Exelon Generation

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10 CFR 50.90
10 CFR 50.54(q)

RS-19-069

August 23, 2019

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

Braidwood Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456, STN 50-457, and 72-73

Byron Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. 50-454, 50-455, and 72-68

Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461 and 72-1046

Dresden Nuclear Power Station, Units 1, 2 and 3
Facility Operating License No. DPR-2
Renewed Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-010, 50-237, 50-249, and 72-37

LaSalle County Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-11 and NPF-18
NRC Docket Nos. 50-373, 50-374, and 72-70

Quad Cities Nuclear Power Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-29 and DPR-30
NRC Docket Nos. 50-254, 50-265, and 72-53

Subject: License Amendment Request Supporting Emergency Plan Emergency Action Level Change (EAL RAL3)

Reference: Letter from Blake Purnell (U.S. Nuclear Regulatory Commission) to Bryan C. Hanson (Exelon Generation Company, LLC) – *"Braidwood Station, Units 1 and 2; Byron Station, Unit Nos. 1 and 2; Clinton Power Station, Unit No. 1; Dresden Nuclear Power Station, Units 1, 2 and 3; LaSalle County Station, Units 1 and 2; Limerick Generating Station, Units 1 and 2; Oyster Creek Nuclear Generating Station; Peach Bottom Atomic Power Station, Units 1, 2 and 3; Quad Cities Nuclear Power Station, Units 1 and 2; and Three Mile Island Nuclear Generating Station, Units 1 and 2 - Issuance of Amendments Regarding Emergency Action Level Schemes (TAC Nos. MF4232-MF4251),"* dated July 28, 2015 (ML15141A058)

In accordance with 10 CFR 50.90, *"Application for amendment of license, construction permit, or early site permit,"* Exelon Generation Company, LLC (Exelon) requests amendments to the licenses for the facilities listed above.

Exelon is requesting Nuclear Regulatory Commission (NRC) approval of a proposed change to an Emergency Plan Emergency Action Level (EAL) for the facilities noted. The proposed change involves revising EAL RA3.1 to remove specific references to radiation monitoring instrumentation used for monitoring radiation levels in the Main Control Rooms as the only entry condition into the EAL.

The NRC's emergency planning standards specified in 10 CFR 50.47(b) and 10 CFR 50, Appendix E, along with its supporting emergency planning program element guidance described in NUREG-0654/FEMA-REP-1, Revision 1*, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,"* establish the requirements for maintaining EALs.

The EAL schemes for the affected facilities as approved by the NRC are currently based on the Nuclear Energy Institute's (NEI's) guidance provided in NEI 99-01, Revision 6, *"Development of Emergency Action Levels for Non-Passive Reactors."* The NRC approved these EAL schemes for the noted facilities as documented in the Reference letter.

EAL RA3 establishes threshold values and conditions for declaring an "Alert" emergency event classification related to radiation levels that would impede access to plant equipment necessary for normal plant operations, cooldown, or shutdown. Exelon proposes to make clarifying changes to this EAL regarding the methods used for making the "Alert" declaration.

10 CFR 50, Appendix E, Section IV.B.2 stipulates that a licensee shall follow the change process specified in 10 CFR 50.54(q) for specific changes to EALs. NRC Regulatory Issue Summary (RIS) 2005-02, Revision 1, *"Clarifying the Process for Making Emergency Plan Changes,"* dated April 19, 2011, and Regulatory Guide (RG) 1.219, Revision 1, *"Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors,"* dated July 2016, provide further guidance for evaluating changes to specific EALs. Based on the guidance provided, the proposed clarifying change to EAL RA3.1 requires prior NRC approval.

Therefore, pursuant to 10 CFR 50.90, Exelon hereby requests NRC review and approval of the proposed change to EAL RA3 for the following facilities:

- Braidwood Station, Units 1 and 2
- Byron Station, Units 1 and 2
- Clinton Power Station, Unit 1
- Dresden Nuclear Power Station, Units 1, 2 and 3
- LaSalle County Station, Units 1 and 2
- Quad Cities Nuclear Power Station, Units 1 and 2

Attachment 1 provides an evaluation of the proposed changes. Attachments 2 through 7 provide additional supporting information that includes the following for each of the affected sites:

- EAL RA3 Procedure Matrix Information
- EAL RA3 Comparison Matrix Information
- EAL RA3 Redline Basis Information
- EAL RA3 Clean Basis Information

The proposed changes contained in this submittal have been reviewed by the Plant Operations Review Committee (PORC) in accordance with the requirements of the Exelon Quality Assurance Program.

Exelon requests approval of the proposed changes by August 23, 2020, and requests that the changes be implemented on or before December 31, 2020, for each of the affected plants. The requested implementation period is needed in order to coordinate the necessary training activities and reviews at each site in order to facilitate implementation of the changes once approved by the NRC.

There are no regulatory commitments contained in this submittal.

Pursuant to 10 CFR 50.91, *"Notice for public comment; State consultation,"* paragraph (b), Exelon is notifying the State of Illinois of this application for license amendments by transmitting a copy of this letter and its supporting attachments to the designated state officials.

If you have any questions concerning this submittal, please contact Richard Gropp at (610) 765-5557.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 23rd day of August 2019.

Respectfully,

David T. Gudger
Sr. Manager, Licensing
Exelon Generation Company, LLC

Attachments:
1) Evaluation of Proposed Changes
2) Braidwood Station, Units 1 and 2 - Supporting EAL RA3 Information
3) Byron Station, Units 1 and 2 - Supporting EAL RA3 Information
4) Clinton Nuclear Station - Supporting EAL RA3 Information
5) Dresden Nuclear Power Station, Units 1, 2, 3 - Supporting EAL RA3 Information
6) LaSalle County Station, Units 1 and 2 - Supporting EAL RA3 Information
7) Quad Cities Nuclear Power Station, Units 1 and 2 - Supporting EAL RA3 Information

cc: w/ Attachments
Regional Administrator - NRC Region III
NRC Senior Resident Inspector - Braidwood Station
NRC Senior Resident Inspector - Byron Station

cc: continued w/ Attachments
NRC Senior Resident Inspector - Clinton Power Station
NRC Senior Resident Inspector - Dresden Nuclear Power Station
NRC Senior Resident Inspector - LaSalle County Station
NRC Senior Resident Inspector - Quad Cities Nuclear Power Station
NRC Project Manager, NRR - Exelon Fleet
NRC Project Manager, NRR - Braidwood Station
NRC Project Manager, NRR - Byron Station
NRC Project Manager, NRR - Clinton Power Station
NRC Project Manager, NRR - Dresden Nuclear Power Station
NRC Project Manager, NRR - LaSalle County Station
NRC Project Manager, NRR - Quad Cities Nuclear Power Station
Illinois Emergency Management Agency - Division of Nuclear Safety

Attachment 1

License Amendment Request
Supporting Emergency Plan Emergency Action Level Change

EVALUATION OF PROPOSED CHANGES

Subject: License Amendment Request Supporting Emergency Plan Emergency Action Level Change

Other Supporting Attachments

Attachment 2 – Braidwood Station, Units 1 and 2 - Supporting EAL RA3 Information
Attachment 3 – Byron Station, Units 1 and 2 - Supporting EAL RA3 Information
Attachment 4 – Clinton Nuclear Station - Supporting EAL RA3 Information
Attachment 5 – Dresden Nuclear Power Station, Units 1, 2, 3 - Supporting EAL RA3 Information
Attachment 6 – LaSalle County Station, Units 1 and 2 - Supporting EAL RA3 Information
Attachment 7 – Quad Cities Nuclear Power Station, Units 1 and 2 - Supporting EAL RA3 Information

1.0 SUMMARY DESCRIPTION

In accordance with 10 CFR 50.90, *"Application for amendment of license, construction permit, or early site permit,"* Exelon Generation Company, LLC (Exelon) requests license amendments in support of Emergency Plan changes for the following facilities:

- Braidwood Station, Units 1 and 2
- Byron Station, Units 1 and 2
- Clinton Power Station, Unit 1
- Dresden Nuclear Power Station, Units 1, 2 and 3
- LaSalle County Station, Units 1 and 2
- Quad Cities Nuclear Power Station, Units 1 and 2

Exelon is requesting Nuclear Regulatory Commission (NRC) approval of a proposed change to an Emergency Plan Emergency Action Level (EAL) for the facilities noted. The proposed change involves revising EAL RA3.1 to remove specific references to radiation monitoring instrumentation used for monitoring radiation levels in the Main Control Rooms (MCRs) as the only entry condition into the EAL.

The NRC's emergency planning standards specified in 10 CFR 50.47(b) and 10 CFR 50, Appendix E, along with its supporting emergency planning program element guidance described in NUREG-0654/FEMA-REP-1, Revision 1*, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,"* establish the requirements for maintaining EALs.

EAL RA3 establishes threshold values and conditions for declaring an "Alert" emergency event classification related to radiation levels that would impede access to plant equipment necessary for normal plant operations, cooldown, or shutdown. Exelon proposes to make clarifying changes to the EAL regarding the methods used for making the "Alert" declaration.

10 CFR 50, Appendix E, Section IV.B.2 stipulates that a licensee shall follow the change process specified in 10 CFR 50.54(q) for specific changes to EALs. NRC Regulatory Issue Summary (RIS) 2005-02, Revision 1, *"Clarifying the Process for Making Emergency Plan Changes,"* dated April 19, 2011 (Reference 1), and Regulatory Guide (RG) 1.219, Revision 1, *"Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors,"* dated July 2016 (Reference 2), provide further guidance for evaluating changes to specific EALs. Based on the guidance provided, the proposed change to EAL RA3.1 requires prior NRC approval and submittal of a license amendment request pursuant to 10 CFR 50.90.

2.0 BACKGROUND

The EAL schemes for the affected facilities as approved by the NRC are currently based on the Nuclear Energy Institute's (NEI's) guidance provided in NEI 99-01, Revision 6, *"Development of Emergency Action Levels for Non-Passive Reactors"* (Reference 3). The NRC approved these EAL schemes for the noted facilities as documented in an NRC letter and supporting Safety Evaluation (SE) dated July 28, 2015 (Reference 5).

The Exelon Midwest sites (i.e., Braidwood, Byron, Clinton, Dresden, LaSalle, and Quad Cities) currently list specific radiation monitoring instrumentation located in the MCRs for determining radiation levels as an Initiating Condition (IC) for entry into EAL RA3.1. An excerpt from the Braidwood Station's EAL is provided below as an example. As shown in the Braidwood excerpt, EAL RA3 IC 1 has a specific dose rate listed and references Table R2, "Areas Requiring Continuous Occupancy," which identifies the specific radiation monitoring instrumentation (as highlighted) used for establishing the dose rate.

RA3

Initiating Condition:
Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability:
1, 2, 3, 4, 5, 6, D

Emergency Action Level (EAL):
Note:

- *If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.*

1. *Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas:*

Table R2 Areas Requiring Continuous Occupancy
• *Main Control Room – 1/2RE-AR010* • *Central Alarm Station – (by survey)*

OR

2. *UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas:*

The Exelon Midwest sites have historically used this convention of listing MCR radiation monitoring instrumentation as part of this EAL even when transitioning from the NEI 99-01, Revision 5, EAL schemes to the currently NRC-approved NEI 99-01, Revision 6, EAL schemes for affected sites.

Other Exelon facilities as listed below have also implemented NEI 99-01, Revision 6, EAL schemes at their sites as approved by the NRC and do not specifically identify MCR radiation monitoring instrumentation in their respective EAL RA3.1 requirements, but also consider basing the monitoring of radiation levels in the MCR for determining EAL entry conditions on other reliable and effective methods for determining dose rates. This would include field radiation survey results.

- Calvert Cliffs Nuclear Power Plant
- James A. FitzPatrick Nuclear Power Plant
- Limerick Generating Station
- Nine Mile Point Nuclear Station
- Peach Bottom Atomic Power Station
- R.E. Ginna Nuclear Power Plant

An excerpt from the corresponding Limerick EAL RA3.1 is shown below for reference. This EAL for Limerick was approved at the same time the EALs were approved for the Midwest sites (Reference 5).

RA3

Initiating Condition:
Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability:
1, 2, 3, 4, 5, D

Emergency Action Level (EAL):
Note:

- *If the equipment in the room or area listed in Table R4 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.*

1. *Dose rate **> 15 mR/hr** in **ANY** of the following Table R3 areas:*

Table R3 Areas Requiring Continuous Occupancy
• *Main Control Room* • *Central Alarm Station – (by survey)*

OR

2. *UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R4:*

Therefore, Exelon proposes to make clarifying changes to EAL RA3.1 for its Midwest sites by removing the reference to the specific MCR radiation monitoring instrumentation in the applicable table. As a result, besides just having the specific MCR radiation monitoring instrumentation available, other reliable and effective methods for determining dose rates will be utilized as well. This will enable the use of other reliable and effective methods for monitoring

MCR dose rates in the MCR for determining EAL entry conditions. This proposed change will help to add further flexibility in assessing MCR dose rates at the affected sites and enhance consistency across the Exelon fleet for this EAL.

3.0 DETAILED DESCRIPTION

As noted above, Exelon is proposing changes to EAL RA3.1 for its Midwest sites (i.e., Braidwood, Byron, Clinton, Dresden, LaSalle, and Quad Cities). Currently, these sites list specific radiation monitoring instrumentation located in the MCR for determining radiation level dose rates as an IC for entry into EAL RA3 and declaring an "Alert" emergency event classification.

The proposed changes involve revising applicable table entries for the affected sites to remove the reference to the specific radiation monitoring instrumentation listed for the MCR. An excerpt for the Braidwood Station's EAL highlighting the strikethrough changes is shown below as an example.

RA3

Initiating Condition:
Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability:
1, 2, 3, 4, 5, 6, D

Emergency Action Level (EAL):

Note:

- *If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.*

1. *Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas:*

Table R2 ***Areas Requiring Continuous Occupancy***
• *Main Control Room ~~– 1/2RE-AR010~~* • *Central Alarm Station – (by survey)*

OR

2. *UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas:*

Therefore, revising this EAL as described for the Exelon Midwest sites would further help to standardize and facilitate commonality with the EALs across the entire Exelon fleet.

4.0 TECHNICAL EVALUATION

As noted in Section 3.0 above, the Exelon Midwest sites (i.e., Braidwood, Byron, Clinton, Dresden, LaSalle, and Quad Cities) currently list specific radiation monitoring instrumentation located in the MCR for determining radiation level dose rates as an IC for entry into EAL RA3.1. The other Exelon Mid-Atlantic sites (i.e., Limerick and Peach Bottom) and Northeast sites (i.e., Calvert Cliffs, FitzPatrick, Ginna, and Nine Mile Point) do not specify MCR radiation monitoring instrumentation for this EAL. All of the Exelon sites have adopted and implemented the NEI 99-01, Revision 6, EAL schemes, which is the current convention used for the fleet as approved by the NRC.

NEI 99-01, Revision 6, as endorsed by the NRC and as documented in a letter to NEI dated March 28, 2013 (Reference 4), contains a set of generic ICs, EALs, and fission product barrier status thresholds. It also includes supporting technical basis information, developer notes, and recommended classification instructions for users. The methodology described in this document is consistent with NRC requirements and guidance and determined to provide an acceptable approach for meeting the requirements of 10 CFR 50.47(b)(4), applicable requirements of 10 CFR 50, Appendix E, and the associated planning standard evaluation elements established in NUREG-0654/ FEMA-REP-1, Revision 1, *"Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,"* dated November 1980.

