March 23, 2006

NRC 2006-0033
10 CFR 50.90

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

Point Beach Nuclear Plant, Units 1 and 2
Dockets 50-266 and 50-301
License Nos. DPR-24 and DPR-27

License Amendment Request 245;
Technical Specification 3.3.4, Loss of Power Diesel Generator Start Instrumentation

Pursuant to 10 CFR 50.90, Nuclear Management Company, LLC (NMC), hereby submits a proposed amendment to the Technical Specifications (TS) for Point Beach Nuclear Plant, Units 1 and 2.

The proposed amendment would revise TS 3.3.4, "Loss of Power (LOP) Diesel Generator (DG) Start and Load Sequence Instrumentation". The revision modifies the section title and corrects a nonconservatism in the degraded voltage time delay values in TS Surveillance Requirement (SR) 3.3.4.3 b.

Enclosure I provides a description and analysis of the proposed change. Enclosure II provides the existing TS pages marked up to show the proposed change. Enclosure III provides revised (clean) TS pages. Enclosure IV provides the revised TS 3.3.4 Bases.

NMC requests approval of the proposed license amendment by March 2007 with the amendment being implemented within 45 days.

This letter contains no new commitments or revisions to existing commitments.

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated Wisconsin Official.



A001

I declare under penalty of perjury that the foregoing is true and correct.
Executed on March 23, 2006.

Dennis L. Koehl
Site Vice-President, Point Beach Nuclear Plant
Nuclear Management Company, LLC

Enclosures:
I - Description and Analysis of Change
II - Proposed Technical Specification Changes
III - Revised Technical Specification Pages
IV - Proposed Technical Specification Bases

cc: Regional Administrator, Region III, USNRC
Project Manager, Point Beach Nuclear Plant, USNRC
Resident Inspector, Point Beach Nuclear Plant, USNRC
PSCW

## ENCLOSURE I

## DESCRIPTION AND ANALYSIS OF CHANGE

## LICENSE AMENDMENT REQUEST 245
## TECHNICAL SPECIFICATION 3.3.4, LOSS OF POWER
## DIESEL GENERATOR START INSTRUMENTATION

## POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

### 1.0 INTRODUCTION

This License Amendment Request (LAR) is made pursuant to 10 CFR 50.90 to revise Technical Specification (TS) 3.3.4, "Loss of Power (LOP) Diesel Generator (DG) Start and Load Sequence Instrumentation". The revision modifies the title of TS 3.3.4 and corrects a nonconservatism in the degraded voltage time delay Allowable Values in TS Surveillance Requirement (SR) 3.3.4.3 b.

### 2.0 DESCRIPTION OF PROPOSED CHANGE

The proposed amendment would revise TS 3.3.4 and SR 3.3.4.3 b.

The revision modifies the title of TS 3.3.4 to remove the words "and Load Sequence" wherever the title appears.

The revision to TS SR 3.3.4.3 b corrects a nonconservatism in the degraded voltage time delay Allowable Values to incorporate new values derived from an updated plant electrical system degraded voltage analysis.

TS SR 3.3.4.3 b is proposed for modification as follows (deletions are marked as strikethroughs, additions are double-underlined).

Perform CHANNEL CALIBRATION with Allowable Value as follows:

b. 4.16 kV degraded voltage Allowable Value
≥ 3937 V with a time delay of
< ~~6.47~~ 5.68 seconds (~~with SI signal present~~ bus degraded voltage relay) and
< ~~54~~ 39.14 seconds (~~without SI signal present.~~ bus time delay relay)

### 3.0 BACKGROUND

The onsite standby emergency power system is comprised of four diesel generators (DGs) that supply the 4.16 kV safeguards electrical distribution buses (A05 and A06) on each unit. The DGs provide emergency AC power when offsite power is either unavailable or is insufficiently stable to support safe unit

operation. Two DGs are dedicated to each safeguards electrical train. Each diesel generator is capable of supplying one safeguards train in one or both units.

