September 24,1998

Mr. Garrett D. Edwards
Director-Licensing, MC 62A-1
PECO Energy Company
Nuclear Group Headquarters
Correspondence Control Desk
P.O. Box No. 195
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SUBJECT: REQUEST FOR ADDITIONAL INFORMATION (RAI) REGARDING EMERGENCY ACTION LEVELS FOR LIMERICK GENERATING STATION (LGS), UNITS 1 AND 2, AND PEACH BOTTOM ATOMIC POWER STATION (PBAPS), UNITS 2 AND 3 (TAC NOS. MA1736, MA1737, MA1738, AND MA1739)

Dear Mr. Edwards:

By letter dated April 16, 1998, you submitted revised emergency action level guidelines for LGS, Units 1 and 2, and PBAPS, Units 2 and 3, for NRC review and approval. Based on our evaluation of your submittal, we find that additional information, as delineated in Enclosure 1 for LGS, Units 1 and 2, and Enclosure 2 for PBAPS, Units 2 and 3, is required in order to continue our review. The information being requested was discussed with your staff on August 28, 1998, and a response date of 30 days from your receipt of this letter was mutually acceptable.

Sincerely,

original signed by:

Bartholomew C. Buckley, Senior Project Manager
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original signed by:

Mohan C. Thadani, Senior Project Manager
Project Directorate I-2
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Office of Nuclear Reactor Regulation

Docket Nos. 50-352 and 50-353
and 50-277 and 50-278

Enclosures: 1. RAI for LGS, Units 1 and 2
2. RAI for PBAPS, Units 2 and 3

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REQUEST FOR ADDITIONAL INFORMATION

REGARDING LIMERICK GENERATING STATION

EAL REVISION TO NUMARC/NESP-007 METHODOLOGY

The NRC has completed its initial review of the proposed emergency action levels (EALs) in the April 16, 1998, Limerick Generating Station (LGS) submittal. The proposed EALs were reviewed against the guidance in NUMARC/NESP-007, Revision 2,"Methodology for Development of Emergency Action Levels." This document has been endorsed by the NRC in Regulatory Guide 1.101, Revision 3, "Emergency Planning and Preparedness for Nuclear Power Reactor," as an alternative means by which licensees can meet the requirements in 10 CFR 50.47 (b) (4) and Appendix E to 10 CFR Part 50. Additional information is needed to determine whether a number of the LGS EALs conform to NUMARC/NESP-007 guidance. Please provide this additional information as discussed below.

Issue No. 1

NUMARC/NESP-007 Initiating Condition (IC) AU1 is:

> *Any Unplanned Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two Times the Radiological Technical Specifications for 60 Minutes or Longer*

NUMARC/NESP-007 EAL AU1.1 associated with IC AU1 is:

> 1. *A valid reading on one or more of the following monitors that exceeds the "value shown" (site-specific monitors) indicates that the release may have exceeded the above criterion and indicates the need to assess the release with (Site-specific procedure): (Site-specific list)*

The LGS proposed EAL (5.1.1.a) is:

> *North or South Stack Rad Monitor continuously in HiHi Alarm OR known Unmonitored Release continuously in progress OR Radwaste or Cooling Tower Blowdown Discharge Rad Monitor continuously in Hi Alarm for > 60 minutes AND Calculated maximum offsite dose rate using computer dose model exceeds 0.114 mRem/hr TPARD OR 0.342 mRem/hr child thyroid CDE based on a 60 minute average*

A. Please justify why readings on site-specific monitors were not included in this EAL as called for in the NUMARC/NESP-007 guidance.

B. It is not clear whether the "> 60 minutes" condition applies to all monitors or just to the Cooling Tower Blowdown Discharge Rad Monitor. This may cause misapplication of this EAL. Please describe how this EAL is to be applied and how the EAL, as currently written, will not be misapplied.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 24,1998

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Mohan C. Thadani

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Docket Nos. 50-352 and 50-353
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cc w/encls: See next page

C. The use of the dose unit "TPARD" in place of a more common dose unit such as Total Effective Dose Equivalent (TEDE) and the use of Committed Dose Equivalent (CDE) rate may cause confusion in classifying events using this EAL. Please provide additional justification for using these setpoints.

D. The intent of NUMARC/NESP-007 ICs AU1 and AA1 is to use ODCM methodology to confirm that the release exceeds technical specification values. This confirmation is only used if it can be completed promptly (e.g., within 15 minutes in the case of the Alert level EAL). Otherwise the event is to be classified based upon the monitor reading. It is not clear that the ODCM methodology will be used in this manner for this EAL. Please provide information regarding how the LGS's EAL meets the intent of the NUMARC/NESP-007 guidance.

These issues also apply to LGS EAL 5.1.2.a

Issue No. 2
NUMARC/NESP-007 IC AS1 is:

> *Boundary Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 100 mR Whole Body or 500 mR Child Thyroid for the Actual or Projected Duration of the Release*

NUMARC/NESP-007 EALs AS1.1, AS1.3, AS1.4 associated with IC AS1 are:

1. *A valid reading on one or more of the following monitors that exceeds or is expected to exceed the value shown indicates that the release may have exceeded the above criterion and indicates the need to assess the release with (Site-specific procedure): (Site-specific list)*

3. *Valid dose assessment capability indicates dose consequences greater than 100 mR whole body or 500 mR child thyroid*

4. *Field survey results indicate site boundary dose rates exceeding 100 mR/hr expected to continue for more than one hour; or analyses of field survey samples indicate child thyroid dose commitment of 500 mR for one hour of inhalation*

The LGS proposed EAL (5.1.3) is:

> *North or South Stack Rad Monitor continuously in HiHi Alarm OR known Unmonitored Release continuously in progress for > 15 minutes AND either :*
> *Projected offsite dose using computer dose model exceeds 100 mRem TPARD, OR*
> *Projected offsite dose using computer dose model exceeds 500 mRem child thyroid CDE*

OR

Valid dose assessment capability indicates dose consequences > 100 mRem TPARD, OR > 500 mRem child thyroid CDE

OR

Analysis of Field Survey results indicates dose consequences > 100 mRem/hr expected to continue for more than one hour, OR Analysis of Field Survey results indicate child thyroid dose commitment of 500 mRem for one hour of inhalation

A. Please justify why readings on site-specific monitors were not included in this EAL as called for in the NUMARC/NESP-007 guidance.

B. It is not clear whether the "> 15 minutes" condition applies to all monitors or just to the unmonitored release. This may cause misapplication of this EAL. Please describe how this EAL is to be applied and how the EAL, as currently written, will not be misapplied.

