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RS-02-051

10 CFR 50 Appendix E

March 11, 2002

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

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

Subject: Response to Request for Additional Information

- References:
- (1) Letter from R. M. Krich to U. S. NRC, "Request for NRC Approval of Change in Emergency Action Level Classification Scheme," dated May 25, 2001
 - (2) Letter from R. M. Krich to U.S. NRC, "Transmittal of Clinton Power Station Emergency Action Level Information," dated July 9, 2001
 - (3) Letter from K. A. Ainger to U.S. NRC, "Response to Request for Current Clinton Power Station Emergency Action Level Classification Schemes," dated October 2, 2001

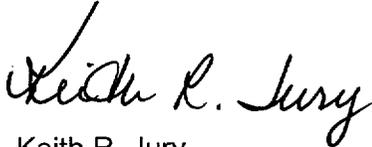
In Reference 1, AmerGen Energy Company (AmerGen), LLC submitted a request for NRC review and approval of changes in the Clinton Power Station (CPS) emergency action level (EAL) classification schemes. This initial submittal was subsequently supplemented by References 2 and 3. The NRC, in a conference call, requested additional information in support of their review of the AmerGen request. The attachment to this letter provides the requested information.

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Should you have any questions concerning this information, please contact Mr. Timothy A. Byam at (630) 657-2804.

Respectfully,

A handwritten signature in black ink that reads "Keith R. Jury". The signature is written in a cursive style with a large initial "K".

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

Attachment: Response to Request for Additional Information

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Clinton Power Station

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Question 1

General Comment

The AmerGen letter dated May 25, 2001, requesting NRC approval of the change in the Emergency Action Level (EAL) Classification Scheme for Clinton states the State of Illinois has reviewed the proposed change and found them to be acceptable. Appendix E of 10CFR Part 50, states: "These emergency action levels will be discussed and agreed on by the applicant and State and local governmental authorities and approved by NRC." Your letter does not mention the agreement of local governmental authorities. Why not?

Response 1

The Illinois Department of Nuclear Safety (IDNS) provides a technical review of the EALs as documented in Reference 1. DeWitt County Emergency Services and Disaster Agency (ESDA) is the local agency responsible for Emergency Planning in the majority of the 10-mile emergency planning zone (EPZ) around Clinton Power Station (CPS). DeWitt County ESDA has delegated their review of the EALs to IDNS and therefore our letter did not discuss agreement of the local authorities.

Question 2

RU2 and RA2

In Attachment B, of your letter, you state that CPS does not have perimeter radiation monitoring. It is available through the State of Illinois. Why did you not use it for event evaluation and classification?

Response 2

IDNS maintains a perimeter monitoring system of 16 Reuter-Stokes pressurized ion chambers as well as a real time Gaseous Effluent Monitoring System at CPS. This equipment is not used to make emergency declarations since it has not been validated to the same degree as the station radiation monitors used by CPS. In addition, the perimeter monitoring system described in this question would be a lagging indicator of a problem at the station. Other in-station radiation monitors as well as other critical parameter indications would alarm prior to radiation being detected offsite. Therefore, use of the IDNS monitoring system was determined to provide no additional value. The current CPS EALs, which are based on NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," also utilize the in-station radiation monitors for event evaluation and classification.

Question 3

RA2

Justify your value for the station total release rate. How does this release rate compare to the 500 mr/yr limit established by the Offsite Dose Calculation Manual (ODCM)? Is it consistent with the 10 mr/hr basis of the other EAL's?

Response 3

The CPS total release rate of $1.85E+06\mu\text{Ci}/\text{sec}$ is based on a release rate that would result in a dose rate of 10 millirem per hour (mrem/hr). This release rate is a factor of 10 lower than the threshold value for EAL RS1. Therefore, as stated in the technical basis

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for the RA2 sustained station total release rate, the Alert value for gaseous effluents was reduced to 10 times the ODCM value to ensure sequential classifications. The total release rate is also consistent with the ODCM value of 500 mrem/yr. The ODCM value is equivalent to 0.057mrem/hr and, in accordance with NUMARC/NESP-007, "Methodology for Development of Emergency Action Levels," 200 times this ODCM value would equal approximately 10 mrem/hr. The process used to develop the bases and sequencing of these EALs is consistent with that used for the other Exelon nuclear sites in the State of Illinois and approved by the NRC for these other sites in 1994.