DG Start Signals

Each diesel generator will automatically start on a loss of voltage signal from its associated 4.16 kV bus(es) to restore safeguards power on the bus(es) to which it is aligned. All four diesel generators will also automatically start on a safety injection (SI) signal from either unit. Following an SI start signal, DG connection to the associated bus(es) only occurs if the bus(es) are disconnected from offsite power.

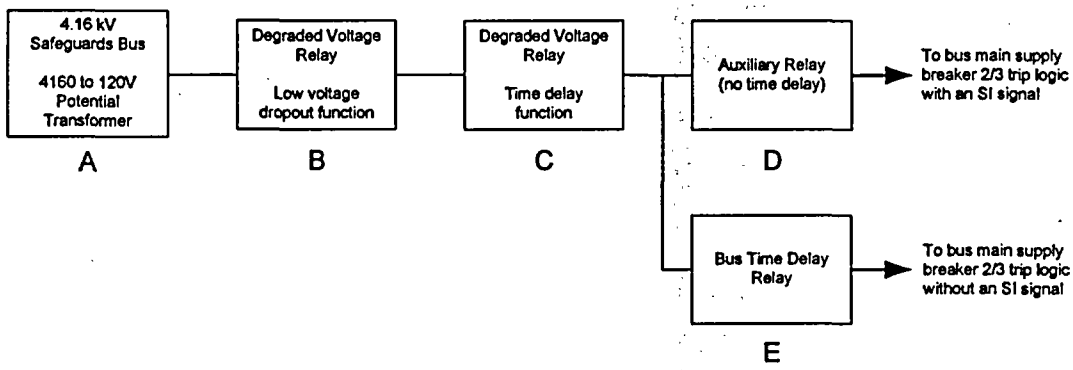
4.16 kV Safeguards Bus Undervoltage Protection

The normal power source for the four 4.16 kV safeguards buses is offsite power. Undervoltage protection is provided to detect a loss or degradation of the offsite power source. Undervoltage is defined in FSAR Section 8.8 as a 4.16 kV safeguards bus voltage that leads to actuation of either the 4.16 kV loss of voltage relays or the 4.16 kV degraded voltage relays. Loss of voltage relays and degraded voltage relays are adjusted to actuate (drop out) at different voltage levels and different time delays, as discussed below.

The time delay Allowable Values revised by this amendment request only affect the 4.16 kV degraded voltage function, and do not affect the 4.16 kV loss of voltage function. The degraded voltage function initiates the loss of voltage function; therefore, the loss of voltage function is described briefly in the following paragraph.

The loss of voltage function is provided by three loss of voltage relays on each 4.16 kV safeguards bus. When bus voltage remains below approximately 77% of nominal voltage for a short relay time delay, the loss of voltage relay outputs are combined in a two-out-of-three coincidence logic to generate a loss of voltage signal for the bus. The loss of voltage signal opens the safeguards bus main supply breaker to disconnect the bus from offsite power. The same loss of voltage signal also initiates starting each DG associated with the bus.

Degraded voltage protection on each 4.16 kV safeguards bus is provided by three degraded voltage channels, each with a degraded voltage relay having voltage and time delay settings and a bus time delay relay having a separate time delay setting. Each degraded voltage channel is configured as shown in the figure below:




Blocks A through D above provide degraded voltage protection coincident with an SI signal. When an SI signal is present and safeguards bus voltage remains below approximately 95% of nominal voltage as detected by a potential transformer (Block A), the degraded voltage relay (Block B) drops out and begins its time delay (Block C). After timeout, the degraded voltage relay output (through Block D) is combined with the other degraded voltage channels in a two-out-of-three coincidence logic to generate a bus main supply breaker trip. Opening the breaker disconnects the bus from offsite power, creating a loss of voltage condition on the bus. The bus loss of voltage function will then initiate DG start.