C. The use of the dose unit "TPARD" in place of a more common dose unit such as Total Effective Dose Equivalent (TEDE) and the use of Committed Dose Equivalent (CDE) rate may cause confusion in classifying events using this EAL. Please provide additional justification for using these setpoints.

D. The intent of NUMARC/NESP-007 ICs AS1 and AG1 is to confirm that release exceeded certain dose limits using a real-time dose assessment. This confirmation is only used if it can be completed promptly (i.e., within 15 minutes). Otherwise the event is to be classified based upon the monitor reading. Please provide information regarding how LGS's EAL meets the intent of the NUMARC/NESP-007 guidance.

E. Please provide information regarding the difference between "projected offsite dose" and "Valid dose assessment capability" as used in this LGS EAL.

These issues also apply to LGS EAL 5.1.4.

Issue No. 3

NUMARC/NESP-007 IC AA3 is:

Release of Radioactive Material or Increases in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown

NUMARC/NESP-007 EAL AA3.1 associated with IC AA3 is:

1. *Valid (Site-specific) radiation monitor readings GREATER THAN 15 mR/hr in areas requiring continuous occupancy to maintain plant safety functions: (Site-specific list)*

The LGS proposed EAL (5.2.2.b) is:

Valid Control Room area radiation monitor reading > 15mR/hr

A. Justify limiting the LGS EAL to the Control Room when the corresponding NUMARC/NESP-007 EAL relates to all "*areas requiring continuous occupancy to maintain plant safety functions.*" Provide information regarding whether the Control Room is the only area where continuous occupancy is maintained or if there are other areas, such as the radwaste control room and the central security alarm station, which are continuously occupied.

Issue No. 4
NUMARC/NESP-007 IC AA3 is:

Release of Radioactive Material or Increases in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown

NUMARC/NESP-007 EAL AA3.2 associated with IC AA3 is:

2. Valid (Site-specific) radiation monitor readings GREATER THAN <site-specific> values in areas requiring infrequent access to maintain plant safety functions.

The LGS proposed EAL (5.2.2.a) is:

Valid radiation level readings > 5000 mR/hr in areas requiring infrequent access to maintain plant safety functions as identified in procedure SE-1 or SE-6 AND Access is required for safe plant operation, but is impeded, due to radiation dose rates

A. This EAL deviates from the NUMARC/NESP-007 guidance by including the condition "*AND Access is required for safe plant operation, but is impeded, due to radiation dose rates.*" Such a condition could delay the emergency classification in cases where immediate access to the areas in question is not required. Please provide additional information justifying this deviation.

B. Please provide additional information justifying the use of a single value (5000 mR/hr) for level readings, applicable for all areas, instead of a unique value for each area as NUMARC/NESP-007 EAL suggests.

Issue No. 5
NUMARC/NESP-007 EAL FC2 for the loss of the fuel clad barrier is:

LOSS:
RPV level less than (site-specific) value

The LGS proposed EAL (FC.2) is:

LOSS:
RPV level cannot be restored above -204"

A. A delay may occur in classifying a loss of RPV level event using the LGS EAL due to the time needed to determine whether level cannot be restored. Please justify why RPV level less than -204" is not, by itself, an indication of the loss of the fuel clad and, if it is not, what provisions there may be to prevent undue delay in classifying this event using the proposed LGS EAL.

Issue No. 6
NUMARC/NESP-007 EAL RC1 for the loss of the reactor coolant system barrier is:

LOSS:
(site-specific) indication of a Main Steam Line Break

The LGS proposed EAL (RC.1) is:

LOSS:
Hi Steam Low Annunciator AND Hi Steam Tunnel temperature Annunciator....

A. In a letter dated June 10, 1993, the NRC endorsed NUMARC's Questions and Answers (Q&As) on the NUMARC/NESP-007 document. One of the Q&As addressed the use of an isolable main steam line break EAL as a loss of the RCS barrier. The Q&A stated that it was inappropriate to include indication of a main steam line break in the fission product matrix, but that an event-based EAL should be provided for the main steam line break. Please justify why this EAL is included in the LGS fission product barrier matrix.

Issue No. 7
NUMARC/NESP-007 EAL PC1 for the loss of the containment barrier is:

LOSS:
Rapid unexplained decrease following initial increase
OR
Drywell pressure response not consistent with LOCA conditions

POTENTIAL LOSS:
(Site-specific) psig and increasing OR explosive mixture exists

The LGS proposed EAL (PC.1) is:

LOSS:
Rapid, unexplained decrease in Drywell Pressure following initial increase OR Drywell pressure response not consistent with LOCA conditions

POTENTIAL LOSS:
Drywell Pressure > 44 psig and increasing
OR
Drywell Hydrogen > 6% AND Drywell Oxygen > 5%

A. Please provide the deflagration limit curves used to determine the 6% Hydrogen and 5% Oxygen figures.

Issue No. 8
NUMARC/NESP-007 IC HA1 is:

Natural and Destructive Phenomena Affecting the Plant Vital Area

NUMARC/NESP-007 EAL HA1.3 is:

Report of any visible structural damage on any of the following plant structures:

- *Reactor Building*
- *Intake Building*
- *Ultimate Heat Sink*
- *Refueling Water Storage Tank*
- *Diesel Generator Building*
- *Turbine Building*
- *Condensate Storage Tank*
- *Control Rooms*
- *Other (Site-specific) Structures*

The LGS proposed EAL (8.4.2.c) is:

Report of any visible structural damage on any Plant Vital Structure (Table 8-1)

Table 8-1 identifies the Plant Vital Structures as the Reactor Enclosure, Control Enclosure, Turbine Enclosure, Diesel Generator Enclosure, and Spray Pond Pump House/Spray Network.

A. It does not appear that Table 8-1 encompasses all the structures and components listed in the NUMARC/NESP-007 Example EAL. Specifically, the tanks listed in NUMARC/NESP-007 EAL HA1.3 are not listed in Table 8-1. Please justify this apparent deviation.

Issue No. 9

NUMARC/NESP-007 IC HA2 is:

> *Fire or Explosion Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown*

NUMARC/NESP-007 EAL HA2.1 is:

> *1. The following conditions exist:*
>
> *a. Fire or explosion in any of the following (Site-specific) areas: (Site-specific) list*
> *AND*
> *b. Affected system parameter indications show degraded performance or plant personnel report visible damage to permanent structures or equipment within the specified area*

The LGS proposed EAL (8.2.2.a) is:

> *The following conditions exist:*
>
> *Fire or explosion which makes inoperable:*
>
> *Two or More subsystems or a Safe Shutdown System (Table 8-2)*
> *OR*
> *Two or More Safe Shutdown Systems*
> *OR*
> *Plant Vital Structures containing Safe Shutdown Equipment*
> *AND*
> *Safe Shutdown System or Plant Vital Structure is required for the present Operational Condition*

A. By including the condition that a fire or explosion makes systems or subsystems inoperable, the LGS EAL does not appear to meet the intent of the corresponding NUMARC/NESP-007 EAL which refers to events leading to "degraded performance."

