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

February 2, 1993

MEMORANDUM FOR: Bruce A. Boger, Director
Division of Reactor Controls
and Human Factors

FROM: Jared Wermiel, Chief
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Division of Reactor Controls
and Human Factors

SUBJECT: EMERGENCY ACTION LEVEL REGARDING LOSS OF ANNUNCIATION

The enclosed safety evaluation of emergency action levels (EAL) resulting from loss of annunciators is provided for your information. During the past seven and half (7 1/2) years there have been fourteen (14) events that involved loss of alarm systems. Our evaluation of these events has concluded that:

(1) Most annunciators are non-safety related and will continue to be periodically lost. The cause of the loss is equipment failures, design errors, and personnel error.

(2) Annunciators are used as an operator aid to draw operator attention to off-normal conditions and their loss does not cause a degradation in the level of safety of the plant.

(3) The information provided by the annunciators is provided by other control room safety-related instruments e.g. Reactor Protection, Engineered Safety Features, and Post Accident Monitoring systems, and non-safety related instruments (plant computer, alarm printer, SPDS, etc.).

(4) Emergency procedure guidance does not call for operator reliance on annunciators to take action. In most plants, neither the plant specific Emergency Operating Procedures nor operator response guidance rely upon annunciators to trigger further action.

(5) Certain indicators such as, Post Accident Monitoring (PAM) and Control Rod Position Indication are important and require proper coordination with the Emergency Procedures.

(6) In the event of a reactor trip or other transients that challenge the plant, so many annunciator alarms go off within such a short period of time that operators do not try to respond to all of them. Instead, they rely upon safety-related control room instrumentation to monitor the functioning of safety-related systems and for deciding what manual action to take.

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(7) The declaration of an Alert or higher level emergency for loss of annunciators which are not required for safe shutdown or operation of the plant, appears to be inappropriate when considering the possible public alarm and unwarranted activation of emergency;y response facilities and personnel. The Nuclear Management and Resources Council, Inc. (NUMARC) proposed declassification of EAL for loss of annunciators, endorsed by NRC Regulatory Guide 1.101, Revision 3, is an appropriate change, in that loss of annunciators should only be part of an EAL.

Our recommendations regarding loss of annunciators are as follows:

(1) Licensees should have abnormal procedures covering loss of annunciators and should provide operator training regarding this loss.

(2) When a plant has a loss of annunciators, the licensee should; (1) increase surveillance of key parameters, and (2) stop all routine surveillance, maintenance activities, and power level changes to preclude possible initiation on of a plant transient while the annunciators are being repaired.

(3) In plants where the Emergency Operating Procedures rely upon the annunciators to trigger further action, the procedures should either be modified to remove that reliance consistent with approved emergency procedure guidance, or the annunciators should be upgraded to safety grade.

Enclosure 1 is our evaluation regarding the above subject.

Original signed by

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Enclosure:
As stated

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