UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:
Sheldon J. Wolfe, Chairman
Emmeth A. Luebke
Dr. Jerry Harbour

In the Matter of	
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE, ET AL. (Seabrook Station, Units 1 and 2)	Docket No.(s) 50-443/444-OL-1 On-site EP October 11, 1988

ANSWER OF MASSACHUSETTS ATTORNEY GENERAL IN OPPOSITION TO APPLICANTS' MOTION FOR SUMMARY DISPOSITION OF AMENDED CONTENTION ON NOTIFICATION SYSTEM

Pursuant to 10 C.F.R. § 2.749(a), the Massachusetts Attorney General ("Mass AG") submits this Answer, a Statement of Material Facts in Dispute and the accompanying affidavits of Thomas G. Bouliane, Nancy A. Mason and Stephen A. Jonas in opposition to the Applicants' motion for summary disposition of the Amended Contention on Notification System ("siren contention").

The Applicants argue, employing no fewer than thirteen affidavits, that not a single material fact remains in dispute. Without much difficulty, however, the Board will find numerous disputes concerning the ability of the VANS systems and its airborne backup to meet applicable regulatory

requirements. First, at required sound pressure levels, the system will fall far short of providing coverage for essentially 100 percent of the population in the Massachusetts EPZ. Second, several of the acoustic locations are physically inaccessible to the VANS trucks. Third, several of the VANS acoustic locations cannot be activated within the required fifteen minutes even under unrealistically optimistic conditions. Fourth, the rotation of the speaker assembly will cause non-uniform sound levels and coverage problems inconsistent with regulatory requirements. Finally, the airborne backup system cannot be found to cure any of these deficiencies.

Material submitted by the Applicants in support of their motion either supports the Mass AG's conclusions or is insufficient, in the face of the materials submitted herewith by the Mass AG, to warrant summary disposition. Therefore, the Board should deny the Applicants' motion for most of the bases it addresses.

STANDARD FOR SUMMARY DISPOSITION

Summary disposition is only authorized "where it is quite clear what the facts are" and the moving party is entitled to judgment as a matter of law. 10 C.F.R. § 2.749(d); Pacific Gas & Electric Co. (Stanislaus Nuclear Project, Unit 1), LBP-77-45, 6 NRC 159, 163 (1977). "[I]n order to grant a motion for summary disposition, the record before [the Licensing Board]

must demonstrate clearly that there is no possibility that there exists a litigable issue of fact." Washington Public Power Supply System (WPPSS Nuclear Project No. 2), LBP-79-9, 9 NRC 330, 340 (1979).

The movant carries the burden of proving the absence of any genuine issue of material fact. Cleveland Electric Illuminating Co. (Perry Nuclear Power Plant, Units 1 and 2), ALAB-443, 6 NRC 741, 753 (1977).[1/] Moreover, the record is to be reviewed in the light most favorable to the opponent of the motion. Dairyland Power Cooperative (La Crosse Boiling Water Reactor), LBP-82-58, 16 NRC 512, 519 (1982).

Judging against these standards, most of the Applicants' motion must be denied.

BASIS BY BASIS RESPONSES

Basis A.1

> The VANS and the New Hampshire fixed sirens because of their locations, height, acoustic range and number, do not provide tone or message coverage for essentially 100 percent of the population in the Massachusetts plume exposure pathway EPZ at the sound pressure levels required in NUREG-0654 and FEMA-REP-10.

The Applicants claim that Basis A.1 is "put to rest" because their VANS system does not and need not provide informational and instructional messages and because Wyle Laboratories has determined that essentially 100 percent of the

---

1/ That burden exists even if no party opposes the motion. Cleveland Electric, supra, 6 NRC at 753-754.

population in the Massachusetts portion of the EPZ will be covered. Applicants' Brief at 3-5. Neither claim withstands scrutiny.

With respect to the message mode, the Mass AG filed a Motion to Amend Bases on September 8, 1988 which addresses the Applicants' claim that the VANS system need not provide instructional messages for the beach population. The Mass AG contends that the educational efforts relied upon by the Applicants to inform the population to tune into a particular radio station upon hearing an alerting tone are insufficient for transient beachgoers many of whom will not have radios. The Motion to Amend Basis has been fully briefed and is awaiting the Board's decision.