B. The LGS EAL requires that "*Safe Shutdown System or Plant Vital Structure is required for the present Operational Condition*," which is not addressed in the NUMARC/NESP-007 EAL and does not appear to meet the intent of the NUMARC/NESP-007 EAL.

C. The LGS EAL requires two or more subsystems of a safe shutdown system to be affected by the fire. The corresponding NUMARC/NESP-007 EAL does not include this condition.

Please provide additional information that justifies these departures from the NUMARC/NESP-007 guidance.

Issue No. 10

NUMARC/NESP-007 IC HU4 is:

> *Confirmed Security Event Which Indicates a Potential Degradation in the Level of Safety of the Plant*

NUMARC/NESP-007 EALs HU4.1 and HU4.2 are:

> *1. Bomb device discovered within plant Protected Area and outside the plant Vital Area.*
>
> *2. Other security events as determined from (Site-specific) Safeguards Contingency Plan.*

The LGS proposed EAL (8.1.1) is:

> *Credible sabotage or bomb threat within the Protected Area*
> *OR*
> *Credible intrusion and attack threat to the Protected Area*
> *OR*
> *Attempted intrusion and attack to the Protected Area*
> *OR*
> *Attempted sabotage discovered within the Protected/Vital Area*
> *OR*
> *Hostage/Extorsion situation that threatens normal plant operations*

A. LGS EAL basis states that "*The Shift Management will declare an Unusual Event subsequent to consulting with the Manager, Nuclear Security to determine the credibility of the security event.*" This is inconsistent with the NUMARC/NESP-007 EAL basis which does not include such a statement. This could delay or even impede declaration of the emergency should the Manager, Nuclear Security be unavailable (e.g., during a night shift). Please provide additional information that justifies the departure from the NUMARC/NESP-007 guidance. This comment also applies to EAL 8.1.2.

B. Please provide additional information regarding how the condition "Attempted sabotage discovered within the Protected/Vital Area" would be detected and why this condition is not more appropriately classified at the Alert or Site Area Emergency classification level.

Issue No. 11

NUMARC/NESP-007 IC SA4 is:

> *Unplanned Loss of Most or All Safety System Annunciation or Indication In Control Room With Either (1) a Significant Transient in Progress, or (2) Compensatory Non-Alarming Indicators are Unavailable*

NUMARC/NESP-007 EAL SA4.1 is:

> *1. The following conditions exist:*
>
> *a. Loss of most or all (Site-specific) annunciators associated with safety systems for greater than 15 minutes.*
>
> *AND*
>
> *b. In the opinion of the Shift Supervisor, the loss of the annunciators or indicators requires increased surveillance to safely operate the unit(s).*
>
> *AND*
>
> *c. Annunciator or Indicator loss does not result from planned action.*
>
> *AND*
>
> *d. Either of the following:*
>
> *1. A significant plant transient is in progress.*
>
> *OR*
>
> *2. Compensatory non-alarming indications are unavailable*

The LGS proposed EAL (7.3.2) is:

> *Unplanned Loss of most or all safety system annunciators (Table 7-1) OR indicators for > 15 minutes requiring increased surveillance to safely operate the unit(s)*
>
> *AND EITHER*
>
> *A significant plant transient is in progress (Table 7-3) OR the plant monitoring system (PMS) is unavailable*

A. The LGS EAL and basis are not clear as to what constitute safety system *indicators*. LGS EAL and/or basis should be supplemented to indicate what the "safety system *indicators*" are (e.g., by providing a table like Table 7-1 "Safety System Annunciators"). This comment also applies to LGS EAL 7.3.1.a.

B. LGS EAL basis states "*Although loss of ALL annunciators is specified, if a large portion of annunciators or significant annunciators, as determined by the Shift Supervisor, are lost ...*" for the "*loss of ALL annunciators.*" This is inconsistent with the associated LGS EAL. The basis should be corrected. This comment also applies to LGS EAL 7.3.1.a and 7.3.3.

Issue No. 12
NUMARC/NESP-007 IC SA1 is:

Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses During Cold Shutdown Or Refueling Mode

NUMARC/NESP-007 EAL SA1.1 is:

1. The following conditions exist:
- *a. Loss of power to (Site-specific) transformers.*
  AND
- *b. Failure of (Site-specific) emergency generators to supply power to emergency busses.*
  AND
- *c. Failure to restore power to at least one emergency bus within 15 minutes from the time of loss of both offsite and onsite AC power.*

The LGS proposed EAL (6.1.2.b) is:

The following conditions exist:

Loss of Power to 101 and 201 Safeguard Transformers
AND
Failure to restore power to at least One emergency bus within 15 minutes from the time of loss of both offsite and onsite AC power

A. LGS EAL is not consistent with the NUMARC/NESP-007 EAL in that it does not include the second condition of the NUMARC/NESP-007 EAL, which is "*b. Failure of (Site-specific) emergency generators to supply power to emergency busses.*" Please provide additional information that justifies this departure from the NUMARC/NESP-007 guidance. This comment also applies to LGS EAL 6.1.3.a.

B. The LGS EAL does not define "emergency bus." This may cause confusion in classifying a loss of power event. Please define "emergency bus" in the EAL or justify not providing this definition. This comment also applies to the other loss of onsite AC power EALs.

Issue No. 13
NUMARC/NESP-007 IC SA3 is:

Inability to Maintain Plant in Cold Shutdown

NUMARC/NESP-007 EAL SA3.1 is:

1. The following conditions exist:

a. Loss of (Site-specific) Technical Specification required functions to maintain cold shutdown.

AND

b. Temperature increase that either:

- *Exceeds Technical Specification cold shutdown temperature limit*

OR

- *Results in uncontrolled temperature rise approaching cold shutdown technical specification limit.*

The LGS proposed EAL (7.2.2) is:

Loss of Shutdown Cooling

AND

Uncontrolled Temperature increase that either:

- *Exceeds 200 °F*

OR

- *Results in temperature rise approaching 200 °F*

A. The term "*Loss of Shutdown Cooling*" in the LGS EAL is not defined. The LGS EAL should be supplemented to indicate what constitutes "*Loss of Shutdown Cooling*" or additional information should be provided regarding how this EAL is to be applied.

