# It's No Gamble

## IED's Announcement Control System

### McCarran International Airport, Las Vegas, Nevada

*by Keith Clark*

The recent opening of the new D Gate Satellite Concourse at McCarran International Airport in Las Vegas coincides with the facility's 50th anniversary of air service to the region, and it boosts total annual passenger capacity from 30 million to 45 million. The 26-gate concourse features a sophisticated paging and announcement system, designed by Paoletti & Associates of San Francisco, that highlights just how far technology for this specialized application has come in the past decade. The system was implemented by Ford Audio/Video Systems Inc., a process headed by Mark Seney, project manager, and Robert Rose, project engineer. Ford A/V, based in Oklahoma City, counts airport systems among its specialties. In some ways, the new system is an extension of what was attempted, with mixed results, at the main terminal several years ago. The goal at D Gate was to provide the basic functionality of that original system, but with dramatic improvements. Further, without a staff member on site dedicated to operating the system, it needed to be as operationally simple and reliable as possible.

"All of this clearly indicated that a computerized DSP-based control package, highly automated, would be the best approach," says Dennis Paoletti, president of Paoletti & Associates. "In our opinion, IED control systems cater exceptionally well to this type of application. There was little question that this was the way to go." The centralized control room is a 500ACS

Announcement Control System mainframe. It features a modular design that allows the system designer to tailor and expand capabilities as needed via a series of cards, including microphone station interface, audio routing and digital record/playback, audio zone output and others. The mainframe works in tandem with an IED 590 computer featuring Pentium processing and Ethernet capability. With these components, a versatile paging system for the entire concourse was established. Each of the 26 gates is outfitted with IED 508 Series microphone stations, with several other mic stations also established throughout the terminal. The stations, linked to the mainframe, include an LCD panel and a keypad providing access to any paging zone or zone group, or to play specific pre-recorded messages. Announcements can even be remotely pre-recorded from these positions for playback at a later time or at regular intervals.

"The mainframe acts as a 'traffic cop' for the myriad of messages," explains Ford A/V's Rose. "It can record up to eight messages simultaneously and then play them back in the order received. Meanwhile, pre-recorded messages, such as caution warnings at the moving walkways or airport smoking policies, are played at regular intervals. It's a matter of programming whatever you want in terms of priority and frequency via the unit's software, which is easy to use." Both pre-recorded and new messages are stored within their own "cues" in the mainframe. The software is set up to hold new messages

until a pre-recorded one finishes its course, preventing annoying overlap and possible confusion. Of course, emergency pages and messages are given top priority. The mainframe also accepts pages from the main terminal, located almost a mile away from D Gate. A fiber link was established between the two paging systems, routed in the monorail tunnel connecting the buildings, with fiber hubs on each end performing A/D and D/A conversion. These messages are held in a cue and released at the appropriate time according to their designated priority.

The IED system includes other features that contribute to its hands-off, automated capabilities. Linked to several microphones concealed within the concourse, it performs constant ambient analysis. Audio levels are automatically increased, in real time, in zones that become noisy (i.e. due to increased passenger traffic), returning to normal levels after things quiet down. In addition, a monitor/test system performs extensive self-diagnostics that extends to the system's loudspeakers and amplifiers. Any problems are relayed to staff members in the main terminal. And, all audio processing – full bandwidth and strictly in the digital domain - is supplied as well.        "Ford A/V did a tremendous job of implementing the entire system, and their expertise really showed with the integration of the IED system," says Paoletti. "There were a lot of changes



along the way with this project, but they handled it all very well. I've rarely dealt with a systems contractor that's been as responsive."

The new facility's architecture differs markedly from McCarran's main terminal. Architectural firms Tate-Snyder and Leo A. Daly teamed up to create the unique look, which at the same time presented some acoustical and logistical challenges, Paoletti notes. "The architects wanted, and achieved, a very open,



voluminous look throughout," he explains. "Yet they were extremely concerned about acoustics and were quite attentive to our needs in this regard. As a result, I can guarantee that this concourse is clearly the best in terms of acoustical treatment of any airport I've ever been in. The acoustical treatment is extensive."

In addition, there was a stringent requirement that loudspeakers not be visible. Easy enough to achieve with the ceiling loudspeakers at each gate, but not quite so simple in the main traffic corridors running through the concourse as well as the two-story rotunda that serves as the main entrance. In both cases, Paoletti formulated custom solutions, working closely with the architects and loudspeaker manufacturers. The lower section of the circular rotunda is virtually blanketed with 4-inch-thick panels. Oval columns conceal Bose Panaray loudspeakers housed in carved-out enclosures covered with perforated metal grilles painted to match the look of the columns. These loudspeakers were carefully aimed for maximum coverage while also keeping sound off of reflective surfaces as much as possible. Meanwhile, the highly trafficked corridors receive coverage from custom Frazier CAT-40 coaxial loudspeakers concealed more than 30 feet from the floor. They were selected to supply relatively high, full-bandwidth output from a compact enclosure, with well-controlled dispersion keeping sound off of reflective surfaces.

"We were looking to get good low-end frequency response, down to 100Hz and as clean as possible," Paoletti says. "In addition to providing this capability, the CAT-40's best overcame the other constraints. They've given us a very smooth, clean sound that's controlled. The success of this facet is indicative of the overall success of the project. We've created a system supplying excellent functionality and reliability, with some added touches that make it unique for an airport application."