Question 4

RG1 & RS1

How do the station total release rate values compare to the restricted area boundary EAL threshold values?

Justify using the restricted area boundary rather than the actual boundary.

Response 4

The station total release rate threshold value is the release rate that will result in the restricted area boundary EAL threshold values given a one hour ground level release using an annual χ/Q of $3.7E-6$. As stated in the bases for EALs RG1 and RS1, for classification and dose projection purposes the restricted area boundary is a 975 meter (i.e., 0.6 mile) radius around the plant. Since the actual restricted area boundary is not a uniform distance in all directions from the release point, a circular boundary with a 975 meter radius is used to simplify emergency classification and dose projection determinations.

Question 5

MS4

Justify not including a time limit threshold before classifying a Site Area Emergency.

Several other EALs (MU4, MU1, MS6) have no time limit thresholds. How is a transitory condition distinguished from a sustained condition?

Response 5

EALs MS4 and MU4 have been revised to include a time-limit threshold. The revised versions of these EALs are attached. Loss of all offsite power, even if it is of short duration, represents a potential degradation of the level of safety. Therefore, EAL MU1 (i.e., unplanned loss of all offsite power) does not have a time threshold. EAL MS6 has no time limit threshold since entry into this EAL would require a significant challenge to occur (i.e., loss of safety system indications with a significant transient in progress). Even if this condition were to exist for only a short time, it would represent a condition which warrants entry into a Site Area Emergency. This EAL is consistent with the NUMARC/NESP-007 methodology approved for use at the other Exelon sites within the State of Illinois.

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Question 6

MA6, MU6 & MS6

Provide justification for excluding the availability of compensatory non-alarming indications from the EAL scheme.

Response 6

EAL MS6 does not exclude the availability of compensatory non-alarming indications. If any of the indications for reactor criticality, core heat removal or fission product barrier status are available, then conditions do not warrant entry into a Site Area Emergency. EAL MA6 also recognizes the availability of the same indications as MS6. MU6 is a lower level classification and therefore, if indications are lost for greater than or equal to 15 minutes, it meets the conditions for entry into a Notification of Unusual Event.

Question 7

MU8

Provide justification for combining unidentified and identified reactor coolant system leakage. What is the basis for the modified "reasonable" values? What would the classification be if unidentified leakage was 5 gpm and identified leakage was 26 gpm?

Response 7

In accordance with Technical Specification (TS) Limiting Condition for Operation (LCO) 3.4.5, "Reactor Coolant System Operational Leakage," total reactor coolant system (RCS) leakage shall be limited to less than or equal to 30 gallons per minute (gpm) over the previous 24-hour period. EAL MU8 has a threshold value of ≥ 10 gpm unidentified RCS leakage, which is twice the TS allowable value of 5 gpm, and was selected to match the NUMARC/NESP-007 bases. The EAL total leakage threshold value of ≥ 35 gpm was selected based on the sum of the 10 gpm unidentified leakage and 25 gpm identified leakage. The example cited above (i.e., 5 gpm unidentified leakage and 26 gpm identified) would be less than 35 gpm total leakage and therefore would not result in a classification under this EAL. It would require an entry into the action statement for TS LCO 3.4.5 and therefore, under EAL MU10, a Notification of Unusual Event would be declared if the action time statement is exceeded.

Question 8

MA11

Provide the rationale for selecting 10 R/hr as the EAL threshold value. How does it compare to normal operating levels?

Response 8

Normal radiation levels in the Fuel Building are less than 1mrem/hr. As stated in the technical basis for EAL MA11, uncovering spent fuel represents a substantial degradation of the level of safety of the plant and warrants an Alert classification. Time is available to take corrective actions. Therefore, rather than classifying based on the spent fuel pool water level falling below the top of irradiated fuel a conservative radiation level has been chosen. The threshold value for entry into this EAL (i.e., 10 Rem/hr) was

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chosen conservatively as being low enough to warrant emergency actions, but high enough to allow for corrective actions to be taken prior to the need for classification.