Issue No. 14

NUMARC/NESP-007 IC AU2 is:

Fuel Clad Degradation

NUMARC/NESP-007 EAL AU2.2 is:

Uncontrolled water level decrease in the spent fuel pool and fuel transfer canal with all irradiated fuel assemblies remaining covered by water

The LGS proposed EAL (1.2.1.a) is:

Uncontrolled water level decrease in the spent fuel pool with all irradiated fuel assemblies remaining covered by water

The LGS proposed basis for this EAL is:

> *... During refueling operations, RPV level indication is read on Panel C602 ...*

A. It does not appear to be appropriate to limit the statement *"RPV level indication is read on Panel C602"* in the basis to refueling operations. Please modify the basis or provide additional information for including this statement.

Issue No. 15

NUMARC/NESP-007 IC AA2 is:

> *Major Damage to Irradiated Fuel or Loss of Water Level that Has or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel*

NUMARC/NESP-007 EALs AA2.3 and AA2.4 are:

> *Water Level less than (site-specific) feet for the Reactor Refueling Cavity that will result in Irradiated Fuel Uncovering*
>
> *Water Level less than (site-specific) feet for the Spent Fuel Pool and Fuel Transfer Canal that will result in Irradiated Fuel Uncovering*

The corresponding LGS EALs (1.2.2.c and d) are:

> *Water Level < 22 feet above RPV flange for the Reactor Refueling Cavity that will result in Irradiated Fuel Uncovering*
>
> *Water Level < 22 feet for the Spent Fuel Pool that Will Result in Irradiated Fuel Uncovering*

A. Please provide additional information describing the basis for use of the indication of water level "<22 feet" for the fuel pool and reactor cavity. Please provide information regarding how this level will be measured.

Issue No. 16

The basis of LGS proposed EAL 1.2.2.b discusses events involving the loss of water level that has or will result in the uncovering of irradiated fuel outside the reactor vessel. The basis states that offsite doses during these accidents would be well below the EPA Protective Action Guidelines. However, studies of the loss of fuel pool water level, e.g., NUREG/CR-6451, "A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear Power Plants," indicate that a significant release may occur if rapid oxidation of the fuel clad occurs due to a prolonged loss of cooling. The LGS basis may be misleading as to the potential significance of a loss of water in the fuel pool event. Please provide additional information

justifying the LGS basis statements.

Issue No 17
NUMARC IC SS5 contains the following EALs:

> *Loss of reactor vessel water level as indicated by:*
>
> - *Loss of all decay heat removal cooling ....*
>   *and*
> - *(site-specific) indicators that the core is or will be uncovered.*

The corresponding LGS EALs (2.1.3) are:

> *Loss of reactor vessel water level as indicated by:*
>
> - *Loss of all decay heat removal cooling as determined by procedure GP-6.2*
>   *and*
> - *Inability to maintain RPV level over -161"*

In the basis for the LGS EALs it is stated that:

> *Prior to concluding that RPV level cannot be maintained, consideration must be given to injection system availability and status and trend of the rate at which RPV level is decreasing. Ample time should be allotted to analyze the ability of injection sources...*

A. Even though the first condition, i.e., "Loss of all decay heat removal cooling as determined by procedure GP-6.2," is in accordance with the NUMARC guidance, it is not clear that this condition is necessary to conclude that the plant condition warrants a site area emergency classification. Please provide addition information which justifies including this condition in this EAL.

B. The second EAL, i.e., "Inability to maintain RPV level over -161"," appears to deviate from the NUMARC guidance. This deviation may cause a delay in classification which does not appear to be appropriate. Please provided additional information justifying this deviation.

Issue No. 18
The NUMARC EAL for IC SA2 is:

> *(site-specific indication exists that indicate that reactor protection system setpoint was exceeded and automatic scram did not occur, and a successful manual scram occurred.*

The corresponding LGS EAL (2.2.2) is

Automatic RPS SCRAM should occur due to RPS Setpoint being exceeded
AND
Failure of Automatic RPS Scram to reduce reactor power <4%

The LGS EAL deviates from the NUMARC guidance by including the "<4%" power condition. Although including a power level for the failure-to-scram has been determined to be acceptable in the Q&A's on the NUMARC EALs for the Site Area Emergency EAL, it was not deemed appropriate for the Alert level EAL. Please revise this EAL to remove the power level criteria or provide additional information justifying this deviation.

Issue No 19
The NUMARC EAL for the loss of RCS based upon drywell radiation monitoring is:

Drywell Rad Monitor Reading greater than (site-specific) R/hr

The guidance for determining the setpoint for this EAL is "The reading should be calculated assuming the instantaneous release and dispersal of the reactor coolant noble gas and iodine inventory associated with normal operating concentrations...."

The corresponding LGS EAL (RC.3) is:

Drywell Rad Monitor reading > 100 R/hr

Please provide a copy of the document ERP-C-1410 referred to in the Basis for this EAL.

The LGS reading was established based upon technical specification limit concentrations. Please justify use of these concentrations rather than normal operating concentrations.

Issue No. 20
The LGS EAL 6.1.1.b does not identify the specific DC buses for which this EAL is applicable. This information is included in the basis for this EAL. Please provide additional information which describes how the basis document is to be used in the classification process and how errors in classification will not occur if the specific buses are not included in the EAL itself.

Issue No. 21
The LGS EAL 6.1.4 includes the condition, "HPCI and RCIC unavailable for makeup and decay heat removal." Please provide additional information on the definition of "unavailable" as used in this EAL and how long the core cooling can be maintained without HPCI and RCIC operating.

Issue No. 22
NUMARC EAL SS4.1 is:

Complete loss of any (site-specific) function required for hot shutdown

The corresponding LGS EAL (7.2.3) is:

Loss of Main Condenser as a heat sink
AND
Loss of Suppression Pool heat sink capabilities as evidenced by T-102 legs requiring an Emergency Blowdown
AND
Either of the following conditions:
- RPV level cannot be restored above -161"
  OR
- Reactor Power >4%

Please provide additional information describing the relationship of this EAL to EALs using similar parameters (e.g., fission product barrier EALs and failure to scram EALs). In addition, provide additional information justifying the use of the "RPV level cannot be restored above -161" as a setpoint (which requires judgement) rather than a simple setpoint (e.g., RPV level less than -161").

Issue No. 23
NUMARC EAL HU2.1 is:

Fire in building or areas contiguous to any of the following (site-specific) areas ..

The corresponding LGS EAL (8.2.1.a) is:

Fire within SE-8 Plant Vital Structures (table 8-1) ...

