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December 16, 1999

Re: Indian Point Unit No. 2
Docket No. 50-247

Document Control Desk
US Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555-0001

Subject: Revision to Emergency Plan Action Levels

Reference: Con Edison Letter to USNRC dated October 8, 1999

Pursuant to 10 CFR 50 Appendix E, Subsection IV, B, Consolidated Edison Company of New York, Inc. (Con Edison) previously submitted via the referenced letter proposed revisions to the Indian Point 2 Emergency Action Levels (EAL) for NRC approval. Specifically, Items 6.1.1, 6.1.3, 6.2.1 and 6.2.2 were modified.

As a result of additional knowledge gained during recent personnel training, revisions to our previously submitted EALs were determined to be necessary. The attachments to this letter supercede the previously submitted revisions in their entirety. Attachment I contains the proposed EALs and a discussion of the change. Attachment II is the NUMARC initiating condition corresponding to each change. Attachment III provides the technical basis for the current approved EALs, and Attachment IV provides the technical basis for the proposed EAL changes. These revisions represent enhancements to the previously provided information.

The staff's approval of these proposed revisions is requested.

No new regulatory commitments are being made by Con Edison in this correspondence.

Should you or your staff have any questions regarding this matter, please contact Mr. Frank Inzirillo, Manager, Emergency Planning.

Attachment

Very truly yours,

A. Alan Blind

A045

FOR ADDN 05000247

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ATTACHMENT I

Proposed Changes to the Electrical EALs

Consolidated Edison Company of New York, Inc.
Indian Point Unit No. 2
Docket No. 50-247
December 1999

Summary of Proposed Changes to the Electrical EALs

EAL 6.1.1 Unusual Event changed to read:

Unplanned loss of offsite power to all 480V busses (5A, 2A/3A,6A) for > 15 minutes.

This EAL is being changed to reflect the NUMARC IC SU1 which states “Loss of all offsite power to essential busses for greater than 15 minutes.” The example given in NUMARC identifies the following conditions:

- a. Loss of power to (site-specific) transformers for greater than 15 minutes.
AND
- b. At least (site-specific) emergency generators are supplying power to emergency busses.

Background

The original wording of EAL 6.1.1 identified the three transformers that provide offsite power to the Unit #2 as stated here:

None of the following sources of offsite power available for >15 minutes:

- Unit Auxiliary transformer
- Station Auxiliary transformer
- 13.8 KV gas turbine auto transformer

The reference to the emergency generators supplying power to emergency busses was not included in the EAL to simplify the wording. If no emergency diesel generators were supplying power to the 480V busses then the Emergency Director would escalate the event to a Site Area Emergency. If one, two or all three emergency diesel generators were supplying power to the 480V busses a loss of offsite power for greater than 15 minutes would still warrant an NUE declaration.

The change to this EAL removes all references to the sources of offsite power. This change also identifies the “essential busses” to mean the 480V Busses (5A, 2A/3A, 6A). The previous version did not specify that offsite power had to be supplied to the 480V busses. Offsite power can be available and supplying power to the non-essential 6.9KV busses under the previous version and the NUE declaration would not be made. This wording clearly identifies the loss of offsite power to all 480V busses. The term “Unplanned” has been added to be consistent with EAL 6.2.1 and preclude declaration during planned maintenance and testing for which contingency plans have been established.

EAL 6.1.3 Alert changed to read:

AC power capability to 480 volt busses (5A, 2A/3A, 6A) reduced to only one of the following sources for > 15 minutes.

- 480V EDG 21
- 480V EDG 22
- 480V EDG 23
- Unit Auxiliary transformer
- Station Auxiliary transformer
- 13.8 KV gas turbine auto transformer

*With 86P or 86BU tripped, all offsite power supplies must be considered as one power supply.

This EAL is being changed to reflect the NUMARC IC SA5 which states "AC power capability to essential busses reduced to a single power source for greater than 15 minutes such that any additional single failure would result in station blackout." The example given in NUMARC identifies the following conditions:

- a. Loss of power to (site-specific) transformers for greater than 15 minutes.
AND
- b. Onsite power capability has been degraded to one (train of) emergency bus(es) powered from a single onsite power source due to the loss of:
<site-specific list>

Background

The original wording of EAL 6.1.3 identified all the transformers and emergency diesel generators that supply offsite and onsite power as stated here:

Available emergency bus AC power reduced to only one of the following for >15 minutes:

- 480V EDG 21
- 480V EDG 22
- 480V EDG 23
- Unit Auxiliary transformer
- Station Auxiliary transformer
- 13.8KV gas turbine auto transformer

