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 RECIP. NAME: KNIGHTON, G. W. RECIPIENT AFFILIATION: Licensing Branch 3

SUBJECT: Requests that svc list for all related matls be revised to list JA sanford as State of NC consel of record.

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October 14, 1985

George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Carolina Power & Light
Shearon Harris, Unit 1
Docket No. 50-400

Dear Mr. Knighton:

This is to request that the service or carbon-recipient list for all materials pertaining to this docket be revised as follows: by substitution of "Jo Anne Sanford, Special Deputy Attorney General" for "M. David Gordon, Associate Attorney General" as the counsel of record for the state of North Carolina.

Thank you for your assistance.

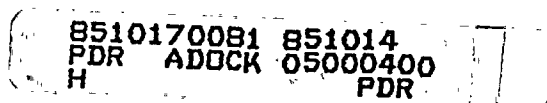
Very truly yours,

LACY H. THORNBURG
Attorney General

Jo Anne Sanford (at)

Jo Anne Sanford
Special Deputy Attorney General

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

FEB 06 1987

50-400

MEMORANDUM FOR: Chairman Zech
Commissioner Roberts
Commissioner Asselstine
Commissioner Bernthal
Commissioner Carr

FROM: Victor Stello, Jr.
Executive Director for Operations

SUBJECT: NIGHTTIME EMERGENCY NOTIFICATION

This memorandum responds to the Chairman's August 7, 1986 request (Enclosure 1) that the staff provide a point-by-point response to the subject generic safety concerns outlined in a May 16, 1986 letter from the Shearon Harris Licensing Board (SHB). The Chairman requested a staff recommendation on whether Commission rules or guidance documents need revision or clarification. The Chairman also requested the staff to respond to a related concern on the adequacy of alert systems during stormy winter nights. This concern was raised by the SHB and by members of the Indian Point Licensing Board.

The staff and the Federal Emergency Management Agency (FEMA) had responded to earlier related issues on nighttime emergency notification in December 11, 1985 and February 24, 1986 memorandums to the Commission.

The FEMA response to the latest nighttime emergency notification issues is contained in a December 11, 1986 letter (Enclosure 2). What follows is a point-by-point response to the May 16, 1986 SHB letter primarily using the information in the FEMA letter. The winter nighttime alerting issue raised by members of the Indian Point Licensing Board is identical to Issue #3 below raised by the SHB.

Issue 1: The SHB is concerned about the adequacy of the FEMA standard for judging nuclear power plant siren systems under winter nighttime conditions. The standard requires a minimum sound level of 60 dB outdoors throughout the emergency planning zone (EPZ). This criterion is based on summer daytime conditions which are considered a time least favorable for sound propagation. However, the board views this standard as inadequate because nighttime conditions are least favorable for actually alerting people.

Response: As stated in the summary of its letter, FEMA currently makes its determination regarding the adequacy of the prompt alert and notification systems based on the standards and criteria set forth in NUREG-0654, Appendix 3, and

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492-7290

FEMA-REP-10, "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants," a document which further clarifies the acceptance criteria. FEMA-REP-10 requires that the siren systems be designed to produce certain minimum outdoor sound levels based on summer daytime weather conditions. Summer is the time least favorable for outdoor sound propagation; therefore, systems designed against this standard are reasonably conservative. FEMA believes that the daytime condition is the situation that is more critically dependent on a high percentage alert of the EPZ population within about 15 minutes because this is the time when individuals are more likely to be out of doors, thus increasing their potential for exposure.

Elaboration on why nighttime alerting is not as important as daytime alerting is contained in FEMA's response to Issue #3 below.

Issue 2: The SHB is concerned with the staff position that a 90 percent alerting level meets the Commission's requirement of essentially 100 percent alerting in the first 5 miles of the EPZ. The SHB held that "essentially 100 percent" means a notification system capable of alerting greater than 95 percent of the EPZ residents in the first 5 miles. The SHB held that the 91 percent level expected for the Shearon Harris sirens and informal alerting was insufficient; however, the addition of tone alert radios raising the alerting level to 98 percent was satisfactory.

Response: "Essentially 100 percent" is not a requirement; rather, it is the design objective in the guidance in NUREG-0654/FEMA-REP-1, Rev. 1. The requirement for the coverage of alert and notification systems is contained in 10 CFR Part 50, Appendix E, Section III.D.3. as follows:

The design objective of the prompt public notification system shall be to have the capability to essentially complete the initial notification of the public within the plume exposure pathway EPZ within about 15 minutes. The use of this notification capability will range from immediate notification of the public (within 15 minutes of the time that State and local officials are notified that a situation exists requiring urgent action) to the more likely events where there is substantial time available for the State and local governmental officials to make a judgement whether or not to activate the notification system. Where there is a decision to activate the notification system, the State and local officials will determine whether to activate the entire notification system simultaneously or in a graduated or staged manner. The responsibility for activating such a public notification system shall remain with the appropriate governmental authorities.