Please provide additional information how the areas listed in Table 8-1 relate to the "buildings or areas contiguous" specified in the NUMARC EAL and justify any deviations.

Issue No. 24
NUMARC EAL HU1.4 is:

Vehicle crash into plant structures or systems within protected area boundary

The corresponding LGS EAL (8.3.1.a) is:

Vehicle crash within protected area boundary that may potentially damage structures

containing functions and systems required for safe shutdown of the plant

The LGS EAL deviates from the NUMARC guidance by including the condition that the crash may damage structures containing functions and systems required for safe shutdown of the plant. This condition more closely correlates with the Alert classification level EAL for a vehicle crash. Please provide additional information justifying this deviation.

REQUEST FOR ADDITIONAL INFORMATION
REGARDING PEACH BOTTOM ATOMIC POWER STATION
EAL REVISION TO NUMARC/NESP-007 METHODOLOGY

The NRC has completed its initial review of the proposed emergency action levels (EALs) in the April 16, 1998, Peach Bottom Atomic Power Station (PBAPS) submittal. The proposed EALs were reviewed against the guidance in NUMARC/NESP-007, Revision 2,"Methodology for Development of Emergency Action Levels." This document has been endorsed by the NRC in Regulatory Guide 1.101, Revision 3, "Emergency Planning and Preparedness for Nuclear Power Reactor," as an alternative means by which licensees can meet the requirements in 10 CFR 50.47 (b) (4) and Appendix E to 10 CFR Part 50. Additional information is needed to determine whether a number of the PBAPS EALs conform to NUMARC/NESP-007 guidance. Please provide this additional information as discussed below.

Issue No. 1

NUMARC/NESP-007 Initiating Condition (IC) AU1 states:

> *Any Unplanned Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two Times the Radiological Technical Specifications for 60 Minutes or Longer*

NUMARC/NESP-007 EAL AU1.1 associated with IC AU1 is:

> 1. *A valid reading on one or more of the following monitors that exceeds the "value shown" (site-specific monitors) indicates that the release may have exceeded the above criterion and indicates the need to assess the release with (Site-specific procedure): (Site-specific list)*

The PBAPS proposed EAL (5.1.1.a) is:

> *Main or Vent Stack Rad Monitor continuously in HiHi Alarm OR known Unmonitored Release or use of Torus Hardened Vent continuously in progress OR Radwaste or Service Water Discharge Rad Monitor continuously in Hi Alarm for > 60 minutes AND Calculated maximum offsite dose rate using computer dose model exceeds 0.114 mRem/hr TPARD OR 0.342 mRem/hr child thyroid CDE based on a 60 minute average*

A. Please justify why readings on site-specific monitors were not included in this EAL as called for in the NUMARC/NESP-007 guidance.

B. It is not clear whether the "> 60 minutes" condition applies to all monitors or just to the Service Water Monitor. This may cause misapplication of this EAL. Please describe how this EAL is to be applied and how the EAL, as currently written, will not be misapplied.

C. The use of the dose unit "TPARD" in place of a more common dose unit such as Total Effective Dose Equivalent (TEDE) and the use of Committed Dose Equivalent (CDE) rate may cause confusion in classifying events using this EAL. Please provide additional justification for using these setpoints.

D. The intent of NUMARC/NESP-007 ICs AU1 and AA1 is to use ODCM methodology to confirm that the release exceeds technical specification values. This confirmation is only used if it can be completed promptly (e.g., within 15 minutes in the case of the Alert level EAL). Otherwise the event is to be classified based upon the monitor reading. It is not clear that the ODCM methodology will be used in this manner for this EAL. Please provide information regarding how the PBAPS's EAL meets the intent of the NUMARC/NESP-007 guidance.

These issues also apply to PBAPS EAL 5.1.2.a

Issue No. 2
NUMARC/NESP-007 Initiating Condition (IC) AS1 states:

Boundary Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 100 mR Whole Body or 500 mR Child Thyroid for the Actual or Projected Duration of the Release

NUMARC/NESP-007 EALs AS1.1, AS1.3, AS1.4 associated with IC AS1 are:

1. *A valid reading on one or more of the following monitors that exceeds or is expected to exceed the value shown indicates that the release may have exceeded the above criterion and indicates the need to assess the release with (Site-specific procedure): (Site-specific list)*

3. *Valid dose assessment capability indicates dose consequences greater than 100 mR whole body or 500 mR child thyroid*

4. *Field survey results indicate site boundary dose rates exceeding 100 mR/hr expected to continue for more than one hour; or analyses of field survey samples indicate child thyroid dose commitment of 500 mR for one hour of inhalation*

The PBAPS proposed EAL (5.1.3) is:

Main or Vent Stack Rad Monitor continuously in HiHi Alarm OR known Unmonitored Release or use of Torus Hardened Vent continuously in progress for > 15 minutes AND either :
Projected offsite dose using computer dose model exceeds 100 mRem TPARD, OR

Projected offsite dose using computer dose model exceeds 500 mRem child thyroid CDE

OR

Valid dose assessment capability indicates dose consequences > 100 mRem TPARD, OR > 500 mRem child thyroid CDE

OR

Analysis of Field Survey results indicates dose consequences > 100 mRem/hr expected to continue for more than one hour, OR Analysis of Field Survey results indicate child thyroid dose commitment of 500 mRem for one hour of inhalation

A. Please justify why readings on site-specific monitors were not included in this EAL as called for in the NUMARC/NESP-007 guidance.

B. It is not clear whether the "> 15 minutes" condition applies to all monitors or just to the Torus Vent. This may cause misapplication of this EAL. Please describe how this EAL is to be applied and how the EAL, as currently written, will not be misapplied.

C. The use of the dose unit "TPARD" in place of a more common dose unit such as Total Effective Dose Equivalent (TEDE) and the use of Committed Dose Equivalent (CDE) rate may cause confusion in classifying events using this EAL. Please provide additional justification for using these setpoints.

D. The intent of NUMARC/NESP-007 ICs AS1 and AG1 is to confirm that release exceeded certain dose limits using a real-time dose assessment. This confirmation is only used if it can be completed promptly (i.e., within 15 minutes). Otherwise the event is to be classified based upon the monitor reading. Please provide information regarding how PBAPS's EAL meets the intent of the NUMARC/NESP-007 guidance.

E. Please provide information regarding the difference between "projected offsite dose" and "Valid dose assessment capability" as used in this PBAPS EAL.

These issues also apply to PBAPS EAL 5.1.4.