The change to this EAL identifies the 480V Busses (5A, 2A/3A, 6A) as the "essential busses." Additionally, the offsite power transformers are conditionally applied in this EAL. Indian Point Unit 2 has a blackout/unit trip/no safety injection logic that opens all the normal supply breakers and locks them out from reclosure. The blackout is sensed by undervoltage on either 480V Bus 5A or 480V Bus 6A. The unit trip is sensed by lockout relays 86P or 86BU. Therefore, with 86P or 86BU relays tripped, undervoltage on Bus 5A or 6A (a single failure) would cause a loss of all offsite power to the "essential busses." For the condition where the plant was in hot shutdown with three emergency diesel generators becoming inoperable all of the offsite power sources need to be considered as one power supply when relays 86P or 86BU are tripped.

EAL 6.2.1 Unusual Event changed to read:

Unplanned loss of bus voltage (< 105 vdc) for > 15 minutes on any DC Bus resulting in the loss of decay heat removal capability.

This EAL is being changed to reflect the NUMARC IC SU7 which states "Unplanned loss of required DC power during cold shutdown or refueling mode for greater than 15 minutes." The example given in NUMARC identifies the following conditions:

- a. Unplanned loss of vital DC Power to required DC busses based on (site specific) bus voltage indications.
- AND
- b. Failure to restore power to at least one required DC bus within 15 minutes from the time of loss.

The Basis for this IC identifies a loss of DC power compromising the ability to monitor and control the removal of decay heat during cold shutdown or refueling operations.

Background

The original wording of EAL 6.2.1 identified 105 vdc on selectable voltmeter switch for all DC Busses as stated here:

<105 vdc bus voltage indication for >15 minutes on the switchable voltmeter for all of the following panels.

- 21
- 22
- 23
- 24

The change to this EAL links the loss of DC voltage to the loss of decay heat removal capability. For Indian Point Unit 2 each 480V bus has an automatic transfer switch to provide alternate DC power supplies to the 480V busses. This DC power is also supplied to 480V motor control centers. With two Residual Heat Removal (RHR) Pumps and two RHR heat exchangers available, only one DC bus is required to provide control to a single train of RHR cooling during cold shutdown and refueling. With one RHR pump or one RHR heat exchanger isolated for repair, a condition could exist where a loss of a single DC power supply could result in a loss of ability to control decay heat removal. Therefore, the wording of this EAL is changed from "all" [DC power] "panels" to "any" DC "bus." The DC Busses are the source of power to the power panels. Additionally the use of the switchable voltmeter was removed from this EAL to allow use of local voltmeter indications. Redundant and alternate indications needed to monitor decay heat removal are powered from different DC sources such that only a loss of all DC power would result in the inability to monitor core cooling status.

EAL 6.2.2 Site Area Emergency changed to read:

Loss of bus voltage (< 105 vdc) for > 15 minutes on all DC Busses.

This EAL is being changed to reflect the NUMARC IC SS3 which states "Loss of all vital DC power" The example given in NUMARC identifies the following conditions:

- a. Loss of all vital DC Power based on (site specific) bus voltage indications for greater than 15 minutes.

Background

The original wording of EAL 6.2.2 identified 105 vdc on selectable voltmeter switch for all DC Busses as stated here:

<105 vdc bus voltage indication for >15 minutes on the switchable voltmeter for all of the following panels.

- 21
- 22
- 23
- 24

The change to this EAL removes the wording for the use of the "switchable voltmeter" to allow use of local voltmeter indications. Additionally the wording of this EAL is changed from "all" [DC power] "panels" to "all DC Busses." The DC Busses are the source of power to the power panels.

ATTACHMENT II

NUMARC Initiating Condition Corresponding to Each Change

Consolidated Edison Company of New York, Inc.
Indian Point Unit No. 2
Docket No. 50-247
December 1999

SYSTEM MALFUNCTION

UNUSUAL EVENT

SU1 Loss of All Offsite Power to Essential Busses for Greater Than 15 Minutes.

OPERATING MODE APPLICABILITY: All

EXAMPLE EMERGENCY ACTION LEVEL:

1. The following conditions exist:

a. Loss of power to (site-specific) transformers for greater than 15 minutes.

AND

b. At least (site-specific) emergency generators are supplying power to emergency busses.

BASIS:

Prolonged loss of AC power reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete Loss of AC Power (Station Blackout). Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Multi-unit stations with shared safety functions should further consider how this IC may affect more than one unit and how this may be a factor in escalating the emergency class.