Blocks A, B, C, and E provide degraded voltage protection without an SI signal present. With no SI signal present and safeguards bus voltage sustained below approximately 95% of nominal voltage, the degraded voltage relay times out first, after which the bus time delay relay (Block E) times out. After timeout, the relay output is combined with the other degraded voltage channels in a two out of three coincidence logic to generate a bus main supply breaker trip. Opening the breaker disconnects the bus from offsite power, creating a loss of voltage condition on the bus. The bus loss of voltage function will then initiate DG start.

During both degraded voltage sequences above, if bus voltage should recover above the degraded voltage relay pickup setting prior to completion of the channel time delay, the degraded voltage relay resets and a channel trip does not occur.

Degraded Voltage Allowable Values

The degraded voltage Allowable Values specify limits for the voltage and time delay settings found during channel surveillance testing. The Allowable Values are calculated based on analytical limits established in the degraded voltage analyses. Satisfying the Allowable Values ensures that safety-related components have adequate voltage to maintain continuous operation and starting capability during worst-case plant loading conditions. The selection of these Allowable Values is such that adequate protection is provided when degraded voltage instrument channel uncertainties and processing time delay

uncertainties are taken into account.

Allowable Values are as-found limits for determining that the tested relays are performing within the limits of the degraded voltage analyses. The actual settings entered into the relays during calibration (the as-left settings) are more conservative than the Allowable Values. The Allowable Value provides a limit for the as-found setting measured during channel calibration prior to any relay adjustments. If the measured as-found relay setting does not exceed the Allowable Value, the relay is considered OPERABLE.

Verifying that the degraded voltage channel as-found settings are within their Allowable Values during relay calibration ensures that the relays are performing within the uncertainties assumed in the analyses and that consequences of a sustained 4.16 kV degraded voltage condition will be acceptable.

## 4.0 TECHNICAL ANALYSIS

Proposed TS 3.3.4 Title Change

The proposed change to the TS 3.3.4 title would remove the phrase "and Load Sequence" from the title. The new title would be "Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation". This change is administrative. The specification does not address DG load sequence instrumentation; therefore, the present title is inconsistent with the specification. The proposed change to the title is consistent with Standard Technical Specification (NUREG-1431, Rev. 3) Section 3.3.5.

Revised Degraded Voltage Time Delay Allowable Values

TS SR 3.3.4.3 is the performance of a CHANNEL CALIBRATION on the LOP DG Start Instrumentation. The CHANNEL CALIBRATION is performed every 18 months. The TS SR 3.3.4.3 b surveillance test of the degraded voltage function verifies that each channel responds to sensing a sustained degraded voltage within the necessary voltage and time delay limits to support the degraded voltage analyses for protecting safety-related loads connected to the 4.16 kV and 480 V safeguards buses.

Proposed Change to Allowable Value Time Delay (with SI signal present)

The time delay Allowable Value now labeled "with SI signal present" is revised downward from < 6.47 seconds to < 5.68 seconds, to account for a reanalysis of degraded voltage occurring on the 4.16 kV safeguards buses coincident with a loss of coolant accident. When an SI signal is present, the only time delay function in the channel is performed by the degraded voltage relay. Therefore, the Allowable Value is used to determine degraded voltage relay operability and the appropriate nomenclature for this Allowable Value is

"degraded voltage relay". This appropriately identifies the specific device to which the Allowable Value applies.

Proposed Change to Allowable Value Time Delay (without SI signal present)

The total degraded voltage circuitry time delay when no SI signal is present is the sum of two time delays, one from the degraded voltage relay and the other from the bus time delay relay. The present time delay Allowable Value (< 54 seconds without SI signal present) represents the combined time of both relay time delays. Since the degraded voltage relay time delay is addressed by the specific Allowable Value discussed above, the second Allowable Value (without SI signal present) is being revised to apply specifically to the bus time delay relay. With this change, both Allowable Values can be more readily evaluated directly against the relays' as-found performance to determine operability.