In accordance with the NRC-endorsed guidance provided in NEI 99-01, Revision 6, the comparable NEI generic EAL to Exelon's EAL RA3 is EAL AA3. EAL AA3 states in part:

AA3

ECL: *Alert*

Initiating Condition: *Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.*

Operating Mode Applicability: *All*

Example Emergency Action Levels: *(1 or 2)*

Note: *If the equipment in the listed room or area was already inoperable or out-of-service before the event occurred, then no emergency classification is warranted.*

*(1) Dose rate greater than 15 mR/hr in **ANY** of the following areas:*

- *Control Room*
- *Central Alarm Station*
- *(other site-specific areas/rooms)*

(2) An UNPLANNED event results in radiation levels that prohibit or impede access to any of the following plant rooms or areas:

(site-specific list of plant rooms or areas with entry-related mode applicability identified)

The supporting Developer Notes for EAL AA3 specify:

> *EAL #1*
>
> *The 15mR/hr value in the EAL is derived from the General Design Criteria (GDC) 19 value of 5 Rem in 30 days with adjustment for expected occupancy times.*
>
> *The "other site-specific areas/rooms" should include any areas or rooms requiring continuous occupancy to maintain normal plant operation, or to perform a normal cooldown and shutdown.*

As noted in the generic EAL AA3, there is no specific requirement for determining the 15 mR/hr dose rate in the MCR based on use of specific installed radiation monitoring instrumentation and, therefore, other means for determining the dose rate would be considered acceptable provided the methods used can support a timely and accurate event classification.

NRC RIS 2003-18, Supplement 2, "*Use of Nuclear Energy Institute (NEI) 99-01, Methodology for Development of Emergency Action Levels"* (Reference 6), discusses "differences" and "deviations" as identified in reviews of EAL-related submittals and/or the consistency of licensee documentation for EAL changes made under 10 CFR 50.54(q). Specifically, a "difference" is an EAL change where the basis scheme guidance differs in wording but agrees in meaning and intent, such that classification of an event would be the same, whether using the basis scheme guidance or the site-specific proposed EAL. A "deviation" is an EAL change where the basis scheme guidance differs in wording and is altered in meaning or intent, such that classification of the event could be different between the basis scheme guidance and the site-specific proposed EAL.

Since the generic NEI EAL AA3 guidance as endorsed by the NRC does not specifically call out the need to use installed radiation monitoring instrumentation in the MCR for monitoring radiation level dose rates for assessing entry conditions for the EAL, the proposed change would not necessarily be considered a "difference" or "deviation" from the endorsed generic EAL guidance. However, the guidance in RG 1.219, Revision 1, provides examples of changes that could require prior NRC approval. In particular, one example indicates that prior NRC approval would likely be required for a proposed change to an EAL that would eliminate direct reading instrumentation and rely instead on other reliable alternative methods that can support a timely and accurate event classification (e.g., manual sampling and analysis).

The removal of the specific references to the radiation monitoring instrumentation in the MCR from the applicable tables in EAL RA3 as proposed, allows for a less restrictive ability to declare the EAL, since there are multiple ways to determine radiation levels within the MCR. For example, this would allow for: 1) radiological field surveys to be used during events with elevated MCR radiation levels; 2) use of currently installed MCR radiation monitoring instrumentation, or 3) temporary monitors to be used when the installed monitors are inoperable or unavailable for readily assessing the EAL ICs without confusion or additional constraints for decision makers. These additional methods and capabilities provide flexibility for detecting elevated radiation levels within the MCR.

Since the generic NEI EAL AA3 as approved by the NRC does not specify the need to use installed radiation monitoring instrumentation, the proposed change to EAL RA3 for the Exelon Midwest sites would still meet the guidance provided in NEI 99-01, Revision 6. In addition, the

proposed change to EAL RA3 for the Midwest sites would also align with the other Exelon Mid-Atlantic and Northeast sites' EALs enabling a consistent approach for event classification across the Exelon fleet to the greatest extent possible.

Accordingly, pursuant to the requirements of 10 CFR 50, Appendix E, Section IV.B.2, and supporting guidance in RIS 2005-02, Revision 1, and Regulatory Guide (RG) 1.219, Revision 1, Exelon requests NRC review and approval of the proposed change to EAL RA3.1, for the identified Exelon Midwest sites, as license amendment requests to the supporting Facility Operating Licenses in accordance with 10 CFR 50.90.

5.0 REGULATORY EVALUATION

5.1 Applicable Regulatory Requirements/Criteria

The proposed changes have been evaluated to determine whether applicable regulations and requirements continue to be met.

The regulations in 10 CFR 50.54(q) provide direction to licensees seeking to revise their Emergency Plan. The requirements related to nuclear power plant Emergency Plans are provided in 10 CFR 50.47, *"Emergency plans,"* and the requirements of Appendix E, *"Emergency Planning and Preparedness for Production and Utilization Facilities,"* to 10 CFR 50.

10 CFR 50.47 establishes standards that onsite and offsite emergency response plans must meet for the NRC to make a positive finding that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. One of these standards, 10 CFR 50.47(b)(4), stipulates that Emergency Plans include a standard emergency classification and action level scheme.

Section IV.B, "Assessment Actions," to 10 CFR 50, Appendix E, stipulates that Emergency Plans include EALs, which are to be used as criteria for determining the need for notification and participation of local and State agencies, and for determining when and what type of protective measures should be considered to protect the health and safety of individuals both onsite and offsite. EALs are to be based on plant conditions and instrumentation, as well as onsite and offsite radiological monitoring. Therefore, a revision to the EALs will require NRC approval prior to implementation if it involves: 1) changing from one EAL scheme to another; 2) the licensee is proposing an alternate method for complying with the regulations; or 3) the EAL revision proposed by the licensee decreases the effectiveness of the licensee's Emergency Plan.

NRC RIS 2005-02, Revision 1, *"Clarifying the Process for Making Emergency Plan Changes,"* issued in April 2011, provides guidance on evaluating changes to individual EALs and assessing whether a change involves a potential decrease in the effectiveness of the Emergency Plan.

RG 1.219, Revision 1, *"Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors,"* dated July 2016, also provides guidance with respect to making changes to Emergency Plans. This RG describes a method that the NRC considers acceptable to implement the requirements of 10 CFR 50.54(q) related to emergency preparedness in evaluating and making changes to Emergency Plans.

Exelon has determined that the proposed changes to EAL RA3.1 for the affected Exelon sites do not require any exemptions or relief from regulatory requirements and do not affect conformance with any General Design Criteria differently than described in the affected plants' Updated Final Safety Analysis Reports (UFSARs).

5.2 Precedent

By letter dated May 30, 2014 (ML14164A054), Exelon submitted license amendment requests for a full EAL scheme change to adopt the NEI 99-01, Revision 6, guidance for Exelon's Braidwood, Byron, Clinton, Dresden, LaSalle, Limerick, Oyster Creek, Peach Bottom, Quad Cities, and Three Mile Island plants. The NRC approved the license amendment requests for these sites as documented in a letter dated July 28, 2015 (ML15141A058), which included the approved changes for EAL RA3 for some of the sites where a reference to MCR installed radiation monitoring instrumentation was not specifically referenced or included.

By letter dated May 31, 2017 (ML17164A149), Exelon submitted license amendment requests for a full EAL scheme change to adopt the NEI 99-01, Revision 6, guidance for Exelon's Calvert Cliffs, Ginna, and Nine Mile Point plants. The NRC approved the license amendment requests for these sites as documented in a letter dated June 26, 2018 (ML18137A614), which included the approved changes for EAL RA3 where a reference to MCR installed radiation monitoring instrumentation was not specifically referenced or included.

By letter dated January 31, 2018 (ML18037A782) Exelon submitted a license amendment request for a full EAL scheme change to adopt the NEI 99-01, Revision 6 guidance for FitzPatrick. The NRC approved this license amendment request for FitzPatrick as documented in a letter dated November 28, 2018 (ML18289A432), which included the approved changes for EAL RA3 where a reference to MCR installed radiation monitoring instrumentation was not specifically referenced or included.

5.3 No Significant Hazards Consideration

In accordance with 10 CFR 50.90, *"Application for amendment of license, construction permit, or early site permit,"* Exelon Generation Company, LLC (Exelon) requests license amendments for the facilities listed below in support of Emergency Plan changes that involve a change to Emergency Action Level (EAL) RA3.1 that establishes threshold values and conditions for declaring an "Alert" emergency classification related to radiation levels that would impede access to plant equipment necessary for normal plant operations, cooldown, or shutdown.

- Braidwood Station
- Byron Station
- Clinton Power Station
- Dresden Nuclear Power Station
- LaSalle County Station
- Quad Cities Nuclear Power Station

The proposed change to EAL RA3.1 involves removing the specific reference to Main Control Room (MCR) installed radiation monitoring instrumentation in the applicable table for determining MCR radiation levels as one of the EAL Initiating Conditions (ICs). The proposed change to EAL RA3.1 for the Exelon facilities noted remains consistent with the Nuclear Energy

Institute's (NEI's) guidance provided in NEI 99-01, Revision 6, *"Development of Emergency Action Levels for Non-Passive Reactors,"* as endorsed by the U.S. Nuclear Regulatory Commission (NRC) as documented in a letter to NEI dated March 28, 2013 (ML12346A463). The proposed change to EAL RA3.1 does not reduce the capability to meet the emergency planning requirements established in 10 CFR 50.47 and 10 CFR 50, Appendix E. The proposed change does not reduce the functionality, performance, or capability of Exelon's Emergency Response Organization (ERO) to respond in mitigating the consequences of accidents. Exelon ERO functions will continue to be performed as required.

The proposed change to EAL RA3 has been reviewed considering the applicable requirements of 10 CFR 50.47(b), 10 CFR 50.54(q), 10 CFR 50, Appendix E, and other applicable NRC guidance. Exelon has evaluated the proposed change to the affected sites' Emergency Plans and determined that the change to EAL RA3.1 does not involve a Significant Hazards Consideration. In support of this determination, an evaluation of each of the three (3) standards, set forth in 10 CFR 50.92, "*Issuance of amendment,"* is provided below.

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

   Response: No.

   The proposed change to EAL RA3.1 for the Exelon facilities noted meets the guidance established in NEI 99-01, Revision 6, as endorsed by the NRC and does not reduce the capability to meet the emergency planning requirements established in 10 CFR 50.47 and 10 CFR 50, Appendix E. The proposed change does not reduce the functionality, performance, or capability of Exelon's ERO to respond in mitigating the consequences of any design basis accident.

   The probability of a reactor accident requiring implementation of Emergency Plan EALs has no relevance in determining whether the proposed change to EAL RA3.1 will reduce the effectiveness of the Emergency Plans. As discussed in Section D, *"Planning Basis,"* of NUREG-0654, Revision 1, *"Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants":*

   > *"…The overall objective of emergency response plans is to provide dose savings (and in some cases immediate life saving) for a spectrum of accidents that could produce offsite doses in excess of Protective Action Guides (PAGs). No single specific accident sequence should be isolated as the one for which to plan because each accident could have different consequences, both in nature and degree. Further, the range of possible selection for a planning basis is very large, starting with a zero point of requiring no planning at all because significant offsite radiological accident consequences are unlikely to occur, to planning for the worst possible accident, regardless of its extremely low likelihood…."*

   Therefore, Exelon did not consider the risk insights regarding any specific accident initiation or progression in evaluating the proposed change involving EAL RA3.

   The proposed change to EAL RA3.1 does not involve any physical changes to plant equipment or systems, nor does the proposed change alter the assumptions of any

accident analyses. The proposed change does not adversely affect accident initiators or precursors nor does the proposed change alter the design assumptions, conditions, and configuration or the manner in which the plants are operated and maintained. The proposed change does not adversely affect the ability of Structures, Systems, or Components (SSCs) to perform their intended safety functions in mitigating the consequences of an initiating event within the assumed acceptance limits.

Therefore, the proposed change to EAL RA3.1 for the affected sites does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No.

The proposed change to EAL RA3.1 for the Exelon facilities noted meets the guidance established in NEI 99-01, Revision 6, as endorsed by the NRC and does not involve any physical changes to plant systems or equipment. The proposed change does not involve the addition of any new plant equipment. The proposed change will not alter the design configuration, or method of operation of plant equipment beyond its normal functional capabilities. Exelon ERO functions will continue to be performed as required. The proposed change does not create any new credible failure mechanisms, malfunctions, or accident initiators.

Therefore, the proposed change to EAL RA3.1 for the affected sites does not create the possibility of a new or different kind of accident from those that have been previously evaluated.

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

Response: No.

The proposed change to EAL RA3.1 for the Exelon facilities noted meets the guidance established in the guidance in NEI 99-01, Revision 6, as endorsed by the NRC and does not alter or exceed a design basis or safety limit. There is no change being made to safety analysis assumptions, safety limits, or limiting safety system settings that would adversely affect plant safety as a result of the proposed change. There are no changes to setpoints or environmental conditions of any SSC or the manner in which any SSC is operated. Margins of safety are unaffected by the proposed change to EAL RA3. The applicable requirements of 10 CFR 50.47 and 10 CFR 50, Appendix E will continue to be met.

Therefore, the proposed change to EAL RA3.1 for the affected sites does not involve any reduction in a margin of safety.

5.4 Conclusions

In conclusion, and based on the considerations discussed above: 1) there is reasonable assurance that the health and safety of the public will not be endangered by the proposed change to revise EAL RA3.1 for the Exelon facilities cited; 2) the changes will be in compliance with the NRC's regulations; and 3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

The proposed change to EAL RA3.1 for the Exelon facilities noted meets the guidance established in NEI 99-01, Revision 6, as endorsed by the NRC and does not reduce the capability to meet the emergency planning standards established in 10 CFR 50.47 and 10 CFR 50, Appendix E. The proposed change 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 the individual or cumulative occupational radiation exposure. Accordingly, the proposed change 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 change.

7.0 REFERENCES

1) RIS 2005-02, Revision 1, *"Clarifying the Process for Making Emergency Plan Changes,"* dated April 19, 2011.

2) Regulatory Guide 1.219, Revision 1, "Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors," dated July 2016.

3) NEI 99-01, Revision 6, *"Development of Emergency Action Levels for Non-Passive Reactors,"* dated November 2012.

4) Letter from Mark Thaggard (U.S. Nuclear Regulatory Commission) to Susan Perkins-Grew (Nuclear Energy Institute) - *U.S. Nuclear Regulatory Commission Review and Endorsement of NEI 99-01, Revision 6, November 2012,* dated March 28, 2013 (ML12346A463).

5) Letter from Blake Purnell (U.S. Nuclear Regulatory Commission) to Bryan C. Hanson (Exelon Generation Company, LLC) – *"Braidwood Station, Units 1 and 2; Byron Station, Unit Nos. 1 and 2; Clinton Power Station, Unit No. 1; Dresden Nuclear Power Station, Units 1, 2 and 3; LaSalle County Station, Units 1 and 2; Limerick Generating Station, Units 1 and 2; Oyster Creek Nuclear Generating Station; Peach Bottom Atomic Power Station, Units 1, 2 and 3; Quad Cities Nuclear Power Station, Units 1 and 2; and Three Mile Island Nuclear Generating Station, Units 1 and 2 - Issuance of Amendments Regarding Emergency Action Level Schemes (TAC Nos. MF4232-MF4251),"* dated July 28, 2015 (ML15141A058).

6) RIS 2003-18, Supplement 2, *"Use of Nuclear Energy Institute (NEI) 99-01, Methodology for Development of Emergency Action Levels,"* dated December 12, 2005.

ATTACHMENT 2

RADIOLOGICAL EMERGENCY PLAN ANNEX INFORMATION
FOR
BRAIDWOOD STATION

EP-AA-1001, Addendum 3

Braidwood Station, Units 1 and 2 - Supporting EAL RA3 Information

EAL RA3 Procedure Matrix Information
EAL RA3 Comparison Matrix Information
EAL RA3 Redline Basis Document Information
EAL RA3 Clean Basis Document Information

Braidwood EAL RA3 Procedure Matrix Information

Abnormal Rad Levels / Radiological Effluents

Radiological Effluents

GENERAL EMERGENCY

RG2 Spent fuel pool level cannot be restored to at least 1.00 ft. as indicated on 0LI-FC001B(2B) for 60 minutes or longer. 1 2 3 4 5 6 D

Emergency Action Levels (EAL):

Note: The Emergency Director should declare the General Emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

Spent fuel pool level cannot be restored to at least **1.00 ft.** as indicated on 0LI-FC001B(2B) for **60 minutes** or longer.