SYSTEM MALFUNCTION

Alert

SAS AC power capability to essential busses reduced to a single power source for greater than 15 minutes such that any additional single failure would result in station blackout.

OPERATING MODE APPLICABILITY: Power Operation
Hot Standby (startup in BWRs)
Hot Shutdown

EXAMPLE EMERGENCY ACTION LEVELS:

1. The following conditions exists: (a and b)

a. Loss of Power to <site-specific> Transformers for Greater Than 15 Minutes.

AND

b. Onsite Power Capability has been Degraded to one (Train of) Emergency Bus(es) Powered From a Single Onsite Power Source due to the Loss of:

<site-specific list>

BASIS:

This IC and the associated EALs are intended to provide an escalation from IC SU1, "Loss of All Offsite Power To Essential Busses for Greater Than 15 Minutes." The condition indicated by this IC is the degradation of the offsite and onsite power systems such that any additional single failure would result in a station blackout. This condition could occur due to a loss of offsite power with a concurrent failure of one emergency generator to supply power to its emergency busses. Another related condition could be the loss of all offsite power and loss of onsite emergency diesels with only one train of emergency busses being backfed from the unit main generator, or the loss of onsite emergency diesels with only one train of emergency busses being backfed from offsite power. The subsequent loss of this single power source would escalate the event to a Site Area Emergency in accordance with IC SS1, "Loss of All Offsite and Loss of All Onsite AC Power to Essential Busses."

Example EAL 1b should be expanded to identify the control room indication of the status offsite-specific power sources and distribution busses that, if unavailable, establish a single failure vulnerability.

At multi-unit stations, the EALs should allow credit for operation of installed design features, such as cross-ties or swing diesels, provided that abnormal or emergency operating procedures address their use. However, these stations must also consider the impact of this condition on other shared safety functions in developing the site specific EAL.

SYSTEM MALFUNCTION

UNUSUAL EVENT

SU7 Unplanned Loss of Required DC Power During Cold Shutdown or Refueling Mode for Greater than 15 Minutes.

OPERATING MODE APPLICABILITY: Cold Shutdown
Refueling

EXAMPLE EMERGENCY ACTION LEVEL:

1. Either of the following conditions exist:
 - a. Unplanned Loss of Vital DC power to required DC busses based on (site-specific) bus voltage indications.
- AND
- b. Failure to restore power to at least one required DC bus within 15 minutes from the time of loss.

BASIS:

The purpose of this IC and its associated EALs is to recognize a loss of DC power compromising the ability to monitor and control the removal of decay heat during Cold Shutdown or Refueling operations. This EAL is intended to be anticipatory in as much as the operating crew may not have necessary indication and control of equipment needed to respond to the loss.

Unplanned is included in this IC and EAL to preclude the declaration of an emergency as a result of planned maintenance activities. Routinely plants will perform maintenance on a Train related basis during shutdown periods. It is intended that the loss of the operating (operable) train is to be considered. If this loss results in the inability to maintain cold shutdown, the escalation to an Alert will be per SA3 "Inability to Maintain Plant in Cold Shutdown."

(Site-specific) bus voltage should be based on the minimum bus voltage necessary for the operation of safety related equipment. This voltage value should incorporate a margin of at least 15 minutes of operation before the onset of inability to operate those loads. This voltage is usually near the minimum voltage selected when battery sizing is performed. Typically the value for the entire battery set is approximately 105 VDC. For a 60 cell string of batteries the cell voltage 1.75 Volts per cell. For a 58 string battery set the minimum voltage is typically 1.81 Volts per cell.

SYSTEM MALFUNCTION

SITE AREA EMERGENCY

SS3 Loss of All Vital DC Power.

OPERATING MODE APPLICABILITY: Power Operation
Hot Standby (startup in BWRs)
Hot Shutdown

EXAMPLE EMERGENCY ACTION LEVEL:

1. Loss of All Vital DC Power based on (site-specific) bus voltage indications for greater than 15 minutes.

BASIS:

Loss of all DC power compromises ability to monitor and control plant safety functions. Prolonged loss of all DC power will cause core uncovering and loss of containment integrity when there is significant decay heat and sensible heat in the reactor system. Escalation to a General Emergency would occur by Abnormal Rad Levels/Radiological Effluent, Fission Product Barrier Degradation, or Emergency Director Judgement ICs. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Multi-unit stations with shared safety functions should further consider how this IC may affect more than one unit and how this may be a factor in escalating the emergency class.