The time delay Allowable Value presently labeled "without SI signal present" is revised downward from < 54 seconds to < 39.14 seconds. This reduction accounts for both a reanalysis of degraded voltage occurring on the 4.16 kV safeguards buses during normal plant operation and the reassignment of the second Allowable Value specifically to the bus time delay relay, rather than representing a combined time delay from the two relays in series. The appropriate nomenclature for the revised Allowable Value is "bus time delay relay", to identify the specific device to which the Allowable Value applies.

The relabeled Allowable Values above represent the as-found limits for the two adjustable time delays that perform the degraded voltage function. Maintaining the as-found settings of the degraded voltage function within their Allowable Values during channel calibration protects safety-related equipment connected to the 4.16 kV and 480 V safeguards buses from damage or trip on overcurrent during a sustained degraded voltage condition. A setting found to be outside an Allowable Value requires declaring the affected degraded voltage channel inoperable.

Administrative limits consistent with the revised Allowable Values have been implemented in the plant calibration procedures and surveillance procedures for the degraded voltage relays to provide additional restriction on the existing Technical Specification Allowable Values that had been found to be nonconservative. Upon approval and implementation of the proposed license amendment, the new Allowable Values will replace the administrative limits.

**Results and Conclusion**

In summary, the proposed changes: 1) revise the title of TS 3.3.4 to reflect the scope of the specification and to conform to the Westinghouse Standard Technical Specifications; and, 2) revise Allowable Values for degraded voltage

time delay settings in TS Surveillance Requirement 3.3.4.3 b based on a recent degraded voltage analysis of the PBNP electrical distribution system. The revised time delay Allowable Values apply to the two different relays in the degraded voltage circuitry that perform the degraded voltage protection function. The revised Allowable Values are necessary to ensure that safety-related components have adequate voltage to maintain continuous operation and starting capability during worst-case plant loading conditions and to protect operating loads from damage or tripping on overcurrent during a degraded voltage condition. Because the present Allowable Values for these settings were found to be non-conservative and could have resulted in certain safety-related motors tripping on overcurrent during a degraded voltage event, administrative controls were instituted pending approval of the proposed Technical Specification change.

In addition to the proposed SR 3.3.4.3 b changes described above, TS Bases Section B 3.3.4 are being revised. Bases changes are necessary to update the description of the Loss of Power protection circuitry and clarify that the Allowable Values apply to as-found measurements taken for specific relays during surveillance testing. A markup of the revised TS Bases section is provided in Enclosure IV.

Based on the above discussion, the proposed Technical Specification change is consistent with the analysis and demonstrates that the operational readiness of the emergency power supply system and safety margins will be maintained.

## 5.0 REGULATORY ANALYSIS

### 5.1 No Significant Hazards Determination

In accordance with the requirements of 10 CFR 50.90, Nuclear Management Company (licensee) hereby requests amendments to facility operating licenses DPR-24 and DPR-27, for Point Beach Nuclear Plant, Units 1 and 2, respectively. The purpose of the proposed amendments is to revise Technical Specification (TS) 3.3.4, "Loss of Power (LOP) Diesel Generator (DG) Start and Load Sequence Instrumentation". The revision changes the section title and corrects a nonconservatism in the degraded voltage time delay values in TS Surveillance Requirement (SR) 3.3.4.3 b. The title change is editorial and has no impact on reactor operation.

Nuclear Management Company (NMC) has evaluated the proposed amendments in accordance with 10 CFR 50.91 against the standards in 10 CFR 50.92 and has determined that the operation of the Point Beach Nuclear Plant in accordance with the proposed amendments presents no significant hazards. The NMC evaluation against each of the criteria in 10 CFR 50.92 follows.