Table R1
Fuel Handling Incident Radiation Monitors

- Fuel Building Fuel Handling Incident Monitor 0RE-AR055
- Fuel Building Fuel Handling Incident Monitor 0RE-AR056
- Containment Fuel Handling Incident Monitor 1/2RE-AR011
- Containment Fuel Handling Incident Monitor 1/2RE-AR012

SITE AREA EMERGENCY

RS2 Spent fuel pool level at 1.00 ft. as indicated on 0LI-FC001B(2B) 1 2 3 4 5 6 D

Emergency Action Level (EAL):

Lowering of spent fuel pool level to **1.00 ft.** as indicated on 0LI-FC001B(2B).

Table R2
Areas Requiring Continuous Occupancy

- Main Control Room
- Central Alarm Station – (by survey)

Table R3
Areas with Entry Related Mode Applicability

Area	Entry Related Mode Applicability
Auxiliary Building 426' VCT Valve Aisle	Mode 4, 5, and 6
Auxiliary Building 401' Curved Wall Area Penetration Area	
Auxiliary Building 383' Remote Shutdown Panel Area	
Auxiliary Building 364' CV Pp areas Curved Wall Area	
Auxiliary Building 346' RH pump areas	

ALERT

RA2 Significant lowering of water level above, or damage to, irradiated fuel. 1 2 3 4 5 6 D

Emergency Action Levels (EAL):

1. Uncovery of irradiated fuel in the REFUELING PATHWAY.

   OR

2. Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by **ANY** Table R1 Radiation Monitor reading **>1000 mRem/hr**

   OR

3. Lowering of spent fuel pool level to **10.50 ft.** as indicated on 0LI-FC001B(2B).

RA3 Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. 1 2 3 4 5 6 D

Emergency Action Levels (EAL):

Note: If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted

1. Dose rate greater than **15 mR/hr** in **ANY** of the areas contained in Table R2.

   OR

2. An UNPLANNED event results in radiation levels that prevent or significantly impede access to **ANY** of the plant rooms in Table R3.

UNUSUAL EVENT

RU2 UNPLANNED loss of water level above irradiated fuel. 1 2 3 4 5 6 D

Emergency Action Levels (EAL):

1. a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by **ANY** of the following:

   - Refueling Cavity water level **<23 ft.** above the Reactor Flange (**< 423 ft.** indicated level)

     OR

   - Spent Fuel Pool water level **< 23 ft.** above the fuel (**< 422 ft. 9 in.** indicated level)

     OR

   - Indication or report of a drop in water level in the REFUELING PATHWAY.

   AND

   b. UNPLANNED Area Radiation Monitor reading rise on **ANY** radiation monitor in Table R1.

RU3 Reactor coolant activity greater than Technical Specification allowable limits. 1 2 3 4

Emergency Action Levels (EAL):

1. Gross Failed Fuel Monitor 1/2RE-PR006 indicating I-135 concentration **> 5 µCi/cc.**

   OR

2. Sample analysis indicates that:

   a. Dose Equivalent I-131 specific coolant activity **> 60.0 µCi/gm.**

   OR

   b. Dose Equivalent XE-133 specific coolant activity **> 603.0 µCi/gm.**

Mode: 1 – Power Operations 2 – Startup 3 – Hot Standby 4 – Hot Shutdown 5 – Cold Shutdown 6 – Refueling D - Defueled

COLD SHUTDOWN/REFUELING MATRIX

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Abnormal Rad Levels / Radiological Effluents			
Radiological Effluents **RG2** Spent fuel pool level cannot be restored to at least 1.00 ft. as indicated on 0LI-FC001B(2B) for 60 minutes or longer. 1 2 3 4 5 6 D **Emergency Action Levels (EAL):** **Note:** The Emergency Director should declare the General Emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. Spent fuel pool level cannot be restored to at least **1.00 ft.** as indicated on 0LI-FC001B(2B) for **60 minutes** or longer. **Table R1** **Fuel Handling Incident Radiation Monitors** • Fuel Building Fuel Handling Incident Monitor 0RE-AR055 • Fuel Building Fuel Handling Incident Monitor 0RE-AR056 • Containment Fuel Handling Incident Monitor 1/2RE-AR011 • Containment Fuel Handling Incident Monitor 1/2RE-AR012	**RS2** Spent fuel pool level at 1.00 ft. as indicated on 0LI-FC001B(2B) 1 2 3 4 5 6 D **Emergency Action Level (EAL):** Lowering of spent fuel pool level to **1.00 ft.** as indicated on 0LI-FC001B(2B). **Table R2** **Areas Requiring Continuous Occupancy** • Main Control Room • Central Alarm Station – (by survey) **Table R3** **Areas with Entry Related Mode Applicability** Auxiliary Building 426' VCT Valve Aisle — Mode 4, 5, and 6 Auxiliary Building 401' Curved Wall Area Penetration Area — Mode 4, 5, and 6 Auxiliary Building 383' Remote Shutdown Panel Area — Mode 4, 5, and 6 Auxiliary Building 364' CV Pp areas Curved Wall Area — Mode 4, 5, and 6 Auxiliary Building 346' RH pump areas — Mode 4, 5, and 6	**RA2** Significant lowering of water level above, or damage to, irradiated fuel. 1 2 3 4 5 6 D **Emergency Action Levels (EAL):** 1. Uncovery of irradiated fuel in the REFUELING PATHWAY. **OR** **2.** Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by **ANY** Table R1 Radiation Monitor reading **>1000 mRem/hr** **OR** 3. Lowering of spent fuel pool level to **10.50 ft.** as indicated on 0LI-FC001B(2B). **RA3** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. 1 2 3 4 5 6 D **Emergency Action Levels (EAL):** **Note:** If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted 1. Dose rate greater than **15 mR/hr** in **ANY** of the areas contained in Table R2. **OR** 2. An UNPLANNED event results in radiation levels that prevent or significantly impede access to **ANY** of the plant rooms in Table R3.	**RU2** UNPLANNED loss of water level above irradiated fuel. 1 2 3 4 5 6 D **Emergency Action Levels (EAL):** 1. a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by **ANY** of the following: • Refueling Cavity water level **<23 ft.** above the Reactor Flange (**< 423 ft.** indicated level) **OR** • Spent Fuel Pool water level **< 23 ft.** above the fuel (**<422 ft. 9 in.** indicated level) **OR** • Indication or report of a drop in water level in the REFUELING PATHWAY. **AND** b. UNPLANNED Area Radiation Monitor reading rise on **ANY** radiation monitor in Table R1.

Mode: 1 – Power Operations 2 – Startup 3 – Hot Standby 4 – Hot Shutdown 5 – Cold Shutdown 6 – Refueling D - Defueled

COLD SHUTDOWN/REFUELING MATRIX

Braidwood EAL RA3 Comparison Matrix Information

NEI 99-01 Rev 6	Current EAL	Proposed EAL
AA3 **Initiating Condition – ALERT** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability**: All **Example Emergency Action Levels**: (1 or 2) **Note:** If the equipment in the listed room or area was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted 1. Dose rate greater than 15 mR/hr in **ANY** of the following areas: • Control Room • Central Alarm Station • (other site-specific areas/rooms) 2. An UNPLANNED event results in radiation levels that prevent or significantly impede access to any of the following plant rooms or areas: (site-specific list of plant rooms or areas with entry-related mode applicability identified)	**RA3** **Initiating Condition:** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability:** 1, 2, 3, 4, 5, 6, D **Emergency Action Levels (EAL):** **Note:** If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted 1. Dose rate greater than **15 mR/hr** in **ANY** of the following areas: **Table R2** **Areas Requiring Continuous Occupancy** • Main Control Room – 1/2RE-AR010 • Central Alarm Station – (by survey) **OR** 2. An UNPLANNED event results in radiation levels that prohibit or significantly impede access to any of the following plant rooms or areas: **Table R3** **Areas with Entry Related Mode Applicability** **Area** | **Entry Related Mode Applicability** Auxiliary Building* | Mode 4, 5, and 6 *Areas required to establish shutdown cooling	**RA3** **Initiating Condition:** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability:** 1, 2, 3, 4, 5, 6, D **Emergency Action Levels (EAL):** **Note:** If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted 1. Dose rate greater than **15 mR/hr** in **ANY** of the following areas: **Table R2** **Areas Requiring Continuous Occupancy** • Main Control Room • Central Alarm Station – (by survey) **OR** 2. An UNPLANNED event results in radiation levels that prohibit or significantly impede access to any of the following plant rooms or areas: **Table R3** **Areas with Entry Related Mode Applicability** **Area** | **Entry Related Mode Applicability** Auxiliary Building* | Mode 4, 5, and 6 *Areas required to establish shutdown cooling

No Change X Difference Deviation	**Justification** Removed the specific rad monitor (1/2RE-AR010) from RA3.1 Main Control Room bullet in Table R2 because it unnecessarily restricted the ability to declare the EAL since there are multiple ways to determine rad levels within the Control Room. The current Emergency Action Level (EAL) is written IAW NEI 99-01 Revision 6. NEI 99-01 Revision 6 does not require a radiation monitor be specified therefore this change is still in keeping with the requirements of NEI 99-01 Revision 6 and will also now conform with the Exelon Mid Atlantic and North East sites.

Braidwood EAL RA3 Redline Basis Document Information

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3

Initiating Condition:

Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability:

1, 2, 3, 4, 5, 6, D

Emergency Action Level (EAL):

Note:

- If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.

1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas:

Table R2 **Areas Requiring Continuous Occupancy**
• Main Control Room ~~– 1/2RE-AR010~~ • Central Alarm Station – (by survey)

OR

2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas:

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Emergency Action Level (EAL) (cont):

Table R3 Areas with Entry Related Mode Applicability	
Area	**Entry Related Mode Applicability**
Auxiliary Building 426' VCT Valve Aisle	Mode 4, 5, and 6
Auxiliary Building 401' Curved Wall Area Penetration Area	
Auxiliary Building 383' Remote Shutdown Panel Area	
Auxiliary Building 364' CV Pp areas Curved Wall Area	
Auxiliary Building 346' RH pump areas	

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses elevated radiation levels in certain plant rooms/areas sufficient to preclude or impede personnel from performing actions necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal plant procedures. As such, it represents an actual or potential substantial degradation of the level of safety of the plant. The Emergency Director should consider the cause of the increased radiation levels and determine if another IC may be applicable.

Assuming all plant equipment is operating as designed, normal operation is capable from the Main Control Room (MCR). The plant is also able to transition into a hot shutdown condition from the MCR, therefore Table R3 is a list of plant rooms or areas with entry-related mode applicability that contain equipment which require a manual/local action necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal operating procedures (establish shutdown cooling), where if this action is not completed the plant would not be able to attain and maintain cold shutdown. This Table does not include rooms or areas for which entry is required solely to perform

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS
RA3 (cont)

Basis (cont):

actions of an administrative or record keeping nature (e.g., normal rounds or routine inspections).

Rooms and areas listed in EAL #1 do not need to be included in EAL #2, including the Control Room.

For EAL #2, an Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect and the elevated radiation levels preclude the ability to place shutdown cooling in service. The emergency classification is not contingent upon whether entry is actually necessary at the time of the increased radiation levels. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., installing temporary shielding beyond that required by procedure, requiring use of non-routine protective equipment, requesting an extension in dose limits beyond normal administrative limits).

An emergency declaration is not warranted if any of the following conditions apply.

- The plant is in an operating mode different than the mode specified for the affected room/area (i.e., entry is not required during the operating mode in effect at the time of the elevated radiation levels). For example, the plant is in Mode 1 when the radiation rise occurs, and the procedures used for normal operation, cooldown and shutdown do not require entry into the affected room until Mode 4.
- The increased radiation levels are a result of a planned activity that includes compensatory measures which address the temporary inaccessibility of a room or area (e.g., radiography, spent filter or resin transfer, etc.).
- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal rounds or routine inspections).
- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

Escalation of the emergency classification level would be via Recognition Category R, C or F ICs.

Basis Reference(s):

1. NEI 99-01 Rev 6, AA3
2. UFSAR Chapter 3.02, UFSAR Table 3.2-1

Braidwood EAL RA3 Clean Basis Document Information

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3

Initiating Condition:

Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability:

1, 2, 3, 4, 5, 6, D

Emergency Action Level (EAL):

Note:

- If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.

1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas:

Table R2 **Areas Requiring Continuous Occupancy**
• Main Control Room • Central Alarm Station – (by survey)

OR

2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas:

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS
RA3 (cont)

Emergency Action Level (EAL) (cont):

Table R3 Areas with Entry Related Mode Applicability	
Area	**Entry Related Mode Applicability**
Auxiliary Building 426' VCT Valve Aisle	Mode 4, 5, and 6
Auxiliary Building 401' Curved Wall Area Penetration Area	
Auxiliary Building 383' Remote Shutdown Panel Area	
Auxiliary Building 364' CV Pp areas Curved Wall Area	
Auxiliary Building 346' RH pump areas	

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses elevated radiation levels in certain plant rooms/areas sufficient to preclude or impede personnel from performing actions necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal plant procedures. As such, it represents an actual or potential substantial degradation of the level of safety of the plant. The Emergency Director should consider the cause of the increased radiation levels and determine if another IC may be applicable.

Assuming all plant equipment is operating as designed, normal operation is capable from the Main Control Room (MCR). The plant is also able to transition into a hot shutdown condition from the MCR, therefore Table R3 is a list of plant rooms or areas with entry-related mode applicability that contain equipment which require a manual/local action necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal operating procedures (establish shutdown cooling), where if this action is not completed the plant would not be able to attain and maintain cold shutdown. This Table does not include rooms or areas for which entry is required solely to perform

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS
RA3 (cont)

Basis (cont):

actions of an administrative or record keeping nature (e.g., normal rounds or routine inspections).

Rooms and areas listed in EAL #1 do not need to be included in EAL #2, including the Control Room.

For EAL #2, an Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect and the elevated radiation levels preclude the ability to place shutdown cooling in service. The emergency classification is not contingent upon whether entry is actually necessary at the time of the increased radiation levels. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., installing temporary shielding beyond that required by procedure, requiring use of non-routine protective equipment, requesting an extension in dose limits beyond normal administrative limits).

An emergency declaration is not warranted if any of the following conditions apply.

- The plant is in an operating mode different than the mode specified for the affected room/area (i.e., entry is not required during the operating mode in effect at the time of the elevated radiation levels). For example, the plant is in Mode 1 when the radiation rise occurs, and the procedures used for normal operation, cooldown and shutdown do not require entry into the affected room until Mode 4.
- The increased radiation levels are a result of a planned activity that includes compensatory measures which address the temporary inaccessibility of a room or area (e.g., radiography, spent filter or resin transfer, etc.).
- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal rounds or routine inspections).
- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

Escalation of the emergency classification level would be via Recognition Category R, C or F ICs.

Basis Reference(s):

1. NEI 99-01 Rev 6, AA3
2. UFSAR Chapter 3.02, UFSAR Table 3.2-1

ATTACHMENT 3

RADIOLOGICAL EMERGENCY PLAN ANNEX INFORMATION
FOR
BYRON STATION

EP-AA-1002, Addendum 3

Byron Station, Units 1 and 2 - Supporting EAL RA3 Information

EAL RA3 Procedure Matrix Information
EAL RA3 Comparison Matrix Information
EAL RA3 Redline Basis Document Information
EAL RA3 Clean Basis Document Information

Byron EAL RA3 Procedure Matrix Information

Abnormal Rad Levels / Radiological Effluents

GENERAL EMERGENCY

RG2 Spent fuel pool level cannot be restored to at least 1.00 ft. as indicated on 0LI-FC001B(2B) for 60 minutes or longer. 1 2 3 4 5 6 D

Emergency Action Levels (EAL):

Note: The Emergency Director should declare the General Emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

Spent fuel pool level cannot be restored to at least **1.00 ft.** as indicated on 0LI-FC001B(2B) for **60 minutes** or longer.

