

# CONVENTION HALL

ATLANTIC CITY, NEW JERSEY

*Electro-Voice*®



Figure 1- Atlantic City Convention Hall, showing desired coverage area.

## THE PROBLEM

The Atlantic City Convention Hall is a nationally famous facility for large meetings, conventions, and trade shows. A major automobile manufacturer regularly used the convention hall for major sales meetings. Previous meetings had been marred by virtually unintelligible public address systems, and, for this important meeting of dealers from all over the nation, company officials demanded a truly superior voice reinforcement system. The Detroit office of Wilding

Incorporated was called upon to engineer and install the equipment.

The very feature which has made the convention hall so popular for large gatherings—its immense size—also contributes to the extremely difficult public address problems. The dimensions of the room, combined with the semi-cylindrical ceiling (11 stories high in the center) create almost overwhelming feedback and reverberation difficulties.

## THE BACKGROUND

The nature of the meeting was such that only about one-third of the convention hall area required sound coverage. In fact, it was desired to eliminate reinforced sound from the remaining two-thirds. The Hall seats up to 35,000 persons but the attendance at this meeting was 3500. Sound pickup was required on the stage, at the orchestra, and on the lectern. The reinforcement system was to cover the entire audience of 3500 evenly and without feedback, and more important, the natural reverberation of the cavernous auditorium had to be controlled.

Various methods to absorb or break up the reverberation pattern were considered. Any effective solution using this procedure, however, would have been prohibitively costly. Distributed low-level sound likewise was impractical, due to the very high ceiling. In addition, sound from overhead was undesirable because of the loss of realism due to the difference in location of the audio and visual sources. The time lag problem would also have become extremely complex using low-level sound.

The system was to be a rental, and quick, convenient installation and removal were considered essential.

Once the decision had been made to employ high-level projection and to keep the number of sound sources to an absolute minimum, Wilding contacted Electro-Voice for advice and possible factory field assistance.

Experimentation on the site soon indicated that the only possible solution to the many problems presented would be that of using extremely directional microphones and loudspeakers.

The equipment was moved into the auditorium on Sunday, immediately following the Miss America Pageant. As soon as the equipment could be setup, a series of tests began to ascertain the best possible combination and location of loudspeakers. Tests were made first with six Line Radiator™ units— two LR4S's located on the floor of the auditorium against the stage, and four LR4's on either side of the stage elevated on stands. It soon became apparent that more sound was available than was actually necessary, and the number of speakers was gradually reduced

until finally three speaker systems provided the best combination of audience coverage and feedback rejection. By carefully adjusting placement of the three systems, through trial and error, it was possible to achieve a level of quality and intelligibility previously unattainable. In addition, utilizing the limited vertical dispersion of the Line Radiators, the units could be aimed to eliminate sound in the unused portion of the auditorium.

## THE SOLUTION

The completed system employed the three Model LR4 Line Radiators shown in Figures 2 and 3. Note the angle at which the two outside LR4's were mounted. The carefully controlled polar pattern of the Line Radiators was put to best use in minimizing reflection from the curved ceiling by mounting in this fashion.

The restricted vertical dispersion of the Line Radiator was the chief contributing factor in the reduction of reverberation, and thus made this job a success. A large part of the credit for feedback rejection, however, must be given to the microphones chosen. As is so often the case, a sophisticated microphone or loudspeaker could not have accomplished this difficult job alone, but used together they solved an otherwise impossible problem.

Multiple microphone placement was required, since theatrical entertainment was to be presented from the stage. Pickup of the orchestra was also desired. The final microphone selection included four E-V Model 644 Sound Spot® microphones mounted on desk stands along the front edge of the stage and two Model 664 microphones located at the orchestra. The directional characteristics of the microphone eliminated sound pickup from undesired directions. Each of the six microphones was equipped with a Model 513 high pass filter which eliminated unnecessary reproduction below 100 cps and thus greatly reduced pickup of reverberation and rumble occurring in the large room.

Amplifying equipment manufactured by DuKane and Altec was employed. A 165-watt Altec unit was used as the main amplifier, while a 100-watt DuKane amplifier served for monitoring and standby.

## COMMENTS

Undoubtedly the most important lesson to be learned from this P.A. job is that experimentation is usually the key to success in an unknown situation. Certainly no one could have predicted in advance the final location of the Line Radiators; their placement does

not correspond to previously published information: this installation was unique. Fortunately, specialized tools were available, and through knowledge of this equipment, combined with trial and error, a most satisfactory sound reinforcement system was achieved.