Issue No. 3

NUMARC/NESP-007 Initiating Condition (IC) AA3 states:

Release of Radioactive Material or Increases in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown

NUMARC/NESP-007 EAL AA3.1 associated with IC AA3 is:

1. *Valid (Site-specific) radiation monitor readings GREATER THAN 15 mR/hr in areas requiring continuous occupancy to maintain plant safety functions: (Site-*

specific list)

The PBAPS proposed EAL (5.2.2.b) is:

Valid Control Room area radiation monitor reading > 15mR/hr

A. Justify limiting the PBAPS EAL to the Control Room when the corresponding NUMARC/NESP-007 EAL relates to all "*areas requiring continuous occupancy to maintain plant safety functions.*" Provide information regarding whether the Control Room is the only area where continuous occupancy is maintained or if there are other areas, such as the radwaste control room and the central security alarm station, which are continuously occupied.

Issue No. 4

NUMARC/NESP-007 Initiating Condition (IC) AA3 states:

Release of Radioactive Material or Increases in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown

NUMARC/NESP-007 EAL AA3.2 associated with IC AA3 is:

2. Valid (Site-specific) radiation monitor readings GREATER THAN <site-specific> values in areas requiring infrequent access to maintain plant safety functions.

The PBAPS proposed EAL (5.2.2.a) is:

Valid radiation level readings > 5000 mR/hr in areas requiring infrequent access to maintain plant safety functions as identified in procedure SE-1 or SE-10 AND Access is required for safe plant operation, but is impeded, due to radiation dose rates

A. This EAL deviates from the NUMARC/NESP-007 guidance by including the condition "*AND Access is required for safe plant operation, but is impeded, due to radiation dose rates.*" Such a condition could delay the emergency classification in cases where immediate access to the areas in question is not required. Please provide additional information justifying this deviation.

B. Please provide additional information justifying the use of a single value (5000 mR/hr) for level readings, applicable for all areas, instead of a unique value for each area as NUMARC/NESP-007 EAL suggests.

Issue No. 5
NUMARC/NESP-007 EAL FC2 is:

LOSS:
RPV level less than (site-specific) value .

The PBAPS proposed EAL (RC.1) is:

LOSS:
RPV level cannot be restored above -226"

A. A delay may occur in classifying a loss of RPV level event using the PBAPS EAL due to the time needed to determine whether level cannot be restored. Please justify why RPV level less than -226" is not, by itself, an indication of the loss of the fuel clad and, if it is not, what provisions there may be to prevent undue delay in classifying this event using the proposed PBAPS EAL.

Issue No. 6
NUMARC/NESP-007 EAL RC1 is:

LOSS:
(site-specific) indication of a Main Steam Line Break

The PBAPS proposed EAL (RC.1) is:

LOSS:
Hi Steam Low Annunciator AND Hi Steam Tunnel temperature Annunciator....

A. In a letter dated June 10, 1993, the NRC endorsed NUMARC's Question and Answers (Q&As) on the NUMARC/NESP-007 document. One of the Q&As addressed concerns on included an EAL for an isolable main steam line break as a loss of the RCS barrier. The Q&A stated that it was inappropriate to include indication of a main steam line break in the fission product matrix, but that an event-based EAL should be provided for the main steam line break. Please justify why this EAL is included in the PBAPS fission product matrix.

Issue No. 7
NUMARC/NESP-007 EAL PC1 is:

LOSS:
Rapid unexplained decrease following initial increase
OR
Drywell pressure response not consistent with LOCA conditions

POTENTIAL LOSS:
(Site-specific) psig and increasing OR explosive mixture exists

The PBAPS proposed EAL (PC.1) is:

LOSS:
Rapid, unexplained decrease in Drywell Pressure following initial increase OR Drywell pressure response not consistent with LOCA conditions

POTENTIAL LOSS:
Drywell Pressure > 49 psig and increasing
OR
Drywell Hydrogen > 6% AND Drywell Oxygen > 5%

A. Please provide the deflagration limit curves used to determine the 6% Hydrogen and 5% Oxygen figures.

Issue No. 8
NUMARC/NESP-007 Initiating Condition (IC) HA1 states:

Natural and Destructive Phenomena Affecting the Plant Vital Area

NUMARC/NESP-007 EAL HA1.3 is:

Report of any visible structural damage on any of the following plant structures:

- *Reactor Building*
- *Intake Building*
- *Ultimate Heat Sink*
- *Refueling Water Storage Tank*
- *Diesel Generator Building*
- *Turbine Building*
- *Condensate Storage Tank*
- *Control Rooms*
- *Other (Site-specific) Structures*

The PBAPS proposed EAL (8.4.2.b) is:

Report of any visible structural damage on any Plant Vital Structure (Table 8-1)

Table 8-1 identifies the Plant Vital Structures as the Power Block, Diesel Generator Building, Emergency Pump Structure, Inner Screen Structure, Emergency Cooling Tower.

A. It does not appear that Table 8-1 encompasses all the structures and components listed in the NUMARC/NESP-007 Example EAL. Specifically, the tanks listed in NUMARC/NESP-007 EAL HA1.3 are not listed in Table 8-1. Please justify this apparent deviation.

Issue No. 9

NUMARC/NESP-007 Initiating Condition (IC) HA2 states:

> *Fire or Explosion Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown*

NUMARC/NESP-007 EAL HA2.1 Is:

> *1. The following conditions exist:*
>
> *a. Fire or explosion in any of the following (Site-specific) areas: (Site-specific) list*
> *AND*
> *b. Affected system parameter indications show degraded performance or plant personnel report visible damage to permanent structures or equipment within the specified area*

The PBAPS proposed EAL (8..2.2.a) is:

> *The following conditions exist:*
>
> *Fire or explosion which makes inoperable:*
>
> *Two or More subsystems or a Safe Shutdown System (Table 8-2)*
> *OR*
> *Two or More Safe Shutdown Systems*
> *OR*
> *Plant Vital Structures containing Safe Shutdown Equipment*
> *AND*
> *Safe Shutdown System or Plant Vital Structure is required for the present Operational Condition*

A. By including the condition that a fire or explosion makes systems or subsystems inoperable, the PBAPS EAL does not appear to meet the intent of the corresponding NUMARC/NESP-007 EAL which refers to events leading to "degraded performance."

B. The PBAPS EAL requires that "*Safe Shutdown System or Plant Vital Structure is required for the present Operational Condition,*" which is not addressed in the NUMARC/NESP-007 EAL and does not appear to meet the intent of the NUMARC/NESP-007 EAL.

C. The PBAPS EAL requires two or more subsystems of a safe shutdown system to be affected by the fire. The corresponding NUMARC/NESP-007 EAL does not include this condition.

Please provide additional information that justifies these departures from the NUMARC/NESP-007 guidance.