Table R1
Fuel Handling Incident Radiation Monitors

- Fuel Building Fuel Handling Incident Monitor 0RE-AR055
- Fuel Building Fuel Handling Incident Monitor 0RE-AR056
- Containment Fuel Handling Incident Monitor 1/2RE-AR011
- Containment Fuel Handling Incident Monitor 1/2RE-AR012

SITE AREA EMERGENCY

RS2 Spent fuel pool level at 1.00 ft. as indicated on 0LI-FC001B(2B). 1 2 3 4 5 6 D

Emergency Action Level (EAL):

Lowering of spent fuel pool level to **1.00 ft.** as indicated on 0LI-FC001B(2B).

Table R2
Areas Requiring Continuous Occupancy

- Main Control Room
- Central Alarm Station – (by survey)

Table R3
Areas with Entry Related Mode Applicability

Area	Entry Related Mode Applicability
Auxiliary Building 426' VCT Valve Aisle	Mode 4, 5, and 6
Auxiliary Building 401' Penetration Area	
Auxiliary Building 383' Remote Shutdown Panel Area	
Auxiliary Building 364' CV Pp areas Penetration Area	
Auxiliary Building 346' RH pump areas	

ALERT

RA2 Significant lowering of water level above, or damage to, irradiated fuel. 1 2 3 4 5 6 D

Emergency Action Levels (EAL):

1. Uncovery of irradiated fuel in the REFUELING PATHWAY.

   OR

2. Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by **ANY** Table R1 Radiation Monitor reading **>1000 mRem/hr**

   OR

3. Lowering of spent fuel pool level to **10.50 ft.** as indicated on 0LI-FC001B(2B).

RA3 Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. 1 2 3 4 5 6 D

Emergency Action Levels (EAL):

Note: If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted

1. Dose rate greater than **15 mR/hr** in **ANY** of the areas contained in Table R2.

   OR

2. An UNPLANNED event results in radiation levels that prevent or significantly impede access to any of the plant rooms in Table R3.

UNUSUAL EVENT

RU2 Unplanned lowering of water level above irradiated fuel. 1 2 3 4 5 6 D

Emergency Action Levels (EAL):

1. a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by **ANY** of the following:

   - Refueling Cavity water level **<23 ft** above the Reactor Flange (**423 ft.** indicated level)

     OR

   - Spent Fuel Pool water level **< 23 ft.** above the fuel (**422 ft 9 in** indicated level)

     OR

   - Report of visual observation of a drop in water level in the Fuel Transfer Canal, Refueling Cavity, or Spent Fuel Pool.

   AND

   b. UNPLANNED Area Radiation Monitor reading rise on **ANY** radiation monitor in Table R1.

RU3 Reactor coolant activity greater than Technical Specification allowable limits. 1 2 3 4

Emergency Action Levels (EAL):

1. Gross Failed Fuel Monitor 1/2RE-PR006 indicating I-135 concentration **> 5 µCi/cc.**

   OR

2. Sample analysis indicates that:

   a. Dose equivalent I-131 specific coolant activity **> 60 µCi/gm.**

   OR

   b. Dose equivalent XE-133 specific coolant activity **> 603.0 µCi/gm.**

Mode: 1 – Power Operations 2 – Startup 3 – Hot Standby 4 – Hot Shutdown 5 – Cold Shutdown 6 – Refueling D - Defueled

Exelon Nuclear
COLD SHUTDOWN/REFUELING MATRIX

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Abnormal Rad Levels / Radiological Effluents			
RG2 Spent fuel pool level cannot be restored to at least 1.00 ft. as indicated on 0LI-FC001B(2B) for 60 minutes or longer. 1 2 3 4 5 6 D **Emergency Action Levels (EAL):** **Note:** The Emergency Director should declare the General Emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. Spent fuel pool level cannot be restored to at least **1.00 ft.** as indicated on 0LI-FC001B(2B) for **60 minutes** or longer.	**RS2** Spent fuel pool level at 1.00 ft. as indicated on 0LI-FC001B(2B). 1 2 3 4 5 6 D **Emergency Action Level (EAL):** Lowering of spent fuel pool level to **1.00 ft.** as indicated on 0LI-FC001B(2B).	**RA2** Significant lowering of water level above, or damage to, irradiated fuel. 1 2 3 4 5 6 D **Emergency Action Levels (EAL):** 1. Uncovery of irradiated fuel in the REFUELING PATHWAY. **OR** 2. Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by **ANY** Table R1 Radiation Monitor reading **>1000 mRem/hr** **OR** 3. Lowering of spent fuel pool level to **10.50 ft.** as indicated on 0LI-FC001B(2B).	**RU2** Unplanned lowering of water level above irradiated fuel. 1 2 3 4 5 6 D **Emergency Action Levels (EAL):** 1. a. UNPLANNED water level drop in the reactor Refueling Cavity, Spent Fuel Pool or Fuel Transfer Canal as indicated by: • Refueling Cavity water level **<23 ft** above the Reactor Flange (**423 ft.** indicated level) **OR** • Spent Fuel Pool water level **< 23 ft.** above the fuel (**422 ft 9 in** indicated level) **OR** • Report of visual observation of a drop in water level in the Fuel Transfer Canal, Refueling Cavity, or Spent Fuel Pool. **AND** b. UNPLANNED Area Radiation Monitor reading rise on **ANY** radiation monitor in Table R1.
		RA3 Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. 1 2 3 4 5 6 D **Emergency Action Levels (EAL):** **Note:** If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted 1. Dose rate greater than **15 mR/hr** in **ANY** of the areas contained in Table R2. **OR** 2. An UNPLANNED event results in radiation levels that prevent or significantly impede access to any of the plant rooms in Table R3.	

Radiological Effluents

Table R1
Fuel Handling Incident Radiation Monitors

- Fuel Building Fuel Handling Incident Monitor 0RE-AR055
- Fuel Building Fuel Handling Incident Monitor 0RE-AR056
- Containment Fuel Handling Incident Monitor 1/2RE-AR011
- Containment Fuel Handling Incident Monitor 1/2RE-AR012

Table R2
Areas Requiring Continuous Occupancy

- Main Control Room
- Central Alarm Station – (by survey)

Table R3
Areas with Entry Related Mode Applicability

Area	Entry Related Mode Applicability
Auxiliary Building 426' VCT Valve Aisle	Mode 4, 5, and 6
Auxiliary Building 401' Penetration Area	
Auxiliary Building 383' Remote Shutdown Panel Area	
Auxiliary Building 364' CV Pp areas Penetration Area	
Auxiliary Building 346' RH pump areas	

Mode: 1 – Power Operations 2 – Startup 3 – Hot Standby 4 – Hot Shutdown 5 – Cold Shutdown 6 – Refueling D - Defueled

COLD SHUTDOWN/REFUELING MATRIX

COLD SHUTDOWN/REFUELING MATRIX

Byron EAL RA3 Comparison Matrix Information

NEI 99-01 Rev 6	Current EAL	Proposed EAL
AA3 **Initiating Condition – ALERT** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability**: All **Example Emergency Action Levels**: (1 or 2) **Note:** If the equipment in the listed room or area was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted 1. Dose rate greater than 15 mR/hr in **ANY** of the following areas: • Control Room • Central Alarm Station • (other site-specific areas/rooms) 2. An UNPLANNED event results in radiation levels that prevent or significantly impede access to any of the following plant rooms or areas: (site-specific list of plant rooms or areas with entry-related mode applicability identified)	**RA3** **Initiating Condition:** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability:** 1, 2, 3, 4, 5, 6, D **Emergency Action Levels (EAL):** **Note:** If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted 1. Dose rate greater than **15 mR/hr** in **ANY** of the following areas: **Table R2** **Areas Requiring Continuous Occupancy** • Main Control Room – 1/2RE-AR010 • Central Alarm Station – (by survey) **OR** 2. An UNPLANNED event results in radiation levels that prohibit or significantly impede access to any of the following plant rooms or areas: **Table R3** **Areas with Entry Related Mode Applicability** | Area | Entry Related Mode Applicability | | --- | --- | | Auxiliary Building 426’ VCT Valve Aisle | Mode 4, 5, and 6 | | Auxiliary Building 401’ Curved Wall Area Penetration Area | | | Auxiliary Building 383’ Remote Shutdown Panel Area | | | Auxiliary Building 364’ CV Pp areas Curved Wall Area | | | Auxiliary Building 346’ RH pump areas | |	**RA3** **Initiating Condition:** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability:** 1, 2, 3, 4, 5, 6, D **Emergency Action Levels (EAL):** **Note:** If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted 1. Dose rate greater than **15 mR/hr** in **ANY** of the following areas: **Table R2** **Areas Requiring Continuous Occupancy** • Main Control Room • Central Alarm Station – (by survey) **OR** 2. An UNPLANNED event results in radiation levels that prohibit or significantly impede access to any of the following plant rooms or areas: **Table R3** **Areas with Entry Related Mode Applicability** | Area | Entry Related Mode Applicability | | --- | --- | | Auxiliary Building 426’ VCT Valve Aisle | Mode 4, 5, and 6 | | Auxiliary Building 401’ Curved Wall Area Penetration Area | | | Auxiliary Building 383’ Remote Shutdown Panel Area | | | Auxiliary Building 364’ CV Pp areas Curved Wall Area | | | Auxiliary Building 346’ RH pump areas | |

No Change	**Justification**
X Difference	Removed the specific rad monitor (1/2RE-AR010) from RA3.1 Main Control Room bullet in Table R2 because it unnecessarily restricted the ability to declare the EAL since there are multiple ways to determine rad levels within the Control Room. The current Emergency Action Level (EAL) is written IAW NEI 99-01 Revision 6. NEI 99-01 Revision 6 does not require a radiation monitor be specified therefore this change is still in keeping with the requirements of NEI 99-01 Revision 6 and will also now conform with the Exelon Mid Atlantic and North East sites.
Deviation	

Byron EAL RA3 Redline Basis Document Information

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3

Initiating Condition:

Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability:

1, 2, 3, 4, 5, 6, D

Emergency Action Level (EAL):

Note:

- If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.

1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas:

Table R2 **Areas Requiring Continuous Occupancy**
• Main Control Room ~~– 1/2RE-AR010~~ • Central Alarm Station – (by survey)

OR

2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas:

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Emergency Action Level (EAL) (cont):

Table R3 Areas with Entry Related Mode Applicability	
Area	**Entry Related Mode Applicability**
Auxiliary Building 426' VCT Valve Aisle	Mode 4, 5, and 6
Auxiliary Building 401' Penetration Area	
Auxiliary Building 383' Remote Shutdown Panel Area	
Auxiliary Building 364' CV Pp areas Penetration Area	
Auxiliary Building 346' RH pump areas	

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses elevated radiation levels in certain plant rooms/areas sufficient to preclude or impede personnel from performing actions necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal plant procedures. As such, it represents an actual or potential substantial degradation of the level of safety of the plant. The Emergency Director should consider the cause of the increased radiation levels and determine if another IC may be applicable.

Assuming all plant equipment is operating as designed, normal operation is capable from the Main Control Room (MCR). The plant is also able to transition into a hot shutdown condition from the MCR, therefore Table R3 is a list of plant rooms or areas with entry-related mode applicability that contain equipment which require a manual/local action necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal operating procedures (establish shutdown cooling), where if this action is not completed the plant would not be able to attain and maintain cold shutdown. This Table does not include rooms or areas for which entry is required solely to perform actions of an administrative or record keeping nature (e.g., normal rounds or routine inspections).

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Basis (cont):

Rooms and areas listed in EAL #1 do not need to be included in EAL #2, including the Control Room.

For EAL #2, an Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect and the elevated radiation levels preclude the ability to place shutdown cooling in service. The emergency classification is not contingent upon whether entry is actually necessary at the time of the increased radiation levels. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., installing temporary shielding beyond that required by procedure, requiring use of non-routine protective equipment, requesting an extension in dose limits beyond normal administrative limits).

An emergency declaration is not warranted if any of the following conditions apply.

- The plant is in an operating mode different than the mode specified for the affected room/area (i.e., entry is not required during the operating mode in effect at the time of the elevated radiation levels). For example, the plant is in Mode 1 when the radiation rise occurs, and the procedures used for normal operation, cooldown and shutdown do not require entry into the affected room until Mode 4.
- The increased radiation levels are a result of a planned activity that includes compensatory measures which address the temporary inaccessibility of a room or area (e.g., radiography, spent filter or resin transfer, etc.).
- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal rounds or routine inspections).
- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

Escalation of the emergency classification level would be via Recognition Category R, C or F ICs.

Basis Reference(s):

1. NEI 99-01 Rev 6, AA3
2. UFSAR Chapter 3.02, UFSAR Table 3.2-1

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Basis (cont):

Rooms and areas listed in EAL #1 do not need to be included in EAL #2, including the Control Room.

For EAL #2, an Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect and the elevated radiation levels preclude the ability to place shutdown cooling in service. The emergency classification is not contingent upon whether entry is actually necessary at the time of the increased radiation levels. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., installing temporary shielding beyond that required by procedure, requiring use of non-routine protective equipment, requesting an extension in dose limits beyond normal administrative limits).

An emergency declaration is not warranted if any of the following conditions apply.

- The plant is in an operating mode different than the mode specified for the affected room/area (i.e., entry is not required during the operating mode in effect at the time of the elevated radiation levels). For example, the plant is in Mode 1 when the radiation rise occurs, and the procedures used for normal operation, cooldown and shutdown do not require entry into the affected room until Mode 4.
- The increased radiation levels are a result of a planned activity that includes compensatory measures which address the temporary inaccessibility of a room or area (e.g., radiography, spent filter or resin transfer, etc.).
- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal rounds or routine inspections).
- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

Escalation of the emergency classification level would be via Recognition Category R, C or F ICs.

Basis Reference(s):

1. NEI 99-01 Rev 6, AA3
2. UFSAR Chapter 3.02, UFSAR Table 3.2-1

Byron EAL RA3 Clean Basis Document Information

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3

Initiating Condition:

Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability:

1, 2, 3, 4, 5, 6, D

Emergency Action Level (EAL):

Note:

- If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.

1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas:

Table R2 Areas Requiring Continuous Occupancy
• Main Control Room • Central Alarm Station – (by survey)

OR

2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas:

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Emergency Action Level (EAL) (cont):

Table R3 Areas with Entry Related Mode Applicability	
Area	**Entry Related Mode Applicability**
Auxiliary Building 426' VCT Valve Aisle	Mode 4, 5, and 6
Auxiliary Building 401' Penetration Area	
Auxiliary Building 383' Remote Shutdown Panel Area	
Auxiliary Building 364' CV Pp areas Penetration Area	
Auxiliary Building 346' RH pump areas	

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses elevated radiation levels in certain plant rooms/areas sufficient to preclude or impede personnel from performing actions necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal plant procedures. As such, it represents an actual or potential substantial degradation of the level of safety of the plant. The Emergency Director should consider the cause of the increased radiation levels and determine if another IC may be applicable.

Assuming all plant equipment is operating as designed, normal operation is capable from the Main Control Room (MCR). The plant is also able to transition into a hot shutdown condition from the MCR, therefore Table R3 is a list of plant rooms or areas with entry-related mode applicability that contain equipment which require a manual/local action necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal operating procedures (establish shutdown cooling), where if this action is not completed the plant would not be able to attain and maintain cold shutdown. This Table does not include rooms or areas for which entry is required solely to perform actions of an administrative or record keeping nature (e.g., normal rounds or routine inspections).

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Basis (cont):

Rooms and areas listed in EAL #1 do not need to be included in EAL #2, including the Control Room.

For EAL #2, an Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect and the elevated radiation levels preclude the ability to place shutdown cooling in service. The emergency classification is not contingent upon whether entry is actually necessary at the time of the increased radiation levels. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., installing temporary shielding beyond that required by procedure, requiring use of non-routine protective equipment, requesting an extension in dose limits beyond normal administrative limits).

An emergency declaration is not warranted if any of the following conditions apply.

