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

February 4, 1993

MEMORANDUM FOR: James H. Sniezek
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for Nuclear Reactor Regulation
Regional Operations and Research
Office of the Executive Director
for Operations

FROM: Thomas E. Murley, Director
Office of Nuclear Reactor Regulation

Edward L. Jordan, Director
Office for Analysis and Evaluation
of Operational Data

SUBJECT: DECLARATION OF ALERT FOR LOSS OF ANNUNCIATORS

In your memorandum of December 28, 1992, you requested NRR and AEOD to evaluate the current classification for loss of annunciators and to revise the emergency classification and emergency action levels as needed.

As you know, emergency classification and emergency action level (EAL) schemes are required by 10 CFR 50.47(b)(4) and Appendix E of 10 CFR Part 50, which refers to NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Procedures," for definition and discussion of "emergency classes." That information is contained in Appendix 1, "Emergency Action Level Guidelines," of NUREG-0654, which lists the following four classes of EALs: (1) Notification of Unusual Event, (2) Alert, (3) Site Area Emergency, and (4) General Emergency. The following statement appears immediately after this list in NUREG-0654:

> The rationale for the notification and alert classes is to provide early and prompt notification of minor events which could lead to more serious consequences given operator error or equipment failure or which might be indicative of more serious conditions which are not yet fully realized. A gradation is provided to assure fuller response preparations for more serious indicators.

Appendix 1 of NUREG-0654 also contains examples of initiating conditions for each class "to form the basis for establishment by each licensee of the specific plant instrumentation readings (as applicable) which, if exceeded, will initiate the emergency class." (Pages 1-3). Those pertaining directly to loss of annunciators are as follows:

Notification of Unusual Event

Indications or alarms on process or effluent parameters not functional in control room to an extent requiring plant shutdown

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or other significant loss of assessment or communication capability (e.g., plant computer, Safety Parameter Display System, all meteorological instrumentation).

Alert

Most or all alarms (annunciators) lost.

Although NUREG-0654 does not amplify this last example of an initiating condition, in keeping with the concept of "gradation," Alert connotes a more serious condition than does Notification of Unusual Event. This "gradation" should also be reflected in the details of plant-specific EAL schemes prepared by licensees based upon NUREG-0654. This "gradation" may not always hold true, however, where a licensee simply and unconditionally incorporates into its plant-specific scheme an example of an initiating condition exactly as written in NUREG-0654.

The concept of "gradation" is evident in the following descriptions of the unusual event and alert classes found in NUREG-0654.

NOTIFICATION OF UNUSUAL EVENT	ALERT
Class Description Unusual events are in process or have occurred which indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.	Class Description Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant. Any releases expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.
Purpose Purpose of offsite notification is to (1) assure that the first step in any response later found to be necessary has been carried out, (2) bring the operating staff to a state of readiness, and (3) provide systematic handling of unusual events information and decision-making.	Purpose Purpose of offsite alert is to (1) assure that emergency personnel are readily available to respond if situation becomes more serious or to perform confirmatory radiation monitoring if required, and (2) provide offsite authorities current status information.

Guidance Recently Issued by the NRC

In August 1992, the NRC issued Revision 3 to Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," in which it endorsed guidance in NUMARC/NESP-007 (Revision 2, January 1992), "Methodology for Development of Emergency Action Levels" as an acceptable alternative method to that described in Appendix 1 to NUREG-0654. As stated in that document: "Licensees may use either NUREG-0654/FEMA-REP-1 or NUMARC/NESP-007 in developing their site-specific EAL scheme but may not use portions of both methodologies." Nevertheless, regardless of which method a licensee uses to prepare a site-specific EAL scheme, much of the general discussion and guidance in NESP-007 applies to that in NUREG-0654 and augments it. NESP-007 includes the following discussion of the difference between a Notification of Unusual Event and an Alert:

> Rather than discussing the distinguishing features of "potential degradation" and "potential substantial degradation," a comparative approach would be to determine whether increased monitoring of plant functions is warranted at the Alert level as a result of safety system degradation. This addresses the operations staff's need for help, independent of whether an actual decrease in plant safety is determined. This increased monitoring can then be used to better determine the actual plant safety state, whether escalation to a higher emergency class is warranted, or whether de-escalation or termination of the emergency class declaration is warranted. Dose consequences from these events are small fractions of the EPA PAG plume exposure levels, i.e., about 10 millirem to 100 millirem.

NESP-007 lists the following emergency action level as an example to amplify that given in NUREG-0654 for loss of annunciators as an initiating condition for an Alert:

> EXAMPLE EMERGENCY ACTION LEVEL:
>
> 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 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.

Consistent with the "gradation" concept, NESP-007 also lists the following example of an emergency action level corresponding to Site Area Emergency:

EXAMPLE EMERGENCY ACTION LEVEL:

1. The following conditions exist:

a. Loss of (site-specific) annunciators associated with safety systems.

AND

b. Compensatory non-alarming indications are unavailable

AND

c. Indications needed to monitor (site-specific) safety functions are unavailable

AND

d. Transient in progress.

Conclusion

The current guidance for treating loss-of-annunciator events in EAL schemes is adequate. In publishing Revision 3 to Regulatory Guide 1.101 endorsing NESP-007, the NRC issued the licensed power reactor community more information of value to all licensees regardless of the method they use to devise their emergency action level schemes. The admonition in Regulatory Guide 1.101 that licensees may use either NUREG-0654 or NUMARC/NESP-007 in preparing EAL schemes (but not portions of both) does not negate information and guidance that pertains to both.

Licensees may revise their emergency plans and associated EAL schemes to conform with that guidance if desired.

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