With respect to tone alert coverage, the Applicants' experts proceed from a faulty, crucial assumption. They assume that it is acceptable for each VANS siren to put out 134dB(C) of sound output. Their calculations are based on that output. Stusnick Affidavit, ¶ 8; Attachment E, 6 and 7 of 10. They also acknowledge, based on their own calculations, that the maximum sound level received by members of the public will be 131dB(C). Applicants' Brief at 4 n.3; Sutherland Affidavit, ¶ 5.[2/]

2/ There are genuine issues of material fact whether this calculation underestimates the sound level received by members of the public. See Affidavit of Thomas Bouliane, attached hereto, ¶ 24; discussion regarding Basis A.7, infra.

However, NUREG-0654, FEMA-REP-1, Rev. 1 states that "[t]he maximum sound levels received by any member of the public should be lower than 123db, the level which may cause discomfort to individuals." NUREG-0654, Appendix 3 at 3-8. The Applicants have far exceeded this limit in order to squeeze additional coverage from their limited number of sirens.[3/] If the sound level is limited to the acceptable 123dB(C) level, coverage falls off sharply and leaves a substantial portion of the Massachusetts EPZ unprotected by an alert and notification system. Bouilane Affidavit, ¶ 31, Appendices 9 and 10. Therefore, genuine issues of material fact exist whether the VANS system provides the required sound coverage in the Massachusetts EPZ. Summary disposition on Basis A.1 should be denied.

Basis A.2

> The Applicants are legally prohibited under local ordinances from operating their six staging areas and their VANS vehicles at the pre-selected acoustic locations. The specific laws and the ordinances can be identified when the Applicants disclose the acoustic locations and staging areas.

Having reviewed the arguments made by the Applicants, the Mass AG withdraws Basis A.2.

3/ They have gone to extraordinary lengths in an attempt to justify this departure. See Applicants' Brief at 29-31; Keast, Kryter, Sutherland, Faix Affidavits. Those justifications are inadequate or, at best for the Applicants, raise genuine issues of material fact. See discussion of Basis A.7, infra

Basis A.3

> The fourteen VANS locations are physically inaccessible to the VANS equipment.

The Applicants ask for summary disposition on Basis A.3 based on the personal observations of a Seabrook employee, Joseph Story, II.

While those observations are sufficient to allow summary disposition with respect to acoustic locations VL-02 and VL-13, they do not dispose of factual issues remaining for VL-03, VL-06, VL-07 and VL-12.

On October 3, 1988, Nancy Mason, an investigator of the Mass AG revisited VL-03, VL-06, and VL-12 and made measurements of those areas to determine their accessibility to VANS equipment. The Ford Series F-800 truck is 95 inches wide, and the outriggers extend approximately 5 feet from the truck on each side. Mason Affidavit ¶ 3; Bouliane Affidavit ¶ 32, Appendices 11 and 12. With outriggers extended, a VANS truck parked at the side of the road at VL-12 will extend at least 6 feet into the road. See Mason Affidavit, ¶ 6.

Moreover, the Applicants acknowledge that VL-06 and VL-07 are inclined where the trucks would set up. Story Affidavit ¶¶ 11 and 12. While they characterize those inclines as slight or negligible, photographs taken by the Mass AG indicate otherwise, see Mason Affidavit, Exhibits C through H, and, in any event, the crane manufacturer's instructions are clear and unequivocal "do not use this equipment except on solid, level

surface", and that the "crane must be level for operation." Bouiliane Affidavit ¶ 32, Appendix 13; see Johnson Affidavit Attachment C, 2 of 2.[4/]

Finally, the Applicants appear to have made no provision for acoustic location accessibility during the wintertime. Locations VL-06, VL-07 and VL-12 are simply unpaved roadsides. Those locations would be blocked by snowpiles in the wintertime, leaving only the unacceptable alternative of parking the VANS trucks in the middle of a lane of traffic and blocking traffic.[5/] The Applicants also have not indicated that the dirt road leading to VL-03 will be accessible from the main road during the wintertime. See Mason Affidavit ¶5.

In short, factual issues remain on Basis A.3.

Basis A.4

> The VANS vehicles are inadequate for their intended use. The vehicles cannot withstand and will not operate properly with the weights, amount and nature of equipment intended to be

4/ Another factual issue is raised by the observation that the grass and dirt surface of VL-12 is uneven, again suggesting operation inconsistent with the manufacturer's specifications. Mason Affidavit ¶ 6.