- The plant is in an operating mode different than the mode specified for the affected room/area (i.e., entry is not required during the operating mode in effect at the time of the elevated radiation levels). For example, the plant is in Mode 1 when the radiation rise occurs, and the procedures used for normal operation, cooldown and shutdown do not require entry into the affected room until Mode 4.
- The increased radiation levels are a result of a planned activity that includes compensatory measures which address the temporary inaccessibility of a room or area (e.g., radiography, spent filter or resin transfer, etc.).
- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal rounds or routine inspections).
- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

Escalation of the emergency classification level would be via Recognition Category R, C or F ICs.

Basis Reference(s):

1. NEI 99-01 Rev 6, AA3
2. UFSAR Chapter 3.02, UFSAR Table 3.2-1

ATTACHMENT 4

RADIOLOGICAL EMERGENCY PLAN ANNEX INFORMATION
FOR
CLINTON NUCLEAR STATION

EP-AA-1003, Addendum 3

Clinton Nuclear Station - Supporting EAL RA3 Information

EAL RA3 Procedure Matrix Information
EAL RA3 Comparison Matrix Information
EAL RA3 Redline Basis Document Information
EAL RA3 Clean Basis Document Information

Clinton EAL RA3 Procedure Matrix Information

Abnormal Rad Levels / Radiological Effluents

Radiological Effluents

GENERAL EMERGENCY

RG2 Spent fuel pool level cannot be restored to at least **1.00 ft.** as indicated on 1LI-FC221A(B) for 60 minutes or longer. 1 2 3 4 5 D

Emergency Action Levels (EAL):

Note: The Emergency Director should declare the General Emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

Spent fuel pool level cannot be restored to at least **1.00 ft.** as indicated on 1LI-FC221A(B) for **60 minutes** or longer.

Table R1
Fuel Handling Incident Radiation Monitors

- Fuel Building Exhaust (1PR006A-D)
- CCP Exhaust (1PR042A-D)
- Containment Exhaust (1PR001A-D)
- Containment Fuel xfer Plenum (1PR008A-D)

SITE AREA EMERGENCY

RS2 Spent fuel pool level at **1.00 ft.** as indicated on 1LI-FC221A(B). 1 2 3 4 5 D

Emergency Action Level (EAL):

Lowering of spent fuel pool level to **1.00 ft.** as indicated on 1LI-FC221A(B).

Table R2
Areas Requiring Continuous Occupancy

- Main Control Room
- Central Alarm Station – (by survey)

Table R3
Areas with Entry Related Mode Applicability

Area	Entry Related Mode Applicability
Auxiliary Building	Mode 3, 4, and 5
• RHR A and B Pump Rooms El.702 • RHR A and B Hx Rooms El. 762 • RHR B Hx Room El. 737 • Switchgear Rooms East/West El. 781	

ALERT

RA2 Significant lowering of water level above, or damage to, irradiated fuel. 1 2 3 4 5 D

Emergency Action Level (EAL):

1. Uncovery of irradiated fuel in the REFUELING PATHWAY.
   OR
2. Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by **ANY** Table R1 Radiation Monitor reading **>1000 mRem/hr**

   OR
3. Lowering of spent fuel pool level to **11.00 ft.** as indicated on 1LI-FC221A(B).

RA3 Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. 1 2 3 4 5 D

Emergency Action Level (EAL):

Note: If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.

1. Dose rate **> 15 mR/hr** in **ANY** of the areas contained in Table R2.

   OR
2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas.

UNUSUAL EVENT

RU2 Unplanned loss of water level above irradiated fuel. 1 2 3 4 5 D

Emergency Action Level (EAL):

1. a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by **ANY** of the following:
   - Refueling Cavity water level **< 22 ft. 8 in.** above the Reactor Vessel Flange

     OR
   - Spent Fuel Pool or Upper Containment Fuel Storage Pool water level **< 23 ft**.

     OR
   - Indication or report of a drop in water level in the REFUELING PATHWAY.

   AND

   b. UNPLANNED Area Radiation Monitor reading rise on one or more radiation monitors in Table R1.

RU3 Reactor coolant activity greater than Technical Specification allowable limits. 1 2 3

Emergency Action Level (EAL):

1 Offgas post-treatment radiation monitor 1RIX-PR035/41 channel 7 **HI** alarm.

OR

2. Specific coolant activity **> 4.0 uCI/gm** Dose equivalent I-131.

Modes: 1 – Power Operation 2 – Startup 3 – Hot Shutdown 4 – Cold Shutdown 5 – Refueling D - Defueled

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Abnormal Rad Levels / Radiological Effluents			
Radiological Effluents **RG2** Spent fuel pool level cannot be restored to at least **1.00 ft.** as indicated on 1LI-FC221A(B) for 60 minutes or longer. 1 2 3 4 5 D **Emergency Action Levels (EAL):** **Note:** The Emergency Director should declare the General Emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. Spent fuel pool level cannot be restored to at least **1.00 ft.** as indicated on 1LI-FC221A(B) for **60 minutes** or longer. **Table R1** **Fuel Handling Incident Radiation Monitors** • Fuel Building Exhaust (1PR006A-D) • CCP Exhaust (1PR042A-D) • Containment Exhaust (1PR001A-D) • Containment Fuel xfer Plenum (1PR008A-D)	**RS2** Spent fuel pool level at **1.00 ft.** as indicated on 1LI-FC221A(B) 1 2 3 4 5 D **Emergency Action Level (EAL):** Lowering of spent fuel pool level to **1.00 ft.** as indicated on 1LI-FC221A(B). **Table R2** **Areas Requiring Continuous Occupancy** • Main Control Room • Central Alarm Station – (by survey) **Table R3** **Areas with Entry Related Mode Applicability** **Area** / **Entry Related Mode Applicability** Auxiliary Building • RHR A and B Pump Rooms El.702 • RHR A and B Hx Rooms El. 762 • RHR B Hx Room El. 737 • Switchgear Rooms East/West El. 781 Mode 3, 4, and 5	**RA2** Significant lowering of water level above, or damage to, irradiated fuel. 1 2 3 4 5 D **Emergency Action Level (EAL):** 1. Uncovery of irradiated fuel in the REFUELING PATHWAY. **OR** 2. Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by **ANY** Table R1 Radiation Monitor reading **>1000 mRem/hr** **OR** 3. Lowering of spent fuel pool level to **11.00 ft.** as indicated on 1LI-FC221A(B). **RA3** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. 1 2 3 4 5 D **Emergency Action Level (EAL):** **Note:** If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted. 1. Dose rate **> 15 mR/hr** in **ANY** of the areas contained in Table R2. **OR** 2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas.	**RU2** Unplanned loss of water level above irradiated fuel. 1 2 3 4 5 D **Emergency Action Level (EAL):** 1. a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by **ANY** of the following : • Refueling Cavity water level **< 22 ft. 8 in.** above the Reactor Vessel Flange **OR** • Spent Fuel Pool or Upper Containment Fuel Storage Pool water level **< 23 ft**. **OR** • Indication or report of a drop in water level in the REFUELING PATHWAY **AND** b. UNPLANNED Area Radiation Monitor reading rise on one or more radiation monitors in Table R1.

Modes: 1 – Power Operation 2 – Startup 3 – Hot Shutdown 4 – Cold Shutdown 5 – Refueling D - Defueled

Clinton EAL RA3 Comparison Matrix Information

NEI 99-01 Rev 6	Current EAL	Proposed EAL
AA3 **Initiating Condition – ALERT** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability**: All **Example Emergency Action Levels**: (1 or 2) **Note:** If the equipment in the listed room or area was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted ● Dose rate greater than 15 mR/hr in **ANY** of the following areas: • Control Room • Central Alarm Station • (other site-specific areas/rooms) ● An UNPLANNED event results in radiation levels that prevent or significantly impede access to any of the following plant rooms or areas: (site-specific list of plant rooms or areas with entry-related mode applicability identified)	**RA3** **Initiating Condition:** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability:** 1, 2, 3, 4, 5, D **Emergency Action Level (EAL):** **Note:** ● If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted. 1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas: **Table R2** **Areas Requiring Continuous Occupancy** • Main Control Room (1RIX-AR035) • Central Alarm Station – (by survey) **OR** 2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas: **Table R3** **Areas with Entry Related Mode Applicability** **Area** / **Entry Related Mode Applicability** **Auxiliary Building** / Modes 3, 4, and 5 • RHR A and B pump Rooms El. 702 • RHR A and B Hx Rooms El. 762 • RHR B Hx Room El. 737 • Switchgear Rooms East/West El. 781	**RA3** **Initiating Condition:** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability:** 1, 2, 3, 4, 5, D **Emergency Action Level (EAL):** **Note:** ● If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted. 1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas: **Table R2** **Areas Requiring Continuous Occupancy** • Main Control Room • Central Alarm Station – (by survey) **OR** 2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas: **Table R3** **Areas with Entry Related Mode Applicability** **Area** / **Entry Related Mode Applicability** **Auxiliary Building** / Modes 3, 4, and 5 • RHR A and B pump Rooms El. 702 • RHR A and B Hx Rooms El. 762 • RHR B Hx Room El. 737 • Switchgear Rooms East/West El. 781

No Change	**Justification**
X Difference	Removed the specific rad monitor (1RIX-AR035) from RA3.1 Main Control Room bullet in Table R2 because it unnecessarily restricted the ability to declare the EAL since there are multiple ways to determine rad levels within the Control Room. The current Emergency Action Level (EAL) is written IAW NEI 99-01 Revision 6. NEI 99-01 Revision 6 does not require a radiation monitor be specified therefore this change is still in keeping with the requirements of NEI 99-01 Revision 6 and will also now conform with the Exelon Mid Atlantic and North East sites.
Deviation	

Clinton EAL RA3 Redline Basis Document Information

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3

Initiating Condition:

Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability:

1, 2, 3, 4, 5, D

Emergency Action Level (EAL):

Note:

- If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.

1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas:

Table R2 Areas Requiring Continuous Occupancy
• Main Control Room ~~(1RIX-AR035)~~ • Central Alarm Station – (by survey)

OR

2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas.

Table R3 Areas with Entry Related Mode Applicability	
Area	**Entry Related Mode Applicability**
Auxiliary Building	Modes 3, 4, and 5
• RHR A and B pump Rooms El. 702 • RHR A and B Hx Rooms El. 762 • RHR B Hx Room El. 737 • Switchgear Rooms East/West El. 781	

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses elevated radiation levels in certain plant rooms/areas sufficient to preclude or impede personnel from performing actions necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal plant procedures. As such, it represents an actual or potential substantial degradation of the level of safety of the plant. The Emergency Director should consider the cause of the increased radiation levels and determine if another IC may be applicable.

Assuming all plant equipment is operating as designed, normal operation is capable from the Main Control Room (MCR). The plant is also able to transition into a hot shutdown condition from the MCR, therefore Table R3 is a list of plant rooms or areas with entry-related mode applicability that contain equipment which require a manual/local action necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal operating procedures (establish shutdown cooling), where if this action is not completed the plant would not be able to attain and maintain cold shutdown. This Table does not include rooms or areas for which entry is required solely to perform actions of an administrative or record keeping nature (e.g., normal rounds or routine inspections).

Rooms and areas listed in EAL #1 do not need to be included in EAL #2, including the Control Room.

For EAL #2, an Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect and the elevated radiation levels preclude the ability to place shutdown cooling in service. The emergency classification is not contingent upon whether entry is actually necessary at the time of the increased radiation levels. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., installing temporary shielding beyond that required by procedures, requiring use of non-routine protective equipment, requesting an extension in dose limits beyond normal administrative limits).

An emergency declaration is not warranted if any of the following conditions apply.

The plant is in an operating mode different than the mode specified for the affected room/area (i.e., entry is not required during the operating mode in effect at the time of the elevated radiation levels). For example, the plant is in Mode 1 when the radiation rise occurs, and the procedures used for normal operation, cooldown and shutdown do not require entry into the affected room until Mode 4.

- The increased radiation levels are a result of a planned activity that includes compensatory measures which address the temporary inaccessibility of a room or area (e.g., radiography, spent filter or resin transfer, etc.).

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Basis (cont):

- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal rounds or routine inspections).
- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

Escalation of the emergency classification level would be via Recognition Category R, C or F ICs.

Basis Reference(s):

1. NEI 99-01 Rev 6, AA3
2. USAR Table 12.3-2
3. USAR Appendix F, Fire Protection Safe Shutdown Analysis
4. CPS 3312.03 RHR - Shutdown Cooling (SDC) & Fuel Pool Cooling and Assist (FPC&A)

Clinton EAL RA3 Clean Basis Document Information

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3

Initiating Condition:

Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability:

1, 2, 3, 4, 5, D

Emergency Action Level (EAL):

Note:

- If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.

1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas:

Table R2 Areas Requiring Continuous Occupancy
• Main Control Room • Central Alarm Station – (by survey)

OR

2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas.

Table R3 Areas with Entry Related Mode Applicability	
Area	**Entry Related Mode Applicability**
Auxiliary Building	Modes 3, 4, and 5
• RHR A and B pump Rooms El. 702 • RHR A and B Hx Rooms El. 762 • RHR B Hx Room El. 737 • Switchgear Rooms East/West El. 781	

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS
RA3 (cont)

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses elevated radiation levels in certain plant rooms/areas sufficient to preclude or impede personnel from performing actions necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal plant procedures. As such, it represents an actual or potential substantial degradation of the level of safety of the plant. The Emergency Director should consider the cause of the increased radiation levels and determine if another IC may be applicable.

Assuming all plant equipment is operating as designed, normal operation is capable from the Main Control Room (MCR). The plant is also able to transition into a hot shutdown condition from the MCR, therefore Table R3 is a list of plant rooms or areas with entry-related mode applicability that contain equipment which require a manual/local action necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal operating procedures (establish shutdown cooling), where if this action is not completed the plant would not be able to attain and maintain cold shutdown. This Table does not include rooms or areas for which entry is required solely to perform actions of an administrative or record keeping nature (e.g., normal rounds or routine inspections).

Rooms and areas listed in EAL #1 do not need to be included in EAL #2, including the Control Room.

For EAL #2, an Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect and the elevated radiation levels preclude the ability to place shutdown cooling in service. The emergency classification is not contingent upon whether entry is actually necessary at the time of the increased radiation levels. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., installing temporary shielding beyond that required by procedures, requiring use of non-routine protective equipment, requesting an extension in dose limits beyond normal administrative limits).

An emergency declaration is not warranted if any of the following conditions apply.

The plant is in an operating mode different than the mode specified for the affected room/area (i.e., entry is not required during the operating mode in effect at the time of the elevated radiation levels). For example, the plant is in Mode 1 when the radiation rise occurs, and the procedures used for normal operation, cooldown and shutdown do not require entry into the affected room until Mode 4.

- The increased radiation levels are a result of a planned activity that includes compensatory measures which address the temporary inaccessibility of a room or area (e.g., radiography, spent filter or resin transfer, etc.).

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Basis (cont):

- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal rounds or routine inspections).
- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

Escalation of the emergency classification level would be via Recognition Category R, C or F ICs.

Basis Reference(s):

1. NEI 99-01 Rev 6, AA3
2. USAR Table 12.3-2
3. USAR Appendix F, Fire Protection Safe Shutdown Analysis
4. CPS 3312.03 RHR - Shutdown Cooling (SDC) & Fuel Pool Cooling and Assist (FPC&A)

ATTACHMENT 5

RADIOLOGICAL EMERGENCY PLAN ANNEX INFORMATION
FOR
DRESDEN NUCLEAR POWER STATION

EP-AA-1004, Addendum 4

Dresden Nuclear Power Station, Units 1, 2, 3 - Supporting EAL RA3 Information

Entire RA3 Procedure Matrix Information
EAL RA3 Comparison Matrix Information
EAL RA3 Redline Basis Document Information
EAL RA3 Clean Basis Document Information

Dresden EAL RA3 Procdure Matrix Information

Abnormal Rad Levels / Radiological Effluents

GENERAL EMERGENCY

RG2 Spent fuel pool level cannot be restored to at least 0.60 ft. as indicated on 2(3)-1901-121A(B) for 60 minutes or longer. 1 2 3 4 5 D

Emergency Action Levels (EAL):

Note: The Emergency Director should declare the General Emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

Spent fuel pool level cannot be restored to at least **0.60 ft**. as indicated on 2(3)-1901-121A(B) for **60 minutes** or longer.