Issue No. 10

NUMARC/NESP-007 Initiating Condition (IC) HU4 is:

> *Confirmed Security Event Which Indicates a Potential Degradation in the Level of Safety of the Plant*

NUMARC/NESP-007 EALs HU4.1 and HU4.2 are:

> *1. Bomb device discovered within plant Protected Area and outside the plant Vital Area.*
>
> *2. Other security events as determined from (Site-specific) Safeguards Contingency Plan.*

The PBAPS proposed EAL (8.1.1) is:

> *Credible sabotage or bomb threat within the Protected Area*
> *OR*
> *Credible intrusion and attack threat to the Protected Area*
> *OR*
> *Attempted intrusion and attack to the Protected Area*
> *OR*
> *Attempted sabotage discovered within the Protected/Vital Area*
> *OR*
> *Hostage/Extorsion situation that threatens normal plant operations*

A. PBAPS EAL basis states that "*The Shift Management will declare an Unusual Event subsequent to consulting with the Manager, Nuclear Security to determine the credibility of the security event.*" This is inconsistent with the NUMARC/NESP-007 EAL basis which does not include such a statement. This could delay or even impede declaration of the emergency should the Manager, Nuclear Security be unavailable (e.g., during a night shift). Please provide additional information that justifies the departure from the NUMARC/NESP-007 guidance. This comment also applies to EAL 8.1.2.

B. Please provide additional information regarding how the condition "Attempted sabotage discovered within the Protected/Vital Area" would be detected and why this condition is not more appropriately classified at the Alert or Site Area Emergency classification level.

Issue No. 11

NUMARC/NESP-007 Initiating Condition (IC) SA4 states:

> *Unplanned Loss of Most or All Safety System Annunciation or Indication In Control Room With Either (1) a Significant Transient in Progress, or (2) Compensatory Non-Alarming Indicators are Unavailable*

NUMARC/NESP-007 EAL SA4.1 is:

> *1. The following conditions exist:*
>
> *a. Loss of most or all (Site-specific) annunciators associated with safety systems for greater than 15 minutes.*
>
> *AND*
>
> *b. In the opinion of the Shift Supervisor, the loss of the annunciators or indicators requires increased surveillance to safely operate the unit(s).*
>
> *AND*
>
> *c. Annunciator or Indicator loss does not result from planned action.*
>
> *AND*
>
> *d. Either of the following:*
>
> *1. A significant plant transient is in progress.*
>
> *OR*
>
> *2. Compensatory non-alarming indications are unavailable*

The PBAPS proposed EAL (7.3.2) is:

> *Unplanned Loss of most or all safety system annunciators (Table 7-1) <u>OR</u> indicators for > 15 minutes requiring increased surveillance to safely operate the unit(s)*
>
> *<u>AND EITHER</u>*
>
> *A significant plant transient is in progress (Table 7-3) OR the plant monitoring system (PMS) is unavailable*

A. The PBAPS EAL and basis are not clear as to what constitute safety system *indicators*. PBAPS EAL and/or basis should be supplemented to indicate what the "safety system *indicators*" are (e.g., by providing a table like Table 7-1 "Safety System Annunciators"). This comment also applies to PBAPS EAL 7.3.1.

B. PBAPS EAL basis states "*Although loss of ALL annunciators is specified, if a large portion of annunciators or significant annunciators, as determined by the Shift Supervisor, are lost ...*" for the "*loss of ALL annunciators*" . This is inconsistent with the associated PBAPS EAL. The basis should be corrected. This comment also applies to PBAPS EAL 7.3.1 and 7.3.3.

Issue No. 12
NUMARC/NESP-007 Initiating Condition (IC) SA1 states:

> *Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses During Cold Shutdown Or Refueling Mode*

NUMARC/NESP-007 EAL SA1.1 is:

> *1. The following conditions exist:*
> *a. Loss of power to (Site-specific) transformers.*
> *AND*
> *b. Failure of (Site-specific) emergency generators to supply power to emergency busses.*
> *AND*
> *c. Failure to restore power to at least one emergency bus within 15 minutes from the time of loss of both offsite and onsite AC power.*

The PBAPS proposed EAL (6.1.2.b) is:

> *The following conditions exist:*
>
> *Loss of Power to 2 and 3 Startup and Emergency Aux. Transformers and 343 Startup Transformer*
> *AND*
> *Failure to restore power to at least One emergency bus within 15 minutes from the time of loss of both offsite and onsite AC power*

A. PBAPS EAL is not consistent with the NUMARC/NESP-007 EAL in that it does not include the second condition of the NUMARC/NESP-007 EAL, which is "*b. Failure of (Site-specific) emergency generators to supply power to emergency busses.*" Please provide additional information that justifies this departure from the NUMARC/NESP-007 guidance. This comment also applies to PBAPS EAL 6.1.2.a.

B. The PBAPS EAL does not define "emergency bus." This may cause confusion in classifying a loss of power event. Please define "emergency bus" in the EAL or justify not providing this definition. This comment also applies to the other loss of onsite AC power EALs.

Issue No. 13
NUMARC/NESP-007 Initiating Condition (IC) SA3 states:

> *Inability to Maintain Plant in Cold Shutdown*

NUMARC/NESP-007 EAL SA3.1 is:

1. The following conditions exist:

a. Loss of (Site-specific) Technical Specification required functions to maintain cold shutdown.

AND

b. Temperature increase that either:

. Exceeds Technical Specification cold shutdown temperature limit

OR

. Results in uncontrolled temperature rise approaching cold shutdown technical specification limit.

The PBAPS proposed EAL (7.2.2) is:

Loss of Shutdown Cooling

AND

Uncontrolled Temperature increase that either:

. Exceeds 212 F

OR

. Results in temperature rise approaching 212 F

A. The term "*Loss of Shutdown Cooling*" in the PBAPS EAL is not defined. The PBAPS EAL should be supplemented to indicate what constitutes "*Loss of Shutdown Cooling*" or additional information should be provided regarding how this EAL is to be applied.

Issue No. 14

NUMARC/NESP-007 Initiating Condition (IC) AU2 is:

Fuel Clad Degradation

NUMARC/NESP-007 EAL AU2.2 is:

Uncontrolled water level decrease in the spent fuel pool and fuel transfer canal with all irradiated fuel assemblies remaining covered by water

The PBAPS proposed EAL (1.2.1.a) is:

Uncontrolled water level decrease in the spent fuel pool with all irradiated fuel assemblies remaining covered by water

The PBAPS proposed basis for this EAL is:

... During refueling operations, RPV level indication is read on Panel 005 ...