In its letter, FEMA points out that the difference between the predicted alerting levels of 91 percent and 95 percent within 5 miles for Shearon Harris means approximately 24 homes. FEMA further states that because it is unlikely

that the entire 5-mile area would be exposed to the plume in the first 15 to 30 minutes under most accident scenarios, it is about 1/4 of the unalerted population that would actually be at risk. FEMA believes that the design of the Shearon Harris alert and notification system meets the intent of the Commission regulations without the enhancement of tone-alert receivers.

Second, FEMA believes that the flexibility implied in the phrase "within about 15 minutes" in 10 CFR Part 50, Appendix E is pertinent to the issue of judging alert and notification systems. FEMA points out that, while most alert and notification systems for commercial nuclear power plants rely primarily on sirens to alert the population, most plans call for backup notification by police, fire, and other emergency vehicles. Further, sirens would continue to operate beyond the original 15 minutes. FEMA believes that repeated sounding of the sirens in conjunction with the backup systems would provide an effective means of alerting the fraction of the population not initially alerted. FEMA's interpretation of the design objective terminology in 10 CFR Part 50, Appendix E is to assure that the system provides coverage of the population through primary means within 15 minutes with sufficient backup capability to complete the coverage of the non-alerted population as soon as possible thereafter. FEMA finds this interpretation consistent with the supplementary information in the final rule on emergency planning (45 FR 55402) where "The Commission recognized that not every individual would necessarily be reached by the actual operation of such a system under all conditions of system use." FEMA further explains that its interpretation is reinforced by two statements in NUREG-0654/FEMA-REP-1, Appendix 3:

- 1) The design objective does not, however, constitute a guarantee that early notification can be provided for everyone with 100 percent assurance or that the system when tested under field conditions will meet the design objectives in all cases.
- 2) Special arrangements will be made to assure 100 percent coverage within 45 minutes of the population who may not have received the initial notification within the entire plume exposure EPZ.

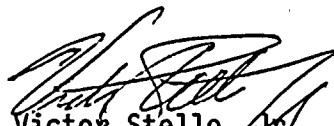
Finally, FEMA believes that the SHB decision, which prescribed greater than 95 percent alerting level within 5 miles of the site in 15 minutes, appears to be an extreme interpretation of the intent of the Commission's requirement in 10 CFR Part 50, Appendix E.

Issue 3: The SHB is concerned about winter nighttime alerting. The SHB estimated that 70-85 percent of the Shearon Harris EPZ residents would be alerted within 15 minutes on a snowy winter night, a condition viewed by the SHB as not meeting the "essentially complete" regulatory requirement. (The Indian Point Licensing Board raised a similar concern estimating that only 73 percent of the EPZ residents at Indian Point would be alerted within 15 minutes

on a snowy winter night.) The SHB states in conclusion that the practical effect of the FEMA and NRC staff positions on nighttime alerting based on sirens and informal alerting are that (1) in the summer, about 10 percent of the people will not be alerted in 15 minutes (more in hot climates) and (2) in the winter in cold climates, 15-30 percent of the people will not be alerted in 15 minutes. The SHB proposed that if the Commission agrees that such alerting levels are acceptable and correspond to an absence of undue risk in the first 5 miles of an EPZ, then the present regulatory standard of essentially 100 percent alerting should be changed. If not, the board recommends that existing siren systems be reviewed against appropriate technical and legal standards and supplemented, if necessary.

Response: FEMA agrees that the regulatory language should be clarified and, if necessary, changed. FEMA points out that individuals failing to hear sirens because they are sleeping indoors would already be sheltered and that structures providing shelter in cold climates would provide greater shielding and prevention from intrusion (of particulates) than those in hot climates. FEMA states that, for the most likely protective action recommendation of sheltering during stormy winter nights, there would be virtually no additional risk to the non-alerted population because they are sheltered. For the more unlikely protective action recommendation of immediate evacuation, FEMA questions whether dose savings would result from alerting 95 percent versus the 70 to 85 percent of the population in the first 15 minutes in light of the total time required to evacuate residents during inclement winter nighttime conditions. Where a precautionary evacuation would be recommended before an impending release, those who may not have heard the sirens initially could still be alerted in time to complete an orderly and effective evacuation. Finally, FEMA states that for either protective action, shelter, or evacuation during inclement winter nights, it is unlikely that enhancements to the alert system would substantially increase the overall effectiveness of the emergency response.

The NRC staff agrees with the FEMA analysis in Enclosure 2 and the staff believes that the alert and notification system guidance in NUREG-0654/FEMA-REP-1, Rev. 1, should be revised to indicate the sufficiency of the guidance in FEMA-REP-10; i.e., that siren systems should be designed to have a minimum sound level of 60 dB outdoors (summer daytime) throughout the plume exposure pathway EPZ.


Victor Stello, Jr.
Executive Director
for Operations

Enclosures:

1. Memo to EDO from Chairman
dtd. 8/7/86
2. Memo to Jordan from Krimm
dtd. 12/11/86

cc: SECY, OGC

The Commissioners

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