Table R1
Fuel Handling Incident Radiation Monitors

- Refuel Floor High Range ARM Station #2(4)
- Fuel Pool Radiation Monitor

SITE AREA EMERGENCY

RS2 Spent fuel pool level at 0.60 ft. as indicated on 2(3)-1901-121A(B) 1 2 3 4 5 D

Emergency Action Level (EAL):

Lowering of spent fuel pool level to **0.60 ft**. as indicated on 2(3)-1901-121A(B).

Table R2
Areas Requiring Continuous Occupancy

- Main Control Room
- Central Alarm Station – (by survey)

Table R3
Areas with Entry Related Mode Applicability

Area	Unit	Entry Related Mode Applicability
Reactor Building 517' elevation • MCC 28-1 area • MCC 29-1 area • MCC 38-1 area • MCC 39-1 area • CRD 25 valve area 545' elevation • Bus 23-1 area • Bus 24-1 area • Bus 33-1 area • Bus 34-1 area • RWCU Pump Room 570' elevation • 250VDC MCC 2A area • 250VDC MCC 2B area • 250VDC MCC 3A area • 250VDC MCC 3B area 589' elevation • Isolation Condenser Floor	2(3)	Modes 3, 4, and 5
Cribhouse	2&3	
Turbine Building **495' elevation** • CRD Pump Area	2(3)	
534' elevation • Bus 23 area • Bus 24 area	2	
538' elevation • Bus 33 area • Bus 34 area	3	

ALERT

RA2 Significant lowering of water level above, or damage to, irradiated fuel. 1 2 3 4 5 D

Emergency Action Level (EAL):

1. Uncovery of irradiated fuel in the REFUELING PATHWAY.
   OR
2. Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by **ANY** Table R1 Radiation Monitor reading **>1000 mRem/hr.**
   OR
3. Lowering of spent fuel pool level to **10.20 ft**. as indicated on 2(3)-1901-121A(B).

RA3 Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. 1 2 3 4 5 D

Emergency Action Level (EAL):

Note: If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted

1. Dose rate **> 15 mR/hr** in **ANY** of the areas contained in Table R2.
   OR
2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to any of the areas contained in Table R3.

UNUSUAL EVENT

RU2 Unplanned loss of water level above irradiated fuel. 1 2 3 4 5 D

Emergency Action Level (EAL):

1. a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by **ANY** of the following:
   - Refueling Cavity water level **< 466 in.** (Refuel Outage Reactor Vessel and Cavity Level Instrument LI 2(3)-263-114)
     OR
   - Spent Fuel Pool water level **< 19 ft**. above the fuel (**< 33 ft. 9 in**. indicated level).
     OR
   - Indication or report of a drop in water level in the REFUELING PATHWAY.

   AND

   b. UNPLANNED Area Radiation Monitor reading rise on **ANY** radiation monitors in Table R1.

RU3 Reactor coolant activity greater than Technical Specification allowable limits. 1 2 3

Emergency Action Level (EAL):

1. Offgas system radiation monitor **HI-HI** alarm.
   OR
2. Specific coolant activity **> 4.0 µCi/gm** Dose equivalent I-131.

Modes: 1 – Power Operation 2 – Startup 3 – Hot Shutdown 4 – Cold Shutdown 5 – Refueling D – Defueled

Abnormal Rad Levels / Radiological Effluents

Radiological Effluents

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
RG2 Spent fuel pool level cannot be restored to at least 0.60 ft. as indicated on 2(3)-1901-121A(B) for 60 minutes or longer. 1 2 3 4 5 D **Emergency Action Levels (EAL):** **Note:** The Emergency Director should declare the General Emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded. Spent fuel pool level cannot be restored to at least **0.60 ft**. as indicated on 2(3)-1901-121A(B) for **60 minutes** or longer.	**RS2** Spent fuel pool level at 0.60 ft. as indicated on 2(3)-1901-121A(B) 1 2 3 4 5 D **Emergency Action Level (EAL):** Lowering of spent fuel pool level to **0.60 ft**. as indicated on 2(3)-1901-121A(B).	**RA2** Significant lowering of water level above, or damage to, irradiated fuel. 1 2 3 4 5 D **Emergency Action Level (EAL):** 1. Uncovery of irradiated fuel in the REFUELING PATHWAY. **OR** 2. Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by **ANY** Table R1 Radiation Monitor reading **>1000 mRem/hr.** **OR** 3. Lowering of spent fuel pool level to **10.20 ft**. as indicated on 2(3)-1901-121A(B).	**RU2** Unplanned loss of water level above irradiated fuel. 1 2 3 4 5 D **Emergency Action Level (EAL):** 1. a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by **ANY** of the following: • Refueling Cavity water level **< 466 in.** (Refuel Outage Reactor Vessel and Cavity Level Instrument LI 2(3)-263-114) **OR** • Spent Fuel Pool water level **< 19 ft**. above the fuel (**< 33 ft. 9 in**. indicated level). **OR** • Indication or report of a drop in water level in the REFUELING PATHWAY. **AND** b. UNPLANNED Area Radiation Monitor reading rise on **ANY** radiation monitors in Table R1.
		RA3 Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. 1 2 3 4 5 D **Emergency Action Level (EAL):** **Note:** If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted 1. Dose rate **> 15 mR/hr** in **ANY** of the areas contained in Table R2. **OR** 2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to any of the areas contained in Table R3.	

Table R1
Fuel Handling Incident Radiation Monitors

- Refuel Floor High Range ARM Station #2(4)
- Fuel Pool Radiation Monitor

Table R2
Areas Requiring Continuous Occupancy

- Main Control Room
- Central Alarm Station – (by survey)

Table R3
Areas with Entry Related Mode Applicability

Area	Unit	Entry Related Mode Applicability
Reactor Building 517' elevation • MCC 28-1 area • MCC 29-1 area • MCC 38-1 area • MCC 39-1 area • CRD 25 valve area 545' elevation • Bus 23-1 area • Bus 24-1 area • Bus 33-1 area • Bus 34-1 area • RWCU Pump Room 570' elevation • 250VDC MCC 2A area • 250VDC MCC 2B area • 250VDC MCC 3A area • 250VDC MCC 3B area 589' elevation • Isolation Condenser Floor	2(3)	Modes 3, 4, and 5
Cribhouse	2&3	
Turbine Building **495' elevation** • CRD Pump Area	2(3)	
534' elevation • Bus 23 area • Bus 24 area	2	
538' elevation • Bus 33 area • Bus 34 area	3	

Modes: 1 – Power Operation 2 – Startup 3 – Hot Shutdown 4 – Cold Shutdown 5 – Refueling D – Defueled

Dresden EAL RA3 Comparison Information

NEI 99-01 Rev 6	Current EAL	Proposed EAL
AA3 **Initiating Condition – ALERT** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability**: All **Example Emergency Action Levels**: (1 or 2) **Note:** If the equipment in the listed room or area was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted 1. Dose rate greater than 15 mR/hr in **ANY** of the following areas: • Control Room • Central Alarm Station • (other site-specific areas/rooms) 2. An UNPLANNED event results in radiation levels that prevent or significantly impede access to any of the following plant rooms or areas: (site-specific list of plant rooms or areas with entry-related mode applicability identified)	**RA3** **Initiating Condition:** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability:** 1, 2, 3, 4, 5, D **Emergency Action Level (EAL):** **Note:** If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted. 1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas: **Table R2** **Areas Requiring Continuous Occupancy** • Main Control Room (Unit 2 ARM Station #22) • Central Alarm Station – (by survey) **OR** 2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas: **Table R3** **Areas with Entry Related Mode Applicability** **Reactor Building** / 517' elevation: • MCC 28-1 area • MCC 29-1 area • MCC 38-1 area • MCC 39-1 area • CRD 25 valve area / 545' elevation: • Bus 23-1 area • Bus 24-1 area • Bus 33-1 area • Bus 34-1 area • RWCU Pump Room / 570' elevation: • 250VDC MCC 2A area • 250VDC MCC 2B area • 250VDC MCC 3A area • 250VDC MCC 3B area / 589' elevation: • Isolation Condenser Floor — Unit: 2(3) — Entry Related Mode Applicability: Modes 3, 4, and 5 **Cribhouse** — Unit: 2&3 **Turbine Building 495' elevation** • CRD Pump Area — Unit: 2(3) **534' elevation** • Bus 23 area • Bus 24 area — Unit: 2 **538' elevation** • Bus 33 area • Bus 34 area — Unit: 3	**RA3** **Initiating Condition:** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability:** 1, 2, 3, 4, 5, D **Emergency Action Level (EAL):** **Note:** If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted. 1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas: **Table R2** **Areas Requiring Continuous Occupancy** • Main Control Room • Central Alarm Station – (by survey) **OR** 2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas: **Table R3** **Areas with Entry Related Mode Applicability** **Reactor Building** / 517' elevation: • MCC 28-1 area • MCC 29-1 area • MCC 38-1 area • MCC 39-1 area • CRD 25 valve area / 545' elevation: • Bus 23-1 area • Bus 24-1 area • Bus 33-1 area • Bus 34-1 area • RWCU Pump Room / 570' elevation: • 250VDC MCC 2A area • 250VDC MCC 2B area • 250VDC MCC 3A area • 250VDC MCC 3B area / 589' elevation: • Isolation Condenser Floor — Unit: 2(3) — Entry Related Mode Applicability: Modes 3, 4, and 5 **Cribhouse** — Unit: 2&3 **Turbine Building 495' elevation** • CRD Pump Area — Unit: 2(3) **534' elevation** • Bus 23 area • Bus 24 area — Unit: 2 **538' elevation** • Bus 33 area • Bus 34 area — Unit: 3

No Change	**Justification**
X Difference	Removed the specific rad monitor (Unit 2 ARM Station #22) from RA3.1 Main Control Room bullet in Table R2 because it unnecessarily restricted the ability to declare the EAL since there are multiple ways to determine rad levels within the Control Room. The current Emergency Action Level (EAL) is written IAW NEI 99-01 Revision 6. NEI 99-01 Revision 6 does not require a radiation monitor be specified therefore this change is still in keeping with the requirements of NEI 99-01 Revision 6 and will also now conform with the Exelon Mid Atlantic and North East sites.
Deviation	

Dresden EAL RA3 Redline Basis Document Information

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3

Initiating Condition:

Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability:

1, 2, 3, 4, 5, D

Emergency Action Level (EAL):

Note:

- If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.

1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas:

Table R2 **Areas Requiring Continuous Occupancy**
• Main Control Room ~~(Unit 2 ARM Station #22)~~ • Central Alarm Station – (by survey)

OR

2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas:

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS
RA3 (cont)

Emergency Action Level (EAL) (cont):

Table R3
Areas with Entry Related Mode Applicability

Area	Unit	Entry Related Mode Applicability
Reactor Building 517' elevation • MCC 28-1 area • MCC 29-1 area • MCC 38-1 area • MCC 39-1 area • CRD 25 valve area 545' elevation • Bus 23-1 area • Bus 24-1 area • Bus 33-1 area • Bus 34-1 area • RWCU Pump Room 570' elevation • 250VDC MCC 2A area • 250VDC MCC 2B area • 250VDC MCC 3A area • 250VDC MCC 3B area 589' elevation • Isolation Condenser Floor	2(3)	Modes 3, 4, and 5
Cribhouse	2&3	
Turbine Building **495' elevation** • CRD Pump Area	2(3)	
534' elevation • Bus 23 area • Bus 24 area	2	
538' elevation • Bus 33 area • Bus 34 area	3	

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses elevated radiation levels in certain plant rooms/areas sufficient to preclude or impede personnel from performing actions necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal plant procedures. As such, it represents an actual or potential substantial degradation of the level of safety of the plant. The Emergency Director should consider the cause of the increased radiation levels and determine if another IC may be applicable.

Assuming all plant equipment is operating as designed, normal operation is capable from the Main Control Room (MCR). The plant is also able to transition into a hot shutdown condition from the MCR, therefore

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Basis (cont):

Table R3 is a list of plant rooms or areas with entry-related mode applicability that contain equipment which require a manual/local action necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal operating procedures (establish shutdown cooling), where if this action is not completed the plant would not be able to attain and maintain cold shutdown. This Table does not include rooms or areas for which entry is required solely to perform actions of an administrative or record keeping nature (e.g., normal rounds or routine inspections).

Rooms and areas listed in EAL #1 do not need to be included in EAL #2, including the Control Room.

For EAL #2, an Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect and the elevated radiation levels preclude the ability to place shutdown cooling in service. The emergency classification is not contingent upon whether entry is actually necessary at the time of the increased radiation levels. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., installing temporary shielding beyond that required by procedure, requiring use of non-routine protective equipment, requesting an extension in dose limits beyond normal administrative limits).

An emergency declaration is not warranted if any of the following conditions apply.

- The plant is in an operating mode different than the mode specified for the affected room/area (i.e., entry is not required during the operating mode in effect at the time of the elevated radiation levels). For example, the plant is in Mode 1 when the radiation rise occurs, and the procedures used for normal operation, cooldown and shutdown do not require entry into the affected room until Mode 4.
- The increased radiation levels are a result of a planned activity that includes compensatory measures which address the temporary inaccessibility of a room or area (e.g., radiography, spent filter or resin transfer, etc.).
- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal rounds or routine inspections).
- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

Escalation of the emergency classification level would be via Recognition Category R, C or F ICs.

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Basis Reference(s):

1. NEI 99-01 Rev 6, AA3
2. DOP 1800-01 Area Radiation Monitors
3. FSAR Section 3.2 Classification of Structures, Components and Systems
4. General Arrangement Drawings M-3, M-4, M-4A, M-5 and M-10
5. DEOP 300-2, Radioactivity Release Control

Dresden EAL RA3 Clean Basis Document Information

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3

Initiating Condition:

Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability:

1, 2, 3, 4, 5, D

Emergency Action Level (EAL):

Note:

- If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.

1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas:

Table R2 **Areas Requiring Continuous Occupancy**
• Main Control Room • Central Alarm Station – (by survey)

OR

2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas:

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS
RA3 (cont)

Emergency Action Level (EAL) (cont):

Table R3
Areas with Entry Related Mode Applicability

Area	Unit	Entry Related Mode Applicability
Reactor Building 517' elevation • MCC 28-1 area • MCC 29-1 area • MCC 38-1 area • MCC 39-1 area • CRD 25 valve area 545' elevation • Bus 23-1 area • Bus 24-1 area • Bus 33-1 area • Bus 34-1 area • RWCU Pump Room 570' elevation • 250VDC MCC 2A area • 250VDC MCC 2B area • 250VDC MCC 3A area • 250VDC MCC 3B area 589' elevation • Isolation Condenser Floor	2(3)	Modes 3, 4, and 5
Cribhouse	2&3	
Turbine Building **495' elevation** • CRD Pump Area	2(3)	
534' elevation • Bus 23 area • Bus 24 area	2	
538' elevation • Bus 33 area • Bus 34 area	3	

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses elevated radiation levels in certain plant rooms/areas sufficient to preclude or impede personnel from performing actions necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal plant procedures. As such, it represents an actual or potential substantial degradation of the level of safety of the plant. The Emergency Director should consider the cause of the increased radiation levels and determine if another IC may be applicable.

Assuming all plant equipment is operating as designed, normal operation is capable from the Main Control Room (MCR). The plant is also able to transition into a hot shutdown condition from the MCR, therefore

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Basis (cont):

Table R3 is a list of plant rooms or areas with entry-related mode applicability that contain equipment which require a manual/local action necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal operating procedures (establish shutdown cooling), where if this action is not completed the plant would not be able to attain and maintain cold shutdown. This Table does not include rooms or areas for which entry is required solely to perform actions of an administrative or record keeping nature (e.g., normal rounds or routine inspections).