5/ Snowfall amounts which would require plowing are indicated at page 6 of the Harper Affidavit and Attachment B, 11 of 12 of the Johnson Affidavit. The latter indicates that "[t]he ground is normally covered with snow from late December until well into March" and "[a] continuous snow cover of at least one inch lasts 30 to 45 days in a usual winter...." According to the National Weather Service at Concord, New Hampshire snow cover of at least one inch has existed for 65 to 109 days per year for the years 1983 through 1988. Mason Affidavit ¶9.

carried by the vehicles. The weight distribution with the siren fully extended will cause the equipment to fall and/or the lifting mechanism to bend or break under heavy wind or precipitation conditions. Moreover, the telescopic crane will not reliably lift the siren to its fully extended position because of the weight of the siren and the capacity of the crane.

The Mass AG cannot dispute the affidavits presented on Basis A.4.

Basis A.5

> The time needed for driver alert, dispatch, route transit, setup and activation in accordance with NRC regulations will exceed 15 minutes for many of the VANS vehicles in optimum weather conditions. The reasons for this include the time required to get vehicles on the road (which itself includes the time required to notify the driver, have the driver proceed to the vehicle, check out the vehicle and equipment, start the vehicle and leave the staging area, along with other vehicles at the staging area), the distance to be traveled, the traffic that will be encountered, the setup time and the need for both alert signal and message capability within the 15 minute period. In poor weather, heavy traffic, and nighttime conditions the times needed to accomplish these tasks will increase.

The Applicants' motion with respect to Basis A.5 is based on six affidavits. However, instead of establishing that without factual dispute the VANS system meets the 15 minute regulatory requirement, those affidavits may well conclusively establish that it does not. At the very least, significant factual disputes remain for hearing.

The 15 minute time requirement appears at 10 C.F.R. Part 50, App. E IV.D(3):

> 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 judgment whether or not to activate the public notification system.

NUREG-0654 sets forth what it describes as the "minimum acceptable design objectives" for the system:

> a) Capability for providing both an alert signal and an informational or instructional message to the population on an area-wide bases throughout the 10 mile EPZ, within 15 minutes.
>
> b) The initial notification system will assure direct coverage of essentially 100% of the population within 5 miles of the site.
>
> c) Special arrangements will be made to assure 100% coverage within 45 minutes of the population who may not have received the initial notification within the entire plume exposure EPZ.

Id. App. 3 at 3-3. As the Applicants acknowledge with their repeated calls for regulatory "flexibility," see Applicants' Brief at 19-20, 23, 25, the VANS system does not meet these objectives.

To correspond with the Applicants' analysis, the Mass AG will treat each of the components of the activation sequence separately.

1. Driver Alert

Gary Catapano describes an elaborate electronic notification system from the initial call from the Seabrook Control Room Communicator to the NHY Offsite Response EOC Contact and then on to the staging areas either electronically or by radio or telephone. Catapano Affidavit ¶¶ 3-13. Catapano concludes that "[t]he entire process for activation and electronic polling of the staging areas should occur in less than 10 seconds." Id. ¶ 12.

This conclusion is based on pure speculation and is entitled to no weight from the Board. First, the system is not constructed and has not been tested because it does not appear that any staging areas have been built. Transcript of Desmarais Deposition at 85-86, Exhibit A to the attached Jonas Affidavit.

Understandably, the Applicants are optimistic about their system, but that is no substitute for testing under realistic conditions. FEMA-REP-10 addresses precisely this sort of unsupported optimism in describing the requirements for mobile siren vehicles. According to FEMA, the design report must include the calculations verifying that the 15 minute requirement is met. "Such calculation should include conservative estimates of the time required to execute any necessary procedures, [and] to obtain or position any necessary equipment . . . ." Id. at E-11 (emphasis added). Without apparently any test runs and without the system even being

constructed, the Applicants' 10 second conclusion is not conservative and is little more than a guess.[6/]

Even if the Board were to credit Applicants' conclusion, the 10 second period, on its own terms, does not complete the driver alert phase. Activation and electronic polling theoretically will be complete in 10 seconds. After that, however, the following actions would be taken:

> 1) Activation of audible alarm devices designed for audible alerting purposes.
>
> 2) Activation of visual alarm devices.
>
> 3) Activation of public address system cross-patch allowing the EOC Contact to transmit an audible message to each staging area. This message could be used to provide additional information to the staging area.
>
> 4) Opening of garage doors at staging area.
>
> 5) Activation of an all building lights-on command.