1. **Operation of the Point Beach Nuclear Plant in accordance with the proposed amendments does not result in a significant increase in the probability or consequences of any accident previously evaluated.**

   The diesel generators (DGs) provide emergency electrical power to the safeguard buses in support of equipment required to mitigate the consequences of design basis accidents and anticipated operational occurrences, including an assumed loss of all offsite power. SR 3.3.4.3 verifies that the loss of power (LOP) DG start instrumentation channels respond to measured parameters within the necessary range and accuracy. The proposed amendment revises the section title and corrects nonconservative values in the allowed time delays for the degraded voltage protection function. The revised values are more restrictive than the previously allowed values.

   Reducing the time delays for the degraded voltage function as proposed does not significantly increase the probability of a loss of offsite power event. The degraded voltage analysis established both maximum time delay limits for a degraded voltage condition and minimum time delays to prevent premature disconnection from offsite power. The analyzed time delay limits considered prevention of premature disconnection from offsite power such that the probability of an unnecessary loss of offsite power is not significantly increased.

   The proposed change does not involve any hardware changes, nor does it affect the probability of any event initiators. There will be no change to normal plant operating parameters, accident mitigation capabilities, or accident analysis assumptions or inputs.

   Therefore, the probability or consequences of any accident previously evaluated will not be significantly increased as a result of the proposed change.

2. **Operation of the Point Beach Nuclear Plant in accordance with the proposed amendments does not result in a new or different kind of accident from any accident previously evaluated.**

   No new accident scenarios, transient precursors, failure mechanisms, or limiting single failures are introduced as a result of the proposed change. The revised surveillance requirements are more restrictive and will continue to assure equipment reliability such that plant safety is maintained or will be enhanced.

   Equipment important to safety will continue to operate as designed. The changes do not result in any event previously deemed incredible being made credible. The changes do not result in adverse conditions or result in any

increase in the challenges to safety systems. Therefore, operation of the Point Beach Nuclear Plant in accordance with the proposed amendment will not create the possibility of a new or different type of accident from any accident previously evaluated.

3. **Operation of the Point Beach Nuclear Plant in accordance with the proposed amendments does not result in a significant reduction in a margin of safety.**

   The diesel generators (DGs) provide emergency electrical power to the safeguard buses in support of equipment required to mitigate the consequences of design basis accidents and anticipated operational occurrences, including an assumed loss of all offsite power. SR 3.3.4.3 verifies that the loss of power (LOP) DG start instrumentation channels respond to measured parameters within the necessary range and accuracy. The proposed amendment corrects nonconservative values in the allowed time delays for the degraded voltage protection function. The revised values are more restrictive than the previously allowed values. The proposed change to this SR assures that design requirements of the emergency electrical power system continue to be met.

   There are no new or significant changes to the initial conditions contributing to accident severity or consequences. The proposed amendment will not otherwise affect the plant protective boundaries, will not cause a release of fission products to the public, nor will it degrade the performance of any other structures, systems or components (SSCs) important to safety. Therefore, the requested change will not result in a significant reduction in the margin of safety.

**Conclusion**

Operation of the Point Beach Nuclear Plant in accordance with the proposed amendment will not result in a significant increase in the probability or consequences of any accident previously analyzed; will not result in a new or different kind of accident from any accident previously analyzed; and, does not result in a significant reduction in any margin of safety. Therefore, operation of the Point Beach Nuclear Plant in accordance with the proposed amendment does not result in a significant hazards determination.

## 5.2 Applicable Regulatory Requirements

Point Beach was licensed prior to the 1971 publication of Appendix A, "General Design Criteria for Nuclear Power Plants", (GDC) to 10 CFR Part 50. As such, Point Beach is not licensed to the Appendix A GDC. The Point Beach Final Safety Analysis Report (FSAR), Section 1.3, lists the plant-specific GDC to which the plant was licensed. The Point Beach GDC are similar in content to the draft

GDC proposed for public comment in 1967. The Point Beach GDC addressing the standby emergency power system is Point Beach GDC 39. The applicable criteria for this system are discussed in FSAR Sections 8.0, "Introduction to the Electrical Distribution Systems", and 8.8, "Diesel Generator (DG) System".

