES,
LCO, and
APPLICABILITY
(continued)

1.c, 1.d, 1.e, 2.c, 2.d, 2.e. 4.16 kV Emergency Bus
Undervoltage (Degraded Voltage)

A reduced voltage condition on a 4.16 kV emergency bus indicates that while offsite power may not be completely lost to the respective emergency bus, power may be insufficient for starting large motors without risking damage to the motors that could disable the ECCS function. Therefore, power supply to the bus is transferred from offsite power to onsite DG power when the voltage on the bus drops below the Degraded Voltage Function Allowable Values (degraded voltage with a time delay). This ensures that adequate power will be available to the required equipment.

The Bus Undervoltage Allowable Values are low enough to prevent inadvertent power supply transfer, but high enough to ensure that sufficient power is available to the required equipment. The Time Delay Allowable Values are long enough to provide time for the offsite power supply to recover to normal voltages, but short enough to ensure that sufficient power is available to the required equipment.

Two channels of each 4.16 kV Emergency Bus Undervoltage (Degraded Voltage) Function per associated emergency bus are required to be OPERABLE when the associated DG is required to be OPERABLE to ensure that no single instrument failure can preclude the DG function. The Degraded Voltage Functions are: 1) 4.16 kV Basis; 2) Time Delay, No LOCA; and 3) Time Delay, LOCA.

Two channels of each 4.16 kV Emergency Bus Undervoltage (Degraded Voltage) Function per associated emergency bus are required to be OPERABLE when the associated DG is required to be OPERABLE to ensure that no single instrument failure can preclude the DG function. The Degraded Voltage Functions are: 1) 4.16 kV Basis; 2) Time Delay, No LOCA; and 3) Time Delay, LOCA.

The Degraded Voltage Time Delay, LOCA, Function is dependent on whether a LOCA signal is present at the time of the degraded voltage condition. The LOCA signal for Division 1 and 2 buses is generated by either the Reactor Vessel Water Level - Low Low Low, Level 1, or Drywell Pressure - High, ECCS Instrumentation. The LOCA signal for Division 3 is

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)	<u>1.c, 1.d, 1.e, 2.c, 2.d, 2.e. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)</u> generated by either the Reactor Vessel Water Level - Low Low, Level 2 or Drywell Pressure - High ECCS Instrumentation. The required OPERABILITY of this instrumentation is identified on Table 3.3.5.1-1, "Emergency Core Cooling System Instrumentation." Two footnotes have been provided for the Degraded Voltage Time Delay, LOCA, Function to modify its OPERABILITY consistent with the OPERABILITY requirements of the ECCS Instrumentation that generate the associated LOCA signal. Per footnote (a), the Degraded Voltage Time Delay, LOCA, Function is required to be OPERABLE in MODES 4 and 5 when the associated ECCS is required to be OPERABLE for automatic initiation. Additionally, footnote (b) states the Degraded Voltage Time Delay, LOCA, Function is not required to be OPERABLE when the reactor vessel is defueled. These footnotes are acceptable because the Degraded Voltage Time Delay, No LOCA, Function provides adequate protection to ensure that other required systems powered from the DG(s) function as designed in any non-LOCA accident in which a loss of offsite power is assumed.
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ACTIONS	A Note has been provided to modify the ACTIONS related to LOP instrumentation channels. Section 1.3, Completion Times, specifies that once a Condition has been entered, subsequent divisions, subsystems, components, or variables expressed in the Condition discovered to be inoperable or not within limits will not result in separate entry into the Condition. Section 1.3 also specifies that Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable LOP instrumentation channels provide appropriate compensatory measures for separate inoperable channels. As such, a Note has been provided that allows separate Condition entry for each inoperable LOP instrumentation channel.
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