McCarran Airport RFID System Takes Off

Three airlines are tagging luggage to track it through the Las Vegas airport's baggage security and handling system.

By Mary Catherine O'Connor

Oct. 25, 2005—Two years after announcing its plan to replace bar-coding with RFID as a means of sorting and tracking baggage, McCarran International Airport in Las Vegas has completed the first phase of its RFID deployment, according to Swanson Rink, the consulting engineering firm that designed the system.

On Labor Day weekend, Alaska, AirTran and Champion airlines started placing RFID tags on checked baggage. RFID interrogators (readers), mounted on conveyors that bring the luggage through an explosive-detection system, read the tags, identifying each bag before it is checked for explosives. The tag then routes each piece of luggage to the appropriate plane or, if the explosives detector finds suspect contents, to another security-screening station.

William Gibbs, Swanson Rink

RFID is a favorable alternative to bar-coding for luggage identification. Due to the unpredictable orientation of the label to the optical scanner, 15 to 30 percent of the bar-coded labels being used to identify the luggage at McCarran are not properly read as the bags move through the airport luggage handling equipment. Each piece of luggage for which the bar code is not successfully scanned is diverted and manually read. Because RFID tags do not require line-of-sight with the interrogator, they are much more easily read.

"We're seeing [RFID] read accuracy rates on the order of 99.5 percent," says William Gibbs, Swanson Rink's senior mechanical engineer and the controls engineer for the McCarran project. Fewer misreads means bags move through the system more quickly, lessening congestion and increasing the likelihood that each piece of luggage will be loaded onto the appropriate flight. But Jim Lusche, vice president of Swanson Rink and the McCarran project manager, says it will be difficult to prove RFID tracking decreases the amount of lost luggage, because airlines tend not to publish detailed information about the volume of luggage they misplace.

In this current phase of the deployment, when passengers check into their Alaska, AirTran or Champion flights at the airlines' respective counters within McCarran's terminal 1, node 1—a node describes an area within each McCarran terminal—airline workers affix passive UHF RFID smart labels onto the bar-coded label attached to each piece of luggage. The smart labels contain an EPC Class 0 inlay provided by Symbol Technologies. The data encoded to the tag has three parts: a unique ID, an airline ID and a McCarran ID.

In the deployment's second phase, set to begin early next year, the RFID inlays will be embedded in the

label, which is printed with a bar code and wrapped around the luggage handle. This will save airline workers labor and increase the likelihood of the tag remaining attached to the luggage. Meanwhile, the airline ID will be removed from the data encoded onto the tag. Instead, all airlines will use a common database in which each bag's unique ID is associated with the respective passenger's data and the McCarran airport ID. If and when more airports begin tagging bags, they will be able to link into this tracking system.

Lusche says that by the second quarter of next year, the airport will expand the RFID system to every terminal and node, and that all 30 airlines currently using McCarran airlines, including international carriers, will adopt the RFID tracking system. Southwest Airlines will likely be the next to begin using it.

In addition, McCarran is working with Las Vegas hotels to deploy an early check-in system. Under this new system, guests would check in for flights at their hotel, while their luggage would be tagged and brought to a remote site for security screening before being loaded onto the appropriate plane.

McCarran first announced its RFID plans in 2003 (see Las Vegas Airport Bets on RFID) and expected this RFID system to be up and running last year airport-wide. However, Lushe says, construction delