ANS Issues Clarification on ANSI/ANS-8.3-1986, "Criticality Accident Alarm System."
(*Nuclear News*, October 1997)

Inquiry:

"Section 4.4.3 of ANSI/ANS-8.3-1986 states the following: 'The signal generator should produce an overall sound pressure level which is not less than 10 dB above the overall maximum typical ambient noise level, and in any case not less than 75 dB (referenced to 20 mN/m^2) at every location from which immediate evacuation is deemed essential.'

1) Was the intent to make the 75 dB a minimum requirement?

2) Is the statement "in no case less than 75 dB" intended to be a "shall"?

3) Does the "should" at the beginning of this paragraph define the entire paragraph as a recommendation?

4) Is the recommendation intended to be applicable only to "not less than 10 dB above the maximum typical ambient noise level?"

Response:

The use of the word "should" and the single-sentence structure of Section 4.4.3 indicate that all of Section 4.4.3 is a recommendation. Thus, the answer to question 3 is "yes" and the answer to each of the remaining questions is "no."

The consensus values recommended by Section 4.4.3 seem reasonable considering the following:

- Human speech may range up to 75 dB, but averages considerably less; the alarm signal should not easily be masked by conversation.

- A differential of 10 dB represents a factor of 10 change in sound intensity. Assuming that the evacuation signal is 10 dB greater than the ambient noise level, the alarm should be readily heard.

Section 4.4.3 is not presented as a requirement, since such would necessitate an impractical number of sound pressure measurements ("at every location") to verify compliance.

The true requirement of the standard in this regard is given in Section 4.4.1: "the alarm signal shall be … of sufficient volume and coverage to be heard …"

Section 6.4 states that "Field observation shall establish that the signal is audible above background in all areas to be evacuated." Although sound measurement devices can be used to augment such observations, they (the devices) are not required by the standard.