Point Beach GDC 39, "Emergency Power", requires, in part, that an emergency power source shall be provided and designed with adequate independency, redundancy, capacity, and testability to permit the functioning of the engineered safety features and protection systems. This power source shall provide this capacity assuming a failure of a single active component. The technical analysis in Section 4.0 above, concludes that the proposed changes to TS SR 3.3.4.3 b will continue to assure that the design requirements of the emergency electrical power system are met. The proposed changes will not affect the other requirements of these criteria.

Surveillance Requirements (SRs), per 10 CFR 50.36(c)(3), are "...to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met." The technical analysis performed by NMC concludes that the proposed change to TS SR 3.3.4.3 b provides more restrictive time delay allowable values as required for this SR to comport to the regulation.

NMC concludes that the proposed changes are in accordance with 10 CFR 50.36(c)(3) with regards to maintaining the necessary quality of systems and components, sustaining facility operation within safety limits, and meeting the limiting conditions for operation. These changes also continue to meet the requirements stated in the PBNP FSAR. The proposed changes thus continue to be compliant with the above regulatory requirements.

### 5.3 Commitments

There are no actions committed to by NMC in this document. The statements in this submittal are provided for information purposes and are not considered to be commitments.

## 6.0 ENVIRONMENTAL EVALUATION

NMC has determined that the information for the proposed amendment does not involve a significant hazards consideration, authorize a significant change in the types or total amounts of effluent release, or result in any significant increase in individual or cumulative occupational radiation exposure. Therefore, NMC concludes that the proposed amendment meets the categorical exclusion requirements of 10 CFR 51.22(c)(9) and that an environmental impact appraisal need not be prepared.

# ENCLOSURE II

# PROPOSED TECHNICAL SPECIFICATION CHANGES

## LICENSE AMENDMENT REQUEST 245
## TECHNICAL SPECIFICATION 3.3.4, LOSS OF POWER
## DIESEL GENERATOR START INSTRUMENTATION

## POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

(3 pages follow)

## 3.3 INSTRUMENTATION

### 3.3.4 Loss of Power (LOP) Diesel Generator (DG) Start ~~and Load Sequence~~ Instrumentation

LCO 3.3.4 The following LOP DG Start ~~and Load Sequence~~ Instrumentation shall be OPERABLE:

a. Three channels per bus of the 4.16 kV loss of voltage Function,

b. Three channels per bus of the 4.16 kV degraded voltage Function, and

c. Three channels per bus of the 480 V loss of voltage Function.

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

ACTIONS

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

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more Functions with one channel per bus inoperable. | A.1 Place channel in trip. | 1 hour |
| B. Two or more 4.16 kV loss of voltage or 4.16 kV degraded voltage channels per bus inoperable. | B.1 Restore all but one channel to OPERABLE status. | 1 hour |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| C. Required Action and associated Completion Time of Condition A for 4.16 kV Functions or Condition B not met. | C.1 Enter applicable Condition(s) and Required Action(s) for the associated standby emergency power source made inoperable by LOP DG start instrumentation. | Immediately |
| D. Two or more 480 V loss of voltage channels per bus inoperable. | D.1 Restore all but one channel to OPERABLE status. | 1 hour |
| E. Required Action and associated Completion Time of Condition A for 480 V loss of voltage Function or Condition D not met. | E.1 Be in MODE 3.<br>AND<br>E.2 Be in MODE 5. | 6 hours<br><br>36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.4.1 | Perform CHANNEL CHECK. | 12 hours |
| SR 3.3.4.2 | Perform TADOT. | 31 days |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.4.3 | Perform CHANNEL CALIBRATION with Allowable Value as follows:<br><br>a. 4.16 kV loss of voltage Allowable Value ≥ 3156 V with a time delay of ≥ 0.7 seconds and ≤ 1.0 second.<br><br>b. 4.16 kV degraded voltage Allowable Value ≥ 3937 V with a time delay of < ~~6.47~~ 5.68 seconds (~~with SI signal present~~ bus degraded voltage relay) and < ~~54~~ 39.14 seconds (~~without SI signal present.~~ bus time delay relay)<br><br>c. 480 V loss of voltage Allowable Value 256 V ± 3% with a time delay of ≤ 0.5 seconds. | 18 months |

**ENCLOSURE III**

**REVISED TECHNICAL SPECIFICATION PAGES**

**LICENSE AMENDMENT REQUEST 245**
**TECHNICAL SPECIFICATION 3.3.4, LOSS OF POWER**
**DIESEL GENERATOR START INSTRUMENTATION**

**POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2**

(3 pages follow)

## 3.3 INSTRUMENTATION

### 3.3.4 Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation

LCO 3.3.4 The following LOP DG Start Instrumentation shall be OPERABLE:

a. Three channels per bus of the 4.16 kV loss of voltage Function,

b. Three channels per bus of the 4.16 kV degraded voltage Function, and

c. Three channels per bus of the 480 V loss of voltage Function.

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

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each Function.
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| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. One or more Functions with one channel per bus inoperable. | A.1 Place channel in trip. | 1 hour |
| B. Two or more 4.16 kV loss of voltage or 4.16 kV degraded voltage channels per bus inoperable. | B.1 Restore all but one channel to OPERABLE status. | 1 hour |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| C. Required Action and associated Completion Time of Condition A for 4.16 kV Functions or Condition B not met. | C.1 | Enter applicable Condition(s) and Required Action(s) for the associated standby emergency power source made inoperable by LOP DG start instrumentation. | Immediately |
| D. Two or more 480 V loss of voltage channels per bus inoperable. | D.1 | Restore all but one channel to OPERABLE status. | 1 hour |
| E. Required Action and associated Completion Time of Condition A for 480 V loss of voltage Function or Condition D not met. | E.1<br><br>AND<br><br>E.2 | Be in MODE 3.<br><br><br>Be in MODE 5. | 6 hours<br><br><br>36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.3.4.1 | Perform CHANNEL CHECK. | 12 hours |
| SR 3.3.4.2 | Perform TADOT. | 31 days |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.3.4.3 | Perform CHANNEL CALIBRATION with Allowable Value as follows:<br><br>a. 4.16 kV loss of voltage Allowable Value ≥ 3156 V with a time delay of ≥ 0.7 seconds and ≤ 1.0 second.<br><br>b. 4.16 kV degraded voltage Allowable Value ≥ 3937 V with a time delay of < 5.68 seconds (bus degraded voltage relay) and < 39.14 seconds (bus time delay relay)<br><br>c. 480 V loss of voltage Allowable Value 256 V ± 3% with a time delay of ≤ 0.5 seconds. | 18 months |

**ENCLOSURE IV**

**PROPOSED TECHNICAL SPECIFICATION BASES CHANGES**

**LICENSE AMENDMENT REQUEST 245**
**TECHNICAL SPECIFICATION 3.3.4, LOSS OF POWER**
**DIESEL GENERATOR START INSTRUMENTATION**

**POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2**

(3 pages follow)

B 3.3 INSTRUMENTATION

B 3.3.4 Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation

BASES

BACKGROUND

The DGs provide a source of emergency power when offsite power is either unavailable or is insufficiently stable to allow safe unit operation. Loss of voltage on either of the 4.16 kV safeguards buses will generate an LOP start signal for each associated DG.

Three channels of loss of voltage relays are provided on each 4.16 kV safeguards buses for detecting a loss of bus voltage. The three channels are combined in a two-of-three coincidence logic to initiate a loss of voltage signal that disconnects the safeguards bus from offsite power and starts the associated DG. The channels are designed to detect loss of voltage at approximately 77% of nominal bus voltage. The LOP start actuation is described in FSAR, Section 8.8 (Ref. 1).

Degraded voltage protection is also provided on each 4.16 kV safeguards bus. However, degraded voltage protection does not directly start the DGs. Degraded voltage protection will disconnect the affected bus from offsite power by opening the main supply breaker, causing a loss of voltage signal on the bus. Loss of 4.16 kV bus voltage protection will then start each associated DG.

Degraded voltage protection instrumentation consists of three channels of degraded voltage relays and bus time delay relays combined in separate two-out-of-three coincidence logics for each bus. One coincidence logic initiates degraded voltage protection after a time delay when an SI signal is present. The other coincidence logic initiates degraded voltage protection after a longer time delay when no SI signal is present. In both cases, degraded voltage protection is designed to disconnect the affected bus from offsite power to prevent damage or tripping of operating loads on a sustained low voltage condition below approximately 95% of nominal bus voltage.

Loss of voltage protection is also provided on the 480 V buses. This loss of voltage protection does not initiate DG start. During a loss of voltage to the safety-related 480 V buses, protective relays initiate load shedding and block automatic SI load sequencing until sufficient voltage recovers on the buses. This function is necessary to prevent overloading the DGs.

BASES

BACKGROUND (continued)

Three undervoltage relays are provided on each safety-related 480 V bus for detecting a loss of voltage. The relays are arranged in a two-of-three coincidence logic to generate load shedding signals for the associated 480 V bus.

Allowable Values

The loss of voltage and degraded voltage relay settings are based on analytical limits established in electrical system analyses. The settings are such that adequate protection is provided when all instrument channel uncertainties and processing time delay uncertainties are taken into account.

Allowable Values are specified for voltage and time delay settings for the protection functions in SR 3.3.4.3. The actual voltage settings and time delay settings entered into the relays during calibration (the as-left settings) are more conservative than the Allowable Values. The Allowable Value provides a limit for the as-found relay setting measured during channel calibration prior to any adjustments. If the measured as-found relay setting does not exceed the Allowable Value, the relay is performing within the limits of the electrical analyses and is considered OPERABLE.

APPLICABLE SAFETY ANALYSES

The LOP DG start instrumentation is required for the Engineered Safety Features (ESF) Systems to function in any accident with a loss of offsite power. The LOP DG start instrumentation design is based on GDC 39, Emergency Power, in FSAR Section 8.0.

Accident analyses credit the loading of the DG based on the loss of offsite power during a loss of coolant accident (LOCA). The actual DG start has historically been associated with the ESFAS actuation (i.e., a safety injection signal). The analyses assume a non-mechanistic DG loading, which does not explicitly account for each individual component of loss of power detection and subsequent actions.

The required channels of LOP DG start instrumentation, in conjunction with the ESF systems powered from the DGs, provide unit protection in the event of any of the analyzed accidents discussed in Reference 2, in which a loss of offsite power is assumed. The delay times assumed in the safety analysis for the ESF equipment include the DG start delay, and the appropriate sequencing delay, if applicable.

The LOP DG start instrumentation channels satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.4.3

SR 3.3.4.3 is the performance of a CHANNEL CALIBRATION.

The setpoints, as well as the response to a loss of voltage and a degraded voltage test, shall include a single point verification that the trip occurs within the required time delay, as shown in Reference 1.

A CHANNEL CALIBRATION is performed every 18 months. CHANNEL CALIBRATION is a complete check of the instrument loop, excluding the potential transformer sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

The degraded voltage function time delay Allowable Values apply to specific relays. The first time delay Allowable Value applies to the bus degraded voltage relay (SI signal present). The second time delay Allowable Value applies to the bus time delay relay. The sum of these two time delay Allowable Values constitutes the required time delay when no SI signal is present.

The Frequency of 18 months is based on operating experience and consistency with the typical industry refueling cycle and is justified by the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

REFERENCES

1. FSAR Section 8.8
2. FSAR Chapter 14