Rooms and areas listed in EAL #1 do not need to be included in EAL #2, including the Control Room.

For EAL #2, an Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect and the elevated radiation levels preclude the ability to place shutdown cooling in service. The emergency classification is not contingent upon whether entry is actually necessary at the time of the increased radiation levels. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., installing temporary shielding beyond that required by procedure, requiring use of non-routine protective equipment, requesting an extension in dose limits beyond normal administrative limits).

An emergency declaration is not warranted if any of the following conditions apply.

- The plant is in an operating mode different than the mode specified for the affected room/area (i.e., entry is not required during the operating mode in effect at the time of the elevated radiation levels). For example, the plant is in Mode 1 when the radiation rise occurs, and the procedures used for normal operation, cooldown and shutdown do not require entry into the affected room until Mode 4.
- The increased radiation levels are a result of a planned activity that includes compensatory measures which address the temporary inaccessibility of a room or area (e.g., radiography, spent filter or resin transfer, etc.).
- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal rounds or routine inspections).
- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

Escalation of the emergency classification level would be via Recognition Category R, C or F ICs.

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Basis Reference(s):

1. NEI 99-01 Rev 6, AA3
2. DOP 1800-01 Area Radiation Monitors
3. FSAR Section 3.2 Classification of Structures, Components and Systems
4. General Arrangement Drawings M-3, M-4, M-4A, M-5 and M-10
5. DEOP 300-2, Radioactivity Release Control

ATTACHMENT 6

RADIOLOGICAL EMERGENCY PLAN ANNEX INFORMATION
FOR
LASALLE COUNTY STATION

EP-AA-1005, Addendum 3

LaSalle County Station, Units 1 and 2 - Supporting EAL RA3 Information

EAL RA3 Procedure Matrix Information
EAL RA3 Comparison Matrix Information
EAL RA3 Redline Basis Document Information
EAL RA3 Clean Basis Document Information

LaSalle EAL RA3 Procedure Matrix Information

Abnormal Rad Levels / Radiological Effluents

GENERAL EMERGENCY

RG2 Spent fuel pool level cannot be restored to at least 820.42 ft. as indicated on 1(2) LI-FC165 for 60 minutes or longer. 1 2 3 4 5 D

Emergency Action Levels (EAL):

Note: The Emergency Director should declare the General Emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

Spent fuel pool level cannot be restored to at least **820.42 ft.** as indicated on 1(2) LI-FC165 for **60 minutes** or longer.

SITE AREA EMERGENCY

RS2 Spent fuel pool level at 820.42 ft. as indicated on 1(2) LI-FC165. 1 2 3 4 5 D

Emergency Action Level (EAL):

Lowering of spent fuel pool level to **820.42 ft.** as indicated on 1(2) LI-FC165.

Table R2
Areas Requiring Continuous Occupancy

- Main Control Room
- Central Alarm Station – (by survey)

Table R3
Areas with Entry Related Mode Applicability

Area	Entry Related Mode Applicability
Reactor Building 673' SE Corner Room 694' NW Corner Room SE Corner Room Raceway 740' NE Valve Room NE SW 761' NE SW	Mode 3 and 4
Auxiliary Building 674' CSCS Rooms 731' AEER 736' DG Penthouse	Mode 3 and 4

ALERT

RA2 Significant lowering of water level above, or damage to, irradiated fuel. 1 2 3 4 5 D

Emergency Action Level (EAL):

1. Uncovery of irradiated fuel in the REFUELING PATHWAY.

   OR

2. Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by ARM 0D21-K604A Radiation Monitor reading **>1000 mRem/hr.**

   OR

3. Lowering of spent fuel pool level to **830.00 ft**. as indicated on 1(2) LI-FC165.

RA3 Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. 1 2 3 4 5 D

Emergency Action Level (EAL):

Note: If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.

1. Dose rate **> 15 mR/hr** in **ANY** of the areas contained in Table R2.
   OR
2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas.

UNUSUAL EVENT

RU2 UNPLANNED loss of water level above irradiated fuel 1 2 3 4 5 D

Emergency Action Level (EAL):

1. a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by **ANY** of the following:

   - Refueling Cavity water level **< 340 in.** on shutdown range.

     OR

   - Spent Fuel Pool water level **< 21 ft**. **4 in.**

     OR

   - Indication or report of a drop in water level in the REFUELING PATHWAY.

   AND

   b. UNPLANNED Area Radiation Monitor reading rise on ARM 0D21-K604A radiation monitor.

RU3 Reactor coolant activity greater than Technical Specification allowable limits. 1 2 3

Emergency Action Level (EAL):

1 Offgas system radiation monitor **HI-HI** alarm.

OR

2. Specific coolant activity **> 4.0 uCI/gm** Dose equivalent I-131.

Modes: 1 – Power Operation 2 – Startup 3 – Hot Shutdown 4 – Cold Shutdown 5 – Refueling D – Defueled

Abnormal Rad Levels / Radiological Effluents

GENERAL EMERGENCY

RG2 Spent fuel pool level cannot be restored to at least 820.42 ft. as indicated on 1(2) LI-FC165 for 60 minutes or longer. 1 2 3 4 5 D

Emergency Action Levels (EAL):

Note: The Emergency Director should declare the General Emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

Spent fuel pool level cannot be restored to at least **820.42 ft.** as indicated on 1(2) LI-FC165 for **60 minutes** or longer.

SITE AREA EMERGENCY

RS2 Spent fuel pool level at 820.42 ft. as indicated on 1(2) LI-FC165. 1 2 3 4 5 D

Emergency Action Level (EAL):

Lowering of spent fuel pool level to **820.42 ft.** as indicated on 1(2) LI-FC165.

Table R2
Areas Requiring Continuous Occupancy

- Main Control Room
- Central Alarm Station – (by survey)

Table R3
Areas with Entry Related Mode Applicability

Area	Entry Related Mode Applicability
Reactor Building 673’ SE Corner Room 694’ NW Corner Room SE Corner Room Raceway 740’ NE Valve Room NE SW 761’ NE SW	Mode 3 and 4
Auxiliary Building 674’ CSCS Rooms 731’ AEER 736’ DG Penthouse	Mode 3 and 4

ALERT

RA2 Significant lowering of water level above, or damage to, irradiated fuel. 1 2 3 4 5 D

Emergency Action Level (EAL):

1. Uncovery of irradiated fuel in the REFUELING PATHWAY.

   OR

2. Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by ARM 0D21-K604A Radiation Monitor reading **>1000 mRem/hr.**

   OR

3. Lowering of spent fuel pool level to **830.00 ft.** as indicated on 1(2) LI-FC165.

RA3 Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. 1 2 3 4 5 D

Emergency Action Level (EAL):

Note: If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.

1. Dose rate **> 15 mR/hr** in **ANY** of the areas contained in Table R2.
   OR
2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas.

UNUSUAL EVENT

RU2 UNPLANNED loss of water level above irradiated fuel 1 2 3 4 5 D

Emergency Action Level (EAL):

1. a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by **ANY** of the following:

   - Refueling Cavity water level **< 340 in.** on shutdown range.

     OR

   - Spent Fuel Pool water level **< 21 ft. 4 in.**

     OR

   - Indication or report of a drop in water level in the REFUELING PATHWAY.

   AND

   b. UNPLANNED Area Radiation Monitor reading rise on ARM 0D21-K604A radiation monitor.

Modes: 1 – Power Operation 2 – Startup 3 – Hot Shutdown 4 – Cold Shutdown 5 – Refueling D – Defuel

LaSalle EAL RA3 Comparison Matrix Information

NEI 99-01 Rev 6	Current EAL	Proposed EAL
AA3 **Initiating Condition – ALERT** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability**: All **Example Emergency Action Levels**: (1 or 2) **Note:** If the equipment in the listed room or area was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted 1. Dose rate greater than 15 mR/hr in **ANY** of the following areas: • Control Room • Central Alarm Station • (other site-specific areas/rooms) 2. An UNPLANNED event results in radiation levels that prevent or significantly impede access to any of the following plant rooms or areas: (site-specific list of plant rooms or areas with entry-related mode applicability identified)	**RA3** **Initiating Condition:** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability:** 1, 2, 3, 4, 5, D **Emergency Action Level (EAL):** **Note:** If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted. 1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas: **Table R2** **Areas Requiring Continuous Occupancy** • Main Control Room (1(2)D18-K751A-D) • Central Alarm Station – (by survey) **OR** 2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas: **Table R3** **Areas with Entry Related Mode Applicability** **Reactor Building** — Mode 3 and 4 673’ SE Corner Room 694’ NW Corner Room SE Corner Room Raceway 740’ NE Valve Room NE SW 761’ NE SW **Auxiliary Building** — Mode 3 and 4 674’ CSCS Rooms 731’ AEER 736’ DG Penthouse	**RA3** **Initiating Condition:** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability:** 1, 2, 3, 4, 5, D **Emergency Action Level (EAL):** **Note:** If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted. 3. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas: **Table R2** **Areas Requiring Continuous Occupancy** • Main Control Room • Central Alarm Station – (by survey) **OR** 4. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas: **Table R3** **Areas with Entry Related Mode Applicability** **Reactor Building** — Mode 3 and 4 673’ SE Corner Room 694’ NW Corner Room SE Corner Room Raceway 740’ NE Valve Room NE SW 761’ NE SW **Auxiliary Building** — Mode 3 and 4 674’ CSCS Rooms 731’ AEER 736’ DG Penthouse

No Change	**Justification**
X Difference	Removed the specific rad monitor (1(2)D18-K751A-D) from RA3.1 Main Control Room bullet in Table R2 because it unnecessarily restricted the ability to declare the EAL since there are multiple ways to determine rad levels within the Control Room. The current Emergency Action Level (EAL) is written IAW NEI 99-01 Revision 6. NEI 99-01 Revision 6 does not require a radiation monitor be specified therefore this change is still in keeping with the requirements of NEI 99-01 Revision 6 and will also now conform with the Exelon Mid Atlantic and North East sites.
Deviation	

LaSalle EAL RA3 Redline Basis Document Information

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3

Initiating Condition:

Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability:

1, 2, 3, 4, 5, D

Emergency Action Level (EAL):

Note:

- If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.

1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas:

Table R2 Areas Requiring Continuous Occupancy
• Main Control Room ~~(1(2)D18-K751A-D)~~ • Central Alarm Station – (by survey)

OR

2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas:

Table R3 Areas with Entry Related Mode Applicability	
Area	**Entry Related Mode Applicability**
Reactor Building 673’ SE Corner Room 694’ NW Corner Room SE Corner Room Raceway 740’ NE Valve Room NE SW 761’ NE SW	Mode 3 and 4
Auxiliary Building 674’ CSCS Rooms 731’ AEER 736’ DG Penthouse	Mode 3 and 4

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses elevated radiation levels in certain plant rooms/areas sufficient to preclude or impede personnel from performing actions necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal plant procedures. As such, it represents an actual or potential substantial degradation of the level of safety of the plant. The Emergency Director should consider the cause of the increased radiation levels and determine if another IC may be applicable.

Assuming all plant equipment is operating as designed, normal operation is capable from the Main Control Room (MCR). The plant is also able to transition into a hot shutdown condition from the MCR, therefore Table R3 is a list of plant rooms or areas with entry-related mode applicability that contain equipment which require a manual/local action necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal operating

procedures (establish shutdown cooling), where if this action is not completed the plant would not be able to attain and maintain cold shutdown.

This Table does not include rooms or areas for which entry is required solely to perform actions of an administrative or record keeping nature (e.g., normal rounds or routine inspections).

Rooms and areas listed in EAL #1 do not need to be included in EAL #2, including the Control Room.

For EAL #2, an Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect and the elevated radiation levels preclude the ability to place shutdown cooling in service. The emergency classification is not contingent upon whether entry is actually necessary at the time of the increased radiation levels. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., installing temporary shielding beyond that required by procedures, requiring use of non-routine protective equipment, requesting an extension in dose limits beyond normal administrative limits).

An emergency declaration is not warranted if any of the following conditions apply.

- The plant is in an operating mode different than the mode specified for the affected room/area (i.e., entry is not required during the operating mode in effect at the time of the elevated radiation levels). For example, the plant is in Mode 1 when the radiation rise occurs, and the procedures used for normal operation, cooldown and shutdown do not require entry into the affected room until Mode 4.

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Basis (cont):

- The increased radiation levels are a result of a planned activity that includes compensatory measures which address the temporary inaccessibility of a room or area (e.g., radiography, spent filter or resin transfer, etc.).
- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal rounds or routine inspections).
- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

Escalation of the emergency classification level would be via Recognition Category R, C or F ICs.

Basis Reference(s):

1. NEI 99-01 Rev 6, AA3
2. LRP-5800-3, Radiation Monitoring Alarm/Trip Setpoint Determination
3. LIS-AR-105 (205)A-D, Main Control Room Radiation Monitor Channel A Calibration
4. UFSAR Section 3.8
5. UFSAR Section 12.3.2.5

LaSalle EAL RA3 Clean Basis Document Information

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3

Initiating Condition:

Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability:

1, 2, 3, 4, 5, D

Emergency Action Level (EAL):

Note:

- If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.

1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas:

Table R2 Areas Requiring Continuous Occupancy
• Main Control Room • Central Alarm Station – (by survey)

OR

2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas:

Table R3 Areas with Entry Related Mode Applicability	
Area	**Entry Related Mode Applicability**
Reactor Building 673’ SE Corner Room 694’ NW Corner Room SE Corner Room Raceway 740’ NE Valve Room NE SW 761’ NE SW	Mode 3 and 4
Auxiliary Building 674’ CSCS Rooms 731’ AEER 736’ DG Penthouse	Mode 3 and 4

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses elevated radiation levels in certain plant rooms/areas sufficient to preclude or impede personnel from performing actions necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal plant procedures. As such, it represents an actual or potential substantial degradation of the level of safety of the plant. The Emergency Director should consider the cause of the increased radiation levels and determine if another IC may be applicable.

Assuming all plant equipment is operating as designed, normal operation is capable from the Main Control Room (MCR). The plant is also able to transition into a hot shutdown condition from the MCR, therefore Table R3 is a list of plant rooms or areas with entry-related mode applicability that contain equipment which require a manual/local action necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal operating

procedures (establish shutdown cooling), where if this action is not completed the plant would not be able to attain and maintain cold shutdown.

This Table does not include rooms or areas for which entry is required solely to perform actions of an administrative or record keeping nature (e.g., normal rounds or routine inspections).

Rooms and areas listed in EAL #1 do not need to be included in EAL #2, including the Control Room.

For EAL #2, an Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect and the elevated radiation levels preclude the ability to place shutdown cooling in service. The emergency classification is not contingent upon whether entry is actually necessary at the time of the increased radiation levels. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., installing temporary shielding beyond that required by procedures, requiring use of non-routine protective equipment, requesting an extension in dose limits beyond normal administrative limits).

An emergency declaration is not warranted if any of the following conditions apply.

- The plant is in an operating mode different than the mode specified for the affected room/area (i.e., entry is not required during the operating mode in effect at the time of the elevated radiation levels). For example, the plant is in Mode 1 when the radiation rise occurs, and the procedures used for normal operation, cooldown and shutdown do not require entry into the affected room until Mode 4.

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Basis (cont):

- The increased radiation levels are a result of a planned activity that includes compensatory measures which address the temporary inaccessibility of a room or area (e.g., radiography, spent filter or resin transfer, etc.).
- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal rounds or routine inspections).
- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

Escalation of the emergency classification level would be via Recognition Category R, C or F ICs.