A. It does not appear to be appropriate to limit the statement *"RPV level indication is read on Panel 005"* in the basis to refueling operations. Please modify the basis or provide additional information for including this statement.

Issue No. 15

NUMARC/NESP-007 Initiating Condition (IC) AA2.4 states:

Major Damage to Irradiated Fuel or Loss of Water Level that Has or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel

NUMARC/NESP-007 EALs AA2.3 and AA2.4 are:

Water Level less than (site-specific) feet for the Reactor Refueling Cavity that will result in Irradiated Fuel Uncovering

Water Level less than (site-specific) feet for the Spent Fuel Pool and Fuel Transfer Canal that will result in Irradiated Fuel Uncovering

The corresponding PBAPS EALs (1.2.2.c and d) are:

Water Level < 22 feet above RPV flange for the Reactor Refueling Cavity that will result in Irradiated Fuel Uncovering

Water Level < 22 feet for the Spent Fuel Pool that Will Result in Irradiated Fuel Uncovering

A. Please provide additional information describing the basis for use of the indication of water level "<22 feet" for the fuel pool and reactor cavity. Please provide information regarding how this level will be measured.

Issue No. 16

The basis of PBAPS proposed EAL 1.2.2.b discusses events involving the loss of water level that has or will result in the uncovering of irradiated fuel outside the reactor vessel. The basis states that offsite doses during these accidents would be well below the EPA Protective Action Guidelines. However, studies of the loss of fuel pool water level, e.g., NUREG/CR-6451, "A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear Power Plants," indicate that a significant release may occur if rapid oxidation of the fuel clad occurs due to a prolonged loss of cooling. The PBAPS basis may be misleading as to the potential significance of a loss of water in the fuel pool event. Please provide additional information justifying the PBAPS basis statements.

Issue No 17
NUMARC IC SS5 contains the following EALs:

Loss of reactor vessel water level as indicated by:

- *Loss of all decay heat removal cooling ....*
  and
- *(site-specific) indicators that the core is or will be uncovered.*

The corresponding PBABS EALs are:

Loss of reactor vessel water level as indicated by:

- *Loss of all decay heat removal cooling as determined by procedure GP-6.2*
  and
- *Inability to maintain RPV level over -172"*

In the basis for the PBAPS EALs it is stated that:

Prior to concluding that RPV level cannot be maintained, consideration must be given to injection system availability and status and trend of the rate at which RPV level is decreasing. Ample time should be allotted to analyze the ability of injection sources...

A. Even though the first EAL, i.e., "Loss of all decay heat removal cooling as determined by procedure GP-6.2," is in accordance with the NUMARC guidance, it is not clear that this condition is necessary to conclude that the plant condition warrants a site area emergency classification. Please provide addition information which justifies including this EAL.

B. The second EAL, i.e., "Inability to maintain RPV level over -172," appears to deviate from the NUMARC guidance. This deviation may cause a delay in classification which does not appear to be appropriate. Please provided additional information justifying this deviation.

Issue No. 18
The NUMARC EAL for IC SA2 is:

(site-specific indication exists that indicate that reactor protection system setpoint was exceeded and automatic scram did not occur, and a successful manual scram occurred.

The corresponding PBAPS EAL is

Automatic RPS SCRAM should occur due to RPS Setpoint being exceeded
AND
Failure of Automatic RPS Scram to reduce reactor power <4%

The PBAPS EAL deviates from the NUMARC guidance by including the "<4%" power condition. Although including a power level for the failure-to-scram has been determined to be acceptable in the Q&A's on the NUMARC EALs for the Site Area Emergency EAL, it was not deemed appropriate for the Alert level EAL. Please revise this EAL to remove the power level criteria or provide additional information justifying this deviation.

Issue No 19
The NUMARC EAL for the loss of RCS based upon drywell radiation monitoring is:

Drywell Rad Monitor Reading greater than (site-specific) R/hr

The guidance for determining the setpoint for this EAL is "The reading should be calculated assuming the instantaneous release and dispersal of the reactor coolant noble gas and iodine inventory associated with normal operating concentrations...."

Please provide a copy of the document ERP-C-1410 refered to in the Basis for this EAL.

The PBABS reading was established based upon technical specification limit concentrations. Please justify use of these concentrations rather than normal operating concentrations.

Issue No. 20
The PBAPS EAL 6.1.1.b does not identify the specific DC buses for which this EAL is applicable. This information is included in the basis for this EAL. Please provide additional information which describes how the basis document is to be used in the classification process and how errors in classification will not occur if the specific buses are not included in the EAL itself.

Issue No. 21
The PBAPS EAL 6.1.4 includes the condition, "HPCI and RCIC unavailable for makeup and decay heat removal." Please provide additional information on the definition of "unavailable" as used in this EAL and how long the core cooling can be maintained without HPCI and RCIC operating.

Issue No. 22
NUMARC EAL SS4-1 is:

Complete loss of any (site-specific) function required for hot shutdown

The corresponding PBAPS EAL (7.2.3) is:

Loss of Main Condenser as a heat sink
AND
Loss of Suppression Pool heat sink capabilities as evidenced by T-102 legs requiring an

Emergency Blowdown
AND
Either of the following conditions:

- RPV level cannot be restored above -172"
  OR
- Reactor Power >4%

Please provide additional information describing the relationship of this EAL to EALs using similar parameters (e.g., fission product barrier EALs and failure to scram EALs). In addition provide additional information justifying the use of the "RPV level cannot be restored above -172" as a setpoint (which requires judgement) rather than a simple setpoint (e.g., RPV level less than -172").

Issue No. 23
NUMARC EAL HU2-1 is:

Fire in building or areas contiguous to any of the following (site-specific) areas ..

The corresponding PBAPS EAL (8.2.1.a) is:

Fire within SE-8 Plant Vital Structures (table 8-1) ...

Please provide additional information how the areas listed in Table 8-1 relate to the "buildings or areas contiguous" specified in the NUMARC EAL and justify any deviations.

Issue No. 24
NUMARC EAL HU4-1 is:

Vehicle crash into plant structures or systems within protected area boundary

The corresponding PBAPS EAL is:

Vehicle crash within protected area boundary that may potentially damage structures containing functions and systems required for safe shutdown of the plant

The PBAPS EAL deviates from the NUMARC guidance by including the condition that the crash may damage structures containing functions and systems required for safe shutdown of the plant. This condition more closely correlates with the Alert classification level EAL for a vehicle crash. Please provide additional information justifying this deviation.

Issue No. 25
Revision 20 of the PBAPS EAL scheme included EALs based upon Conowingo Pond level. The PBAPS EAL scheme based upon the NUMARC scheme did not include this EAL. Please justify

not including these EALs.