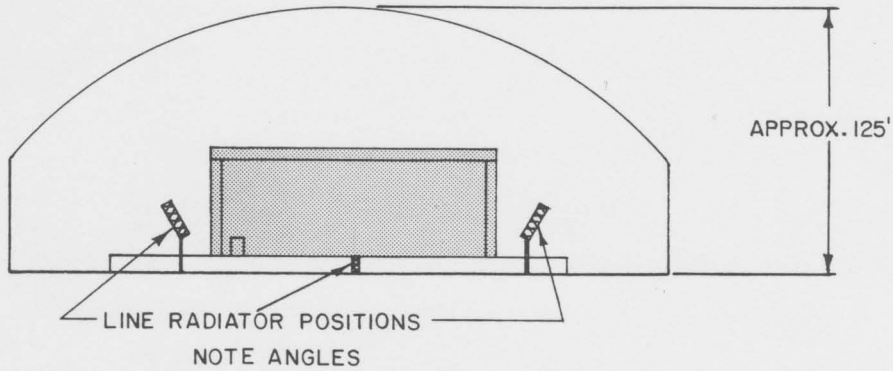


Figure 2 - Front View

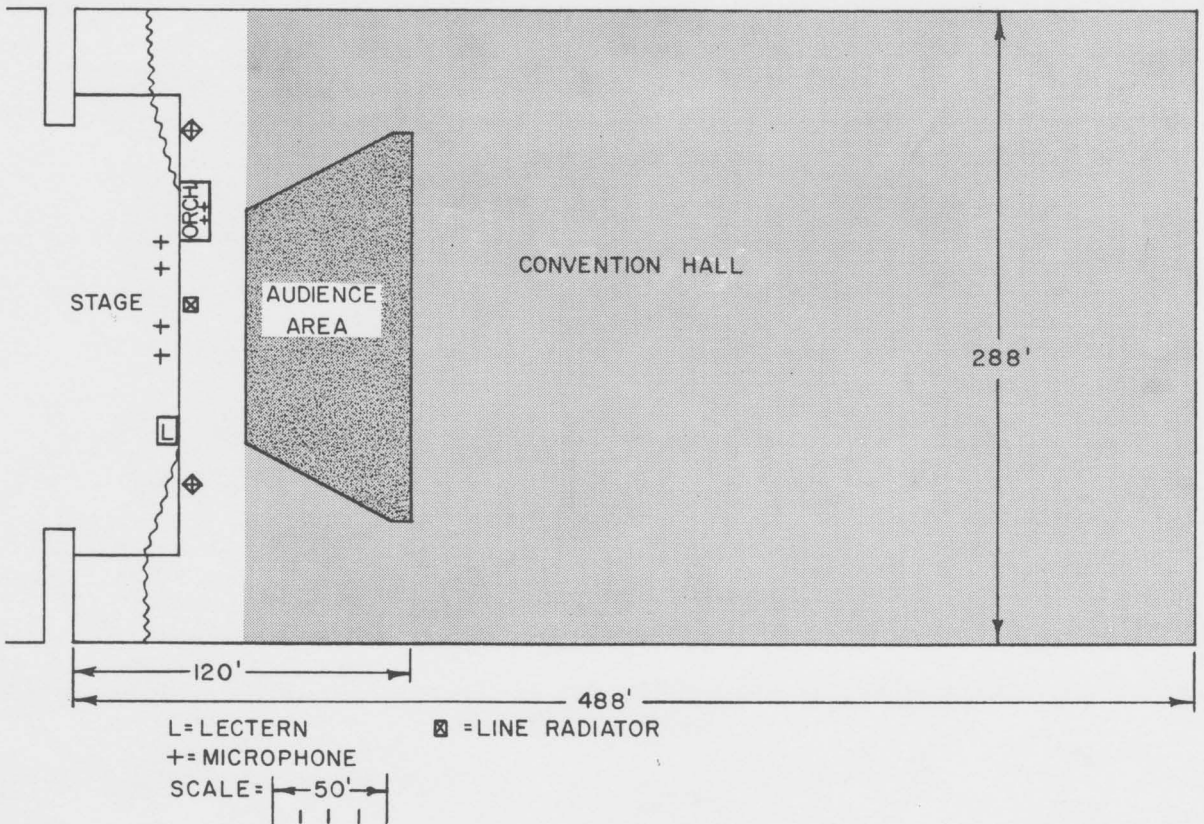


Figure 3 - Top View

Location: Atlantic City, New Jersey Convention Hall

Installation by: Wilding, Inc., Chicago and Detroit

 **ELECTRO-VOICE, INC. / Buchanan, Michigan**