ATTACHMENT III

Current EAL Technical Bases

Consolidated Edison Company of New York, Inc.
Indian Point Unit No. 2
Docket No. 50-247
December 1999

6.0 Electrical Failures**6.1 Loss of AC Power Sources****6.1.1 Unusual Event**

None of the following sources of offsite power available for > 15 min.:

- Unit Auxiliary transformer
- Station Auxiliary transformer
- 13.8 KV gas turbine auto transformer

NUMARC IC:

Loss of all offsite power to essential busses for greater than 15 minutes.

FPB loss/potential loss:

N/A

Mode Applicability:

All

Basis:

Prolonged loss of all offsite AC power reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete loss of AC power (station blackout). Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

PEG Reference:

SU1.1

Basis Reference(s):

1. Design Basis Document (DBD) for 480 V system
2. Oneline Diagram of IP-2 electrical distribution

6.0 Electrical Failures**6.1 Loss of AC Power Sources****6.1.3 Alert**

Available emergency bus AC power sources reduced to only one of the following for > 15 min.:

- 480V EDG 21
- 480V EDG 22
- 480V EDG 23
- Unit Auxiliary transformer
- Station Auxiliary transformer
- 13.8 KV gas turbine auto transformer

NUMARC IC:

AC power capability to essential busses reduced to a single power source for greater than 15 minutes such that any additional single failure would result in station blackout with reactor coolant > 200 °F.

FPB loss/potential loss:

N/A

Mode Applicability:

Power operation, hot shutdown

Basis:

The condition indicated by this EAL is the degradation of the offsite power with a concurrent failure of all but one emergency generator to supply power to its emergency bus. Another related condition could be the loss of all offsite power and loss of onsite emergency diesels with only one train of emergency busses being fed from the unit main generator, or the loss of onsite emergency diesels with only one train of emergency busses being fed from offsite power. The subsequent loss of this single power source would escalate the event to a Site Area Emergency.

PEG Reference:

SA5.1

Basis Reference(s):

1. Design Basis Document (DBD) for 480 V system
2. Oneline Diagram of IP-2 electrical distribution
3. ECA-0.0, Loss Of All AC Power

6.0 Electrical Failures**6.2 Loss of DC Power Sources****6.2.1 Unusual Event**

< 105 vdc bus voltage indications for > 15 min. on the switchable voltmeter for all of the following panels:

- 21
- 22
- 23
- 24

NUMARC IC:

Unplanned loss of required DC power during cold shutdown or refueling mode for greater than 15 minutes.

FPB loss/potential loss:

N/A

Mode Applicability:

Cold Shutdown, Refueling

Basis:

The purpose of this EAL is to recognize a loss of DC power compromising the ability to monitor and control the removal of decay heat during cold shutdown or refueling operations. This EAL is intended to be anticipatory in as much as the operating crew may not have necessary indication and control of equipment needed to respond to the loss.

The bus voltage is based on the minimum bus voltage necessary for the operation of safety related equipment. This voltage value incorporates a margin of at least 15 minutes of operation before the onset of inability to operate loads.

PEG Reference:

SU7.1

Basis Reference(s):

1. Design Basis Document (DBD) for 125 VDC System

6.0 Electrical Failures**6.2 Loss of DC Power Sources****6.2.2 Site Area Emergency**

< 105 vdc bus voltage indications for > 15 min. on the switchable voltmeter for all of the following panels:

- 21
- 22
- 23
- 24

NUMARC IC:

Loss of all vital DC power with reactor coolant > 200 °F.

FPB loss/potential loss:

N/A

Mode Applicability:

Power operation, hot shutdown

Mode Applicability:

Power operation, hot shutdown

Basis:

Loss of all DC power compromises ability to monitor and control plant safety functions. Prolonged loss of all DC power will cause core uncovering and loss of containment integrity when there is significant decay heat and sensible heat in the reactor system. Escalation to a General Emergency would occur by other EAL categories. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

The bus voltage is based on the minimum bus voltage necessary for the operation of safety related equipment. This voltage value incorporates a margin of at least 15 minutes of operation before the onset of inability to operate loads.

PEG Reference:

SS3.1

Basis Reference(s):

1. Design Basis Document (DBD) for 125 VDC System
2. AOI 27.1.11, Rev. 2, LOSS OF 125VDC POWER

ATTACHMENT IV

Proposed EAL Technical Bases

Consolidated Edison Company of New York, Inc.
Indian Point Unit No. 2
Docket No. 50-247
December 1999

6.0 Electrical Failures**6.1 Loss of AC Power Sources****6.1.1 Unusual Event**

Unplanned loss of offsite power to all 480V busses (5A, 2A/3A,6A) for > 15 minutes.

NUMARC IC:

Loss of all offsite power to essential busses for greater than 15 minutes.