Question 9

MU11

Provide the justification for selecting the EAL threshold value of ≤ 23 feet. Why is the limit not lower? As the EAL is written, the core could be uncovered and the event would still be an Unusual Event.

Response 9

As stated in the basis for EAL MU11, the value of 23 feet was chosen since it is the minimum level allowed by the TS. The TS requirement to maintain the spent fuel pool (SFP) water level ≥ 23 feet above the fuel assemblies in the SFP ensures that an explicit assumption in the fuel handling accident analysis remains valid. Should the SFP water level continue to drop below 23 feet, the spent fuel would eventually become uncovered. As discussed in the response to Question 8, an Alert would be declared in accordance with EAL MA11 based on a valid reading of ≥ 10 Rem/hr or a report of visual observation of a rapid decrease of water level such that irradiated fuel is predicted to become uncovered.

Question 10

HA1

Provide justification for waiting 30 minutes or more before declaring an Alert.

Response 10

As stated in the technical bases for EAL HA1, if a security event has not been brought under control by the security force within 30 minutes, it is defined as an event of increasing severity. It is assumed that once the event is determined to be credible it would be classified as a Notification of Unusual Event. Allowing 15 minutes for classification and 15 more minutes for notification yields 30 minutes. If after the initial notification is made and the event has not been brought under control, upgrading to an Alert through HA1 would then be appropriate.

Question 11

HA4

Provide a list of the buildings and structures housing safe shutdown equipment and a list of locations of equipment required for mode 4.

Response 11

A list of buildings required for safe shutdown or mode 4 is provided in the attached Table H3.

Question 12

HA5

Provide a list of structures that are covered by EAL 1 and provide justification for including these structures.

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Response 12

Table H3, referenced in the response to Question 11, also provides a list of structures covered by EAL 1. These structures have been added to the EAL because they house equipment or controls that may be used to mitigate or control a transient or accident.

REFERENCE

1. Letter from R. M. Krich to U. S. NRC, "Request for NRC Approval of Change in Emergency Action Level Classification Scheme," dated May 25, 2001

MS4

INITIATING CONDITION

Loss of vital 125 VDC power.

REAL THRESHOLD VALUE

125 VDC Battery buses 1A and 1B bus voltage ≤ 108 volts for ≥ 15 minutes.

MODE APPLICABILITY

1, 2, 3

BASIS (References)

The loss of all vital DC power compromises the ability to monitor and control plant functions required for the protection of the public and is considered a loss of those functions. A prolonged loss of control power may result in core uncovering and loss of containment integrity if there is sufficient decay heat generated by the core and sensible heat in the RCS.

The Threshold Value was chosen to recognize a loss of DC power at a voltage level low enough to be indicative of a severe control system problem. The value is high enough to provide reasonable assurance that the 125-volt batteries will last at least 15 minutes prior to reaching a designed minimum voltage of 105 volts.

MU4

INITIATING CONDITION

Loss of 125 VDC power.

REAL THRESHOLD VALUE

125 VDC Battery buses 1A and 1B bus voltage ≤ 108 volts for ≥ 15 minutes.

MODE APPLICABILITY

4, 5

BASIS (References)

The threshold value was chosen to recognize a loss of DC buses compromising the ability to monitor and control the removal of decay heat during the Modes 4 and 5. The bus voltage annunciator value is based on the minimum bus voltage necessary for the operation of safety related equipment.

The Threshold Value was chosen to recognize a loss of DC power at a voltage level low enough to be indicative of a severe control system problem. The value is high enough to provide reasonable assurance that the 125-volt batteries will last at least 15 minutes prior to reaching a designed minimum voltage of 105 volts.

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<ul style="list-style-type: none">• Containment• Secondary Containment• Control Building• Diesel Generators• Vital Switchgear and Battery Rooms• Remote Shutdown Area	<ul style="list-style-type: none">• Fuel, Aux VC, VP, VF, SGTS and VD HVAC Rooms• Shutdown Service Water Pump Rooms• Electrical Switchyard• ECCS Rooms• RCIC Rooms
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