Basis Reference(s):

1. NEI 99-01 Rev 6, AA3
2. LRP-5800-3, Radiation Monitoring Alarm/Trip Setpoint Determination
3. LIS-AR-105 (205)A-D, Main Control Room Radiation Monitor Channel A Calibration
4. UFSAR Section 3.8
5. UFSAR Section 12.3.2.5

ATTACHMENT 7

RADIOLOGICAL EMERGENCY PLAN ANNEX INFORAMTION
FOR
QUAD CITIES NUCLEAR POWER STATION

EP-AA-1006, Addendum 3

Quad Cities Nuclear Power Station, Units 1 and 2 - Supporting EAL RA3 Information

EAL RA3 Procedure Matrix Information
EAL RA3 Comparison Matrix Information
EAL RA3 Redline Basis Document Information
EAL RA3 Clean Basis Document Information

Quad Cities EAL RA3 Procedure Matrix Information

Abnormal Rad Levels / Radiological Effluents

GENERAL EMERGENCY

RG2 Spent fuel pool level cannot be restored to at least 0.60 ft. as indicated on LI-1(2)-1901-121 for 60 minutes or longer. 1 2 3 4 5 D

Emergency Action Levels (EAL):

Note: The Emergency Director should declare the General Emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

Spent fuel pool level cannot be restored to at least **0.60 ft**. as indicated on LI-1(2)-1901-121 for **60 minutes** or longer.

Table R1
Fuel Handling Incident Radiation Monitors

- 1(2) 1705-16A Fuel Pool Rad Monitor
- 1(2) 1705-16B Fuel Pool Rad Monitor

SITE AREA EMERGENCY

RS2 Spent fuel pool level at 0.60 ft. as indicated on LI-1(2)-1901-121. 1 2 3 4 5 D

Emergency Action Level (EAL):

Lowering of spent fuel pool level to **0.60 ft**. as indicated on LI-1(2)-1901-121.

Table R2
Areas Requiring Continuous Occupancy

- Main Control Room
- Central Alarm Station – (by survey)

Table R3
Areas with Entry Related Mode Applicability

Area	Unit	Entry Related Mode Applicability
Reactor Building		Mode 3 and 4
• First Floor North Wall	1	
• Second Floor North Wall	1	
• First Floor South Wall	2	
• Second Floor South Wall	2	
High Pressure Heater Bay	1 & 2	Mode 3
MSIV Room	1	
Second Floor Turbine Bldg. N.E. Corner	2	

ALERT

RA2 Significant lowering of water level above, or damage to, irradiated fuel. 1 2 3 4 5 D

Emergency Action Level (EAL):

1. Uncovery of irradiated fuel in the REFUELING PATHWAY.

   OR

2. Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by **ANY** Table R1 Radiation Monitor reading **>1000 mRem/hr.**

   OR

3. Lowering of spent fuel pool level to **10.20 ft**. as indicated on LI-1(2)-1901-121.

RA3 Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. 1 2 3 4 5 D

Emergency Action Level (EAL):

Note: If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.

1. Dose rate **> 15 mR/hr** in **ANY** of the areas contained in Table R2.

   OR

2. An UNPLANNED event results in radiation levels that prohibit or significantly impede access to any of the areas contained in Table R3.

UNUSUAL EVENT

RU2 Unplanned loss of water level above irradiated fuel. 1 2 3 4 5 D

Emergency Action Level (EAL):

1. a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by **ANY** of the following:

   - Refueling Cavity water level **< 282 in.** (Upper Wide range simulated signal).

   OR

   - Spent Fuel Pool water level **< 19 ft**. above the fuel (**< - 4 ft.** indicated level).

   OR

   - Indication or report of a drop in water level in the REFUELING PATHWAY.

   AND

   b. UNPLANNED Area Radiation Monitor reading rise on **ANY** radiation monitors in Table R1.

RU3 Reactor coolant activity greater than Technical Specification allowable limits. 1 2 3

Emergency Action Level (EAL):

1. Offgas system radiation monitor **HI-HI** alarm.

   OR

2. Specific coolant activity **> 4.0 uCi/gm** Dose equivalent I-131.

Modes: 1 – Power Operation 2 – Startup 3 – Hot Shutdown 4 – Cold Shutdown 5 – Refueling D – Defueled

Exelon Nuclear
COLD SHUTDOWN / REFUELING MATRIX

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT

Abnormal Rad Levels / Radiological Effluents

Radiological Effluents

RG2 Spent fuel pool level cannot be restored to at least 0.60 ft. as indicated on LI-1(2)-1901-121for 60 minutes or longer. 1 2 3 4 5 D

Emergency Action Levels (EAL):

Note: The Emergency Director should declare the General Emergency promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

Spent fuel pool level cannot be restored to at least **0.60 ft**. as indicated on LI-1(2)-1901-121 for **60 minutes** or longer.

Table R1
Fuel Handling Incident Radiation Monitors

- 1(2) 1705-16A Fuel Pool Rad Monitor
- 1(2) 1705-16B Fuel Pool Rad Monitor

RS2 Spent fuel pool level at 0.60 ft. as indicated on LI-1(2)-1901-121. 1 2 3 4 5 D

Emergency Action Level (EAL):

Lowering of spent fuel pool level to **0.60 ft**. as indicated on LI-1(2)-1901-121.

Table R2
Areas Requiring Continuous Occupancy

- Main Control Room
- Central Alarm Station – (by survey)

Table R3
Areas with Entry Related Mode Applicability

Area	Unit	Entry Related Mode Applicability
Reactor Building		Mode 3 and 4
• First Floor North Wall	1	
• Second Floor North Wall	1	
• First Floor South Wall	2	
• Second Floor South Wall	2	
High Pressure Heater Bay	1 & 2	Mode 3
MSIV Room	1	
Second Floor Turbine Bldg. N.E. Corner	2	

RA2 Significant lowering of water level above, or damage to, irradiated fuel. 1 2 3 4 5 D

Emergency Action Level (EAL):

1. Uncovery of irradiated fuel in the REFUELING PATHWAY.

   OR

2. Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by **ANY** Table R1 Radiation Monitor reading **>1000 mRem/hr.**

   OR

3. Lowering of spent fuel pool level to **10.20 ft.** as indicated on LI-1(2)-1901-121.

RA3 Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. 1 2 3 4 5 D

Emergency Action Level (EAL):

Note: If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.

1. Dose rate **> 15 mR/hr** in **ANY** of the areas contained in Table R2.

   OR

2. An UNPLANNED event results in radiation levels that prohibit or significantly impede access to any of the areas contained in Table R3.

RU2 Unplanned loss of water level above irradiated fuel. 1 2 3 4 5 D

Emergency Action Level (EAL):

1. a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by **ANY** of the following:

   - Refueling Cavity water level **< 282 in.** (Upper Wide range simulated signal).

   OR

   - Spent Fuel Pool water level **< 19 ft**. above the fuel (**< -4 ft.** indicated level).

   OR

   - Indication or report of a drop in water level in the REFUELING PATHWAY.

   AND

   b. UNPLANNED Area Radiation Monitor reading rise on **ANY** radiation monitors in Table R1.

Modes: 1 – Power Operation 2 – Startup 3 – Hot Shutdown 4 – Cold Shutdown 5 – Refueling D – Defueled

COLD SHUTDOWN / REFUELING MATRIX

COLD SHUTDOWN / REFUELING MATRIX

Quad Cities EAL RA3 Comparison Information

NEI 99-01 Rev 6	Current EAL	Proposed EAL
AA3 **Initiating Condition – ALERT** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability**: All **Example Emergency Action Levels**: (1 or 2) **Note:** If the equipment in the listed room or area was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted 1. Dose rate greater than 15 mR/hr in **ANY** of the following areas: • Control Room • Central Alarm Station • (other site-specific areas/rooms) 2. An UNPLANNED event results in radiation levels that prevent or significantly impede access to any of the following plant rooms or areas: (site-specific list of plant rooms or areas with entry-related mode applicability identified)	**RA3** **Initiating Condition:** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability:** 1, 2, 3, 4, 5,D **Emergency Action Level (EAL):** **Note:** • If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted. 1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas: **Table R2** **Areas Requiring Continuous Occupancy** • Main Control Room (Unit 1 ARM Station #22) • Central Alarm Station – (by survey) **OR** 2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas: **Table R3** **Areas with Entry Related Mode Applicability** **Area** / **Unit** / **Entry Related Mode Applicability** **Reactor Building** / / Mode 3 and 4 • First Floor North Wall / 1 • Second Floor North Wall / 1 • First Floor South Wall / 2 • Second Floor South Wall / 2 **High Pressure Heater Bay** / 1 & 2 / Mode 3 **MSIV Room** / 1 **Second Floor Turbine Bldg. N.E. Corner** / 2	**RA3** **Initiating Condition:** Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown. **Operating Mode Applicability:** 1, 2, 3, 4, 5,D **Emergency Action Level (EAL):** **Note:** • If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted. 1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas: **Table R2** **Areas Requiring Continuous Occupancy** • Main Control Room • Central Alarm Station – (by survey) **OR** 2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas: **Table R3** **Areas with Entry Related Mode Applicability** **Area** / **Unit** / **Entry Related Mode Applicability** **Reactor Building** / / Mode 3 and 4 • First Floor North Wall / 1 • Second Floor North Wall / 1 • First Floor South Wall / 2 • Second Floor South Wall / 2 **High Pressure Heater Bay** / 1 & 2 / Mode 3 **MSIV Room** / 1 **Second Floor Turbine Bldg. N.E. Corner** / 2

No Change	**Justification**
X Difference	Removed the specific rad monitor (Unit 1 ARM Station #22) from RA3.1 Main Control Room bullet in Table R2 because it unnecessarily restricted the ability to declare the EAL since there are multiple ways to determine rad levels within the Control Room. The current Emergency Action Level (EAL) is written IAW NEI 99-01 Revision 6. NEI 99-01 Revision 6 does not require a radiation monitor be specified therefore this change is still in keeping with the requirements of NEI 99-01 Revision 6 and will also now conform with the Exelon Mid Atlantic and North East sites.
Deviation	

Quad Cities EAL RA3 Redline Basis Document Information

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3

Initiating Condition:

Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability:

1, 2, 3, 4, 5, D

Emergency Action Level (EAL):

Note:

- If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted.

1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas:

Table R2 Areas Requiring Continuous Occupancy
• Main Control Room ~~(Unit 1 ARM Station #22)~~ • Central Alarm Station – (by survey)

OR

2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas:

Table R3 Areas with Entry Related Mode Applicability		
Area	**Unit**	**Entry Related Mode Applicability**
Reactor Building		Mode 3 and 4
• First Floor North Wall	1	
• Second Floor North Wall	1	
• First Floor South Wall	2	
• Second Floor South Wall	2	
High Pressure Heater Bay	1 & 2	Mode 3
MSIV Room	1	
Second Floor Turbine Bldg. N.E. Corner	2	

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses elevated radiation levels in certain plant rooms/areas sufficient to preclude or impede personnel from performing actions necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal plant procedures. As such, it represents an actual or potential substantial degradation of the level of safety of the plant. The Emergency Director should consider the cause of the increased radiation levels and determine if another IC may be applicable.

Assuming all plant equipment is operating as designed, normal operation is capable from the Main Control Room (MCR). The plant is also able to transition into a hot shutdown condition from the MCR, therefore Table R3 is a list of plant rooms or areas with entry-related mode applicability that contain equipment which require a manual/local action necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal operating procedures (establish shutdown cooling), where if this action is not completed the plant would not be able to attain and maintain cold shutdown. This Table does not include rooms or areas for which entry is required solely to perform actions of an administrative or record keeping nature (e.g., normal rounds or routine inspections).

Rooms and areas listed in EAL #1 do not need to be included in EAL #2, including the Control Room.

For EAL #2, an Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect and the elevated radiation levels preclude the ability to place shutdown cooling in service. The emergency classification is not contingent upon whether entry is actually necessary at the time of the increased radiation levels. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., installing temporary shielding beyond that required by procedures, requiring use of non-routine protective equipment, requesting an extension in dose limits beyond normal administrative limits).

An emergency declaration is not warranted if any of the following conditions apply.

- The plant is in an operating mode different than the mode specified for the affected room/area (i.e., entry is not required during the operating mode in effect at the time of the elevated radiation levels). For example, the plant is in Mode 1 when the radiation rise occurs, and the procedures used for normal operation, cooldown and shutdown do not require entry into the affected room until Mode 4.
- The increased radiation levels are a result of a planned activity that includes compensatory measures which address the temporary inaccessibility of a room or area (e.g., radiography, spent filter or resin transfer, etc.).

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Basis (cont):

- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal rounds or routine inspections).
- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

Escalation of the emergency classification level would be via Recognition Category R, C or F ICs.

Basis Reference(s):

1. NEI 99-01 Rev 6, AA3
2. QCOP 1800-1 Operation of ARM Indicator/Trip Units
3. UFSAR Section 3.2
4. General Arrangement Drawings M-5, 6, 8 and 10

Quad Cities EAL RA3 Clean Basis Document Information

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3

Initiating Condition:

Radiation levels that impede access to equipment necessary for normal plant operations, cooldown or shutdown.

Operating Mode Applicability:

1, 2, 3, 4, 5, D

Emergency Action Level (EAL):

Note:

- If the equipment in the room or area listed in Table R3 was already inoperable, or out of service, before the event occurred, then no emergency classification is warranted .

1. Dose rate **> 15 mR/hr** in **ANY** of the following Table R2 areas:

Table R2 Areas Requiring Continuous Occupancy
• Main Control Room • Central Alarm Station – (by survey)

OR

2. UNPLANNED event results in radiation levels that prohibit or significantly impede access to **ANY** of the following Table R3 plant rooms or areas:

Table R3 Areas with Entry Related Mode Applicability		
Area	**Unit**	**Entry Related Mode Applicability**
Reactor Building		Mode 3 and 4
• First Floor North Wall	1	
• Second Floor North Wall	1	
• First Floor South Wall	2	
• Second Floor South Wall	2	
High Pressure Heater Bay	1 & 2	Mode 3
MSIV Room	1	
Second Floor Turbine Bldg. N.E. Corner	2	

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS
RA3 (cont)

Basis:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

This IC addresses elevated radiation levels in certain plant rooms/areas sufficient to preclude or impede personnel from performing actions necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal plant procedures. As such, it represents an actual or potential substantial degradation of the level of safety of the plant. The Emergency Director should consider the cause of the increased radiation levels and determine if another IC may be applicable.

Assuming all plant equipment is operating as designed, normal operation is capable from the Main Control Room (MCR). The plant is also able to transition into a hot shutdown condition from the MCR, therefore Table R3 is a list of plant rooms or areas with entry-related mode applicability that contain equipment which require a manual/local action necessary to transition the plant from normal plant operation to cooldown and shutdown as specified in normal operating procedures (establish shutdown cooling), where if this action is not completed the plant would not be able to attain and maintain cold shutdown. This Table does not include rooms or areas for which entry is required solely to perform actions of an administrative or record keeping nature (e.g., normal rounds or routine inspections).

Rooms and areas listed in EAL #1 do not need to be included in EAL #2, including the Control Room.

For EAL #2, an Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant operating mode in effect and the elevated radiation levels preclude the ability to place shutdown cooling in service. The emergency classification is not contingent upon whether entry is actually necessary at the time of the increased radiation levels. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., installing temporary shielding beyond that required by procedures, requiring use of non-routine protective equipment, requesting an extension in dose limits beyond normal administrative limits).

An emergency declaration is not warranted if any of the following conditions apply.

- The plant is in an operating mode different than the mode specified for the affected room/area (i.e., entry is not required during the operating mode in effect at the time of the elevated radiation levels). For example, the plant is in Mode 1 when the radiation rise occurs, and the procedures used for normal operation, cooldown and shutdown do not require entry into the affected room until Mode 4.
- The increased radiation levels are a result of a planned activity that includes compensatory measures which address the temporary inaccessibility of a room or area (e.g., radiography, spent filter or resin transfer, etc.).

RECOGNITION CATEGORY
ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENTS

RA3 (cont)

Basis (cont):

- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal rounds or routine inspections).
- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

Escalation of the emergency classification level would be via Recognition Category R, C or F ICs.

Basis Reference(s):

1. NEI 99-01 Rev 6, AA3
2. QCOP 1800-1 Operation of ARM Indicator/Trip Units
3. UFSAR Section 3.2
4. General Arrangement Drawings M-5, 6, 8 and 10