Catapano Affidavit ¶ 10. These actions will not begin until after the 10 second period concludes and will add additional time to the driver alert phase. Because apparently the staging areas have not been built and the relevant activation equipment has not been installed, the Applicants cannot and have not attempted to calculate the period for these actions. Plainly,

---

6/ The Applicants recognize that radio or telephone voice contact may be necessary if the electronic activation fails. Catapano Affidavit ¶9. They have not estimated a time period for that contact but it would not start until electronic activation failed and would plainly take considerably longer than electronic contact. Moreover, the Applicants did not estimate a failure rate, presumably again because the system is not in place and cannot meaningfully be tested.

however, the total time calculations at page 27 of their brief are understated and hardly conservative.[7/]

2. Dispatch

Once again, the Applicants have ignored the requirement for conservative calculations. Dispatch time calculations reached a maximum of 53.35 seconds. Beard Affidavit ¶ 7. Yet, the Applicants use the average time of 38.98 seconds. Particularly given the fact that the staging areas apparently have not been constructed and the test runs were taken under staged, optimum conditions, conservatism dictates at least using the maximum time observed.

3. Route Transit

The Applicants have constructed a 10 minute time limit for this part of the siren activation procedure and run a number of test runs to verify compliance with the 10 minute limit. The Applicants believe they comply although they have cut it close, claiming that without such "anomalies" as traffic delays and snow in the winter the notification sequences will be completed

---

7/ The audible, visual and public address activations are important functions. Because only 16 VANS drivers will be available at any one time for the 16 VANS routes, see Desmarais Affidavit ¶35, and because these drivers will in essence be playing a necessary but interminable "waiting game," some provision must be made for the reality that at any particular time drivers will be in different states of readiness for an alert signal. All of these methods may well be needed for the driver to actually receive the notification. But these methods take time to implement, and particularly given the mandated conservation in calculating time periods, the Board should not permit the Applicants simply to ignore the additional time.

for all but 1 acoustic location (VL-16) in 14 minutes and 50 seconds.

During the wintertime, however, the Applicants acknowledge that average transit times will exceed 10 minutes at 7 of the 16 acoustic locations. (VL-01, VL-09 to VL-13, VL-16). Lieberman Affidavit at 6. Even these figures, which already exceed the regulatory objective, are overly optimistic. While the Applicants claim that these winter conditions occur 5.5% of the time, see Applicants' Brief 24; Harper Affidavit at 6, in fact they occur considerably more frequently. The Harper Affidavit listed only the days in which snow fell during the year. Id. It did not calculate the number of days on which snow or icy road conditions existed, the relevant figure for calculating wintertime route transit times. Continuous snow coverage of at least one inch lasts 30 to 45 days, or 8% to 11% of the time, in a usual winter in the area. Johnson Affidavit, Att. B, 11 of 12.[8/]

The Applicants' answer to their acknowledged inability to meet the 15 minute requirement is to plead for flexibility. Applicants' Brief 18-20, 22-23, 25. They play two variations on that theme:

> a) the 15 minute period does not apply strictly to the EPZ population between 5 and 10 miles from the plant; and

8/ If the Concord, New Hampshire figures are used, snow coverage exists for 65 to 109 days, or 17% to 29% of the year. Mason Affidavit ¶9. Of course, just as snowfall is not an accurate indication of snow covered roads, neither is snow cover on the ground. The relevant figure lies somewhere in between. The Board need only note the factual issue.

b) a utility plan calls for flexibility.

Neither has merit.

NUREG-0654 states that initial notification will "assure direct coverage of essentially 100% of the population within 5 miles of the site" while "[s]pecial arrangements will be made to assure 100% coverage within 45 minutes" of the remainder of the EPZ population. NUREG-0654, App. 3 at 3-3. The Applicants claim that this sanctions flexibility and, therefore, their inability to meet the 15 minute time standard should be excused.

However, the design objectives are written as they are because the NRC and FEMA recognized that sounding the tone alert and issuing the message within 15 minutes would not guarantee that essentially 100% of the population would be reached. In the ordinary situation, fixed pole sirens, tone alert radios and mobile sirens, see FEMA-REP-10 at E-6 to E-15, would be the primary means for alert and notification but additional methods might be necessary to ensure that those who do not receive the signal and message from the primary system would receive them from another source. NUREG-0654, App.3 at 3-3 (entire EPZ to be covered on "area wide basis" within 15 minutes). Within 5 miles, the initial notification system must reach essentially 100% of the population. However, largely because of the costs associated with secondary methods, they need only work within 45 minutes for the area from 5 to 10 miles from the plant. Id. (Special arrangements will be made

to assure 100% coverage outside of 5 miles in 45 minutes for those "who may not have received" initial notification).[9/] In other words, the primary alerting methods must be capable of implementation throughout the EPZ within 15 minutes. Those methods, in conjunction with any secondary methods, must assure 100% coverage within 5 miles within 15 minutes. Any secondary methods for the area beyond 5 miles must be capable of implementation within 45 minutes.

Viewed in its proper context, the regulatory "flexibility" invoked by the Applicants is of no aid to them. Their initial notification system, in the form of VANS trucks, cannot be implemented to provide "area wide" coverage within 15 minutes much less assure direct coverage of 100% of the 0-5 mile population within that time frame. As they acknowledge for 7 of 16 acoustic locations in the wintertime and as the Mass AG can demonstrate for up to 9 of 16 acoustic locations year round, see discussion of Basis A.5, part 5, infra, area wide coverage will not occur within 15 minutes.

Moreover, even if the Board were to accept the Applicants skewed reading of the design objectives, the conclusion would be the same. Several of the problem acoustic locations (VL-01, VL-12, VL-13) are within 5 miles of the plant. Therefore, the

---

9/ See FEMA-REP-10 at E-15, 16 (special alerting methods may be more "cost effective" than primary methods and can be used to supplement primary methods but must meet 15 minute requirement in 0-5 mile area and 45 minute requirement in 5-10 mile area).

45 minute flexible design objective could not possibly apply to them in any event.

The pleas for utility plan flexibility are equally unavailing. The new rule on NRC consideration of utility plans applies the same planning standards to utility plans as exist for governmental plans. See 52 Fed. Reg. 42078 (November 3, 1987). The flexibility mentioned in Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), CLI-86-13, 24 NRC 22, 30 (1986) refers only to the Commission's conclusion that LILCO could employ the assumption that the LILCO plan would be followed by the state and local governments. The Commission never addressed whether the ability of a particular utility plan to meet specific regulatory objectives would be viewed flexibly.[10/]

4. Setup of Sirens

The Mass AG does not dispute the one minute set up time postulated by the Applicants. The Board should note, however, that this assumes that the setup time ceases and siren activation begins when the crane is only partially extended -- to a 25 foot height. See Sutherland Affidavit ¶¶ 5, 6; Beard Affidavit ¶ 6.

10/ Should the Applicants again raise the issue, the Board should reject any argument that flexibility is appropriate because Massachusetts' governments "destroyed" their fixed pole siren system. See PSNH ALAB 883; Public Service Co. of New Hampshire v. Town of West Newbury, 835 F.2d 380 (1st Cir. 1987).

5. Siren Sounding

The Mass AG does not dispute that the Applicants intend to sound the siren for a 3 minute period. However, they ignore completely the regulatory requirement of "[c]apability for providing both on alert signal and an informational or instructional message" within 15 minutes. NUREG-0654, Appendix 3 at 3-3 (emphasis added). "Within the plume exposure EPZ the system shall provide an alerting signal and notification by commercial broadcast (e.g., EBS)...." Id.

Conspicuously absent from the Applicants' conclusion that they can complete initial notification in the non-winter months in 14 minutes and 50 seconds is any accommodation for EBS or other instructional messages. See Applicants' Brief at 27.[11/] The EBS messages drafted by the Applicants in the SPMC would require a considerable amount of time to read. The initial EBS message used in the June 28-29, 1988 exercise took slightly over two minutes to read. Jonas Affidavit, Exhibit B. Therefore, the Board should add a minimum of 2 minutes to any calculation of VANS system activation times.

With additions over the Applicants' calculations at page 27 of their Brief of 2 minutes for instructional messages, 30 seconds for driver alert and 15 seconds for driver dispatch:

11/ The Applicants rely on the EBS radio network for providing information and instructional messages. Desmarais Affidavit, Att. D, 3 of 23.

a) the following acoustic locations will exceed the 15 minute requirement based on the Applicants' average route transit times as indicated in Table 2 of the Desmarais Affidavit: VL-01 at 16:31; VL-12 at 16:07; VL-13 at 15:48; VL-16 at 19:17;

b) the following acoustic locations will exceed the 15 minute requirement based on the Applicants' maximum route transit times as indicated in Table 2 of the Desmarais Affidavit: VL-01 at 24:42; VL-03 at 15:40; VL-08 at 17:06; VL-09 at 16:58; VL-10 at 16:08; VL-11 at 16:10; VL-12 at 17:15; VL-13 at 16:28; VL-16 at 20:59; and

c) the following acoustic locations will exceed the 15 minute requirement based on the Applicants' average wintertime route transit times as indicated at page 6 of the Lieberman Affidavit: VL-01 at 18:59; VL-03 at 16:02; VL-08 at 16:11; VL-09 at 17:51; VL-10 at 17:54; VL-11 at 18:20; VL-12 at 18:57; VL-13 at 18:12; and VL-16 at 23:53.

In short, the Applicants' system cannot meet the 15 minute requirement and they are not entitled to summary disposition on Basis A.5.[12/]

Basis A.6

Snow, icy and extreme cold weather conditions will impede extension of the sirens to their operational position, rotation and oscillation of the sirens during the tone and message modes and operation of the sirens themselves.

12/ The Applicants plan to "activate the VANS concurrent with the EBS activation." Desmarais Affidavit, Att. D, 6 of 23. However, as stated in NUREG-0654, "[a] system which expects the recipient to turn on a radio receiver without being alerted by an acoustic alerting signal or some other manner is not acceptable." Id. Appendix 3 at 3-3. In other words, assuming the siren alert will issue at all locations at once, the EBS message must be broadcast after the last VANS truck sets up and the signals are issued. Therefore, EBS message length must be added to the VANS activation times to determine whether the Applicants meet the regulatory standard. As described above, they have not done so.

The Mass AG does not have information available to him to dispute the assertions made by the Applicants.

Basis A.7

> At a sound level of 134 dBC anyone within 100 feet of the siren during its operation will suffer severe hearing damage.

As the Applicants recognize, see Applicants' Brief at 29-30, Basis A.7 derives from the instruction in NUREG-0654 that, "[t]he maximum sound levels received by any member of the public should be lower than 123 db, the level which may cause discomfort to individuals. Id. Appendix 3 at 3-8.

Because their system will exceed the 123 dB limit, the Applicants offer the affidavits of David N. Keast and Karl D. Kryter for the proposition that the limit does not mean what it says and in any event should be disregarded here. As the "principal author" of FEMA Publication No. CPG 1-17 [13/] from which the 123 dB limit in NUREG-0654 is taken, Mr. Keast offers his own second-hand regulatory intent for the requirement. He concludes that the Applicants' system, unlike the one from which the requirement arises, has unique characteristics making it safe to operate at 134 dB. Keast Affidavit ¶ 9. Dr. Kryter concludes that the VANS system would cause neither permanent hearing damage nor temporary hearing

---

13/ FEMA Publication No. CPG 1-17 does not list a "principal author" and Mr. Keast's name does not appear in the publication. See Exhibit C to Jonas Affidavit.

loss. Kryter Affidavit ¶¶ 8-9. Mr. Keast's Affidavit is misleading and Dr. Kryter's misses the point.

On the face of NUREG-0654 the NRC and FEMA imposed the 123 dB limit because sound levels above it "may cause discomfort to individuals." Nothing is said about permanent hearing damage or temporary hearing loss. The NRC and FEMA understandably thought it necessary to protect the public from disruption and physical discomfort as well as injury. Although he does not mention it in his affidavit, Mr. Keast himself understood the difference and apparently believed that preventing discomfort as well as injury was necessary:

> 3. Deleterious Effects of Warning Sounds
>
> * * *
>
> Furthermore, the warning devices must be tested from time to time, and the resulting high noise levels could be viewed as disturbing and/or damaging under these circumstances.
>
> 4. Hearing Damage -- For test purposes, audible warning devices should be so located and operated that no person is likely to be subject to a sound level great enough to cause hearing damage. A suitable limit for this purpose, based upon recommendations of the Committee on Hearing, Bioacoustics and Biomechanics (CHABA) of the National Academy of Sciences is 123 dB(c).
>
> Loud sounds, even if not potentially damaging, can be viewed as a disturbance by some residents of a community.

CPG 1-17 at 8, attached to Jonas Affidavit as Exhibit C (emphasis added). CPG 1-17 indicates that the 123 dB limit was designed to avoid discomfort as well as injury. NUREG-0654,

which after all is the relevant document for the Board's purposes,[14/] is explicit that 123 dB is a discomfort, not an injury, limit.

Accepted industry sources support the conclusion in NUREG-0654. Bouliane Affidavit ¶¶ 29-30, Appendix 8. In other words, there is good reason for the NUREG-0654 requirement, whether based on Mr. Keast's work in 1980 or not.

The Board should also recognize the existence of two other factual disputes. First, the Applicants argue that the maximum sound level heard by any individual will be 131 dB(C). Applicants' Brief at 31; Sutherland Affidavit ¶ 5. However, Mr. Bouliane concludes that the calculations from which the 131 dB is derived are insufficient to draw firm conclusions and, in any event, individuals may well be subject to sound levels up to 133 dB by virtue of reflections off of nearly buildings. Bouliane Affidavit ¶¶ 24 and 28. Second, the Applicants suggest that because there are only two permanent structures located within 100 feet of the acoustic locations the safety criteria in NUREG-0654 are met. Applicants Brief at

---

14/ The Keast and Kryter affidavits should be rejected for another, related reason. The authors of NUREG-0654 are the NRC and FEMA through a steering committee of eight individuals. NUREG-0654 at ii. Keast and Kryter are not members of the committee and their views on the intent of the NRC and FEMA in issuing provisions of NUREG-0654 are irrelevant. Moreover, under well-established principles of statutory or regulatory interpretation, the intent of the authors themselves is relevant only if the language is ambiguous. E.g., Howe v. Smith, 452 U.S. 473, 483 (1981); Rubin v. United States, 449 U.S. 424, 430 (1981). There is no ambiguity in the pertinent language of NUREG-0654.

31; Faix Affidavit ¶¶ 11-13. In fact, 12 of the 16 acoustic locations are in residential or other areas where members of the public can be expected to be outside of permanent structures and/or well within the discomfort range of the VANS sirens. See Mason Affidavit ¶ 8.

In short, the Applicants must comply with the 123 dB requirement. If they do so, the 16 acoustic locations, because of the diminished sound level, will not come close to providing full coverage for the Massachusetts portion of the EPZ. Bouliane Affidavit ¶ 31, Appendices 9 and 10.

Basis A.8

> Because of the large size of the intended dispersion angle (60 degress), sound irregularities will occur within the coverage angles including gaps in sound coverage for certain areas. Moreover, the oscillation of the speaker assembly will cause gaps in coverage when the siren is used in its tone alert mode.

In responding to these assertions, Mr. Sutherland acknowledges that "[a]s the siren rotates, a listener at any point in space will experience a varying sound level ranging from a maximum value that occurs when the siren is pointing generally in his or her direction to a minimum value that occurs when the siren is pointing away." Sutherland Affidavit ¶ 10. Mr. Bouliane analyzed this phenomenon carefully to determine whether, as a result, the VANS system was consistent with the NUREG-0654 requirements. He determined that it was not.

The VANS siren loudspeaker has directional characteristics such that the loudspeaker produces its maximum signal output along its primary output axis and the output diminishes as the angular offset from the primary axis increases. Bouliane Affidavit ¶ 9. Therefore, Massachusetts residents will not hear the siren signals uniformly. Instead, they will hear signals which vary by 26 dB or more over short periods of time as the siren rotates. Bouliane Affidavit ¶ 17, Appendices 3 and 4.

Bouliane's conclusions indicate that the Applicants' coverage map may well be based on the erroneous uniform output assumption. In simplistic terms, oval rather than circular coverages will exist for the sirens. Rather than the circular coverage patterns at the 60 dB(C) and 70 dB(C) levels claimed by the Applicants, siren levels will in fact drop for listeners at different times during siren rotation to as little as 34 dB(C) and 44 dB(C) respectively. Bouliane Affidavit ¶ 17, Appendices 5 and 6. Therefore, the Applicants themselves have raised genuine issues of fact as to whether their system meets the requirement for a "steady" signal, NUREG-0654, Appendix 3 at 3-12, and for sound pressure levels exceeding 70dB(C) where the population exceeds 2,000 persons per square mile and 60 dB(C) in other inhabited areas, FEMA-REP-10 at E-8.

Basis A.9

> Listeners in areas where there is an overlap in sound coverage from 2 or more sirens, whether both sirens are in Massachusetts or one is in Massachusetts and one is in New Hampshire, will experience severe echo conditions, rendering any voice message unintelligible.

If the Board denies the Mass AG's Motion To Amend Bases of September 8, Basis A.9 becomes irrelevant. Otherwise, the Applicants have not put in any material justifying summary disposition and it should not be granted.

Basis A.10

> The Applicants have not indicated when and under what circumstances the tone alert mode or the message mode will be used.

As the Applicants point out, Basis A.10 no longer applies.

Basis A.11

> Sufficient drivers and backup drivers will not be stationed at the six staging areas to ensure 24 hour availability of the system. Moreover, the system will work reliably, if at all, only when each vehicle is manned by at least two people.

As pointed out above, the Applicants' claim of a 10 second driver alert time is at least open to factual dispute and, more likely, is simply erroneous. See discussion of Basis A.5, supra. This conclusion is reinforced by the fact that there will only be one driver per VANS truck at each staging area. Desmarais Affidavit ¶35. Unless one entertains the fantastic notion that at every moment of every day for the next 40 years

every driver will be in a position at his or her staging area to be immediately notified in the event of an order to activate the system, the lack of backup drivers renders the 10 second driver alert time particularly suspect. This issue should be litigated either as Basis A.11 or as part of Basis A.5.

Basis A.14

> The Applicants have not identified the equipment to be used for remote activation of the VANS sirens and, therefore, no conclusion can be reached concerning the reliability of the equipment. Moreover, the Applicants have not indicated whether the siren signals will be pre-recorded or broadcast to the remote locations and have not provided sufficient information to conclude that in either event the equipment has adequate fidelity to ensure intelligibility.

For the reasons given with respect to Basis A.9, Basis A.14 insofar as it addresses message mode issues rises or falls with the Board's decision on the Mass AG's Motion To Amend Bases.

Basis B

> The Applicants have not identified the circumstances under which the backup airborne alerting system would be called into operation, the flight path it would take, whether tone or message mode would be used, the time necessary to complete a single operational run, or the areas the helicopter is intended to cover. This lack of information prevents this Board from making a finding that the airborne system meets NRC regulations and standards.

* * *

> 1. One of the circumstances which might give rise to the need for a backup system, poor weather (and in particular high wind, heavy rain, snow, icy or extreme cold conditions), is equally or more debilitating for the use of a helicopter.
>
> * * *
>
> 3. A steady 3 to 5 minute tone alert capable of repetition cannot be accomplished with the airborne system for significant numbers of people even within the covered area because the speed necessary to provide that duration of a tone is too slow for extended operation of the aircraft.

The Applicants' response to these assertions is to argue that a backup system is discretionary, there are no requirements for the backup system to meet and, therefore, potential factual disputes are immaterial. Applicants' Brief 36-41. The Applicants do not even attempt to address whether, in fact, the helicopter system will work in poor weather or will provide a tone alert signal of sufficient duration for significant population areas. Applicants' Brief at 41-43. Therefore, the Mass AG need not and will not introduce evidence on these issues.[15/]

15/ The Applicants' suggestion that the Mass AG is somehow obligated to "introduce admissable evidence" on issues they have not addressed, see Applicants' Brief at 40-41, is contrary to established law on summary disposition. See Cleveland Electric, supra, 6 NRC at 753-54 (movant's filings must affirmatively establish absence of genuine issue of material fact).

As the Board noted in its decision on the admissability of contentions, "at least two Licensing Boards have admitted a contention or heard testimony contesting backup procedures when specific deficiencies or inadequacies were alleged." June 2, 1988 Memorandum and Order at 10 (citing Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), LBP-85-12, 21 NRC 644, 758-59 (1985) and Consolidated Edison Co. of New York (Indian Point, Unit No. 2), LBP-83-68, 18 NRC 811, 938-39 (1983)). The Board went on to note that "[h]aving submitted a plan setting forth specific backup procedures, Applicants cannot be heard to argue for the rejection of bases specifying inadequacies or defects in the backup procedures." Memorandum and Order at 10. Having admitted the contention and bases as relevant, it would make no sense for the Board, as the Applicants would have it, see Applicants' Brief at 41, to dismiss them on summary disposition without any factual showing whatsoever. While the Applicants deserve credit for their decision to provide "an extra safeguard," they cannot expect the Board to conclude that the backup system cures or excuses the defects in the primary system without resolution of those factual disputes.

Basis B.4

> Any attempted informational messages for the airborne siren will be garbled and unintelligible because of the strength and size of the speaker array and amplifier system, the height of the aircraft and the effect of the helicopter's rotary blades.

Basis B.4 has become moot in light of the Applicants' decision not to broadcast voice messages from the airborne siren.

CONCLUSION

For the foregoing reasons, Applicants' motion for summary disposition should be denied as to Bases A.1, A.3, A.5, A.7, A.8, A.9, A.11, A.14, B.1 and B.3 and may be allowed as to Bases A.2, A.4, A.6, A.10 and B.4.

JAMES M. SHANNON
ATTORNEY GENERAL
COMMONWEALTH OF MASSACHUSETTS

Stephen A. Jonas
Deputy Chief
Public Protection Bureau
Office of the Attorney General
One Ashburton Place
Boston, MA 02108
(617) 727-2200

Dated: October 11, 1988