FPB loss/potential loss:

N/A

Mode Applicability:

All

Basis:

Prolonged loss of all offsite AC power reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete loss of AC power (station blackout). Fifteen minutes was selected as a threshold to exclude transient power losses.

“Unplanned” loss of offsite power excludes scheduled maintenance and testing activities.

PEG Reference:

SU1.1

Basis Reference(s):

1. Design Basis Document (DBD) for 480 V system
2. Oneline Diagram of IP-2 electrical distribution

6.0 Electrical Failures**6.1 Loss of AC Power Sources****6.1.3 Alert**

AC power capability to 480 volt busses (5A, 2A/3A, 6A) reduced to only one of the following sources for > 15 minutes

- 480 V EDG 21
- 480 V EDG 22
- 480 V EDG 23
- Unit Auxiliary transformer*
- Station Auxiliary transformer*
- 13.8 KV gas turbine auto transformer*

*With 86P or 86BU tripped, all offsite power supplies must be considered as one power supply.

NUMARC IC:

AC power capability to essential busses reduced to a single power source for greater than 15 minutes such that any additional single failure would result in station blackout with reactor coolant > 200 °F.

FPB loss/potential loss:

N/A

Mode Applicability:

Power operation, hot shutdown

Basis:

The condition indicated by this EAL is the degradation of the offsite power with a concurrent failure of all but one emergency generator to supply power to its emergency bus. Another related condition could be the loss of all offsite power and loss of onsite emergency diesels with only one train of emergency busses being fed from the unit main generator, or the loss of onsite emergency diesels with only one train of emergency busses being fed from offsite power. The subsequent loss of this single power source would escalate the event to a Site Area Emergency.

For the condition where all emergency diesel generators are inoperable when the unit is shutdown and relays 86P and 86BU are not reset a loss of power to either 480V Bus 5A or 480V Bus 6A will cause the normal supply breakers to all 480V busses to

open. The subsequent loss of AC power to all the 480V Busses would escalate the event to a Site Area Emergency.

PEG Reference:

SA5.1

Basis Reference(s):

1. Design Basis Document (DBD) for 480 V system
2. Oneline Diagram of IP-2 electrical distribution
3. ECA-0.0, Loss Of All AC Power

6.0 Electrical Failures 6.2 Loss of DC Power Sources**6.2.1 Unusual Event**

Unplanned loss of bus voltage (< 105 vdc) for > 15 minutes on any DC Bus resulting in the loss of decay heat removal capability.

NUMARC IC:

Unplanned loss of required DC power during cold shutdown or refueling mode for greater than 15 minutes.

FPB loss/potential loss:

N/A

Mode Applicability:

Cold Shutdown, Refueling

Basis:

The purpose of this EAL is to recognize a loss of DC power compromising the ability to monitor and control the removal of decay heat during cold shutdown or refueling operations. During a maintenance or refueling outage an evaluation of available decay heat removal capability (cooling pumps, heat exchangers and valves) and DC power sources (normal and emergency) to components and indicators is required. This EAL is intended to be anticipatory in as much as the operating crew may not have necessary indication and control of equipment needed to respond to the loss.

The bus voltage is based on the minimum bus voltage necessary for the operation of safety related equipment. This voltage value incorporates a margin of at least 15 minutes of operation before the onset of inability to operate loads.

“Unplanned” loss of required DC power excludes scheduled maintenance and testing activities.

PEG Reference:

SU7.1

Basis Reference(s):

1. Design Basis Document (DBD) for 125 VDC System

6.0 Electrical Failures 6.2 Loss of DC Power Sources**6.2.2 Site Area Emergency**

Loss of bus voltage (< 105 vdc) for > 15 minutes on all of the DC Busses.

NUMARC IC:

Loss of all vital DC power with reactor coolant > 200 °F.

FPB loss/potential loss:

N/A

Mode Applicability:

Power operation, hot shutdown

Mode Applicability:

Power operation, hot shutdown

Basis:

Loss of all DC power compromises ability to monitor and control plant safety functions. Prolonged loss of all DC power will cause core uncovering and loss of containment integrity when there is significant decay heat and sensible heat in the reactor system. Escalation to a General Emergency would occur by other EAL categories. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

The bus voltage is based on the minimum bus voltage necessary for the operation of safety related equipment. This voltage value incorporates a margin of at least 15 minutes of operation before the onset of inability to operate loads.

PEG Reference:

SS3.1

Basis Reference(s):

1. Design Basis Document (DBD) for 125 VDC System
2. AOI 27.1.11, Rev. 2, LOSS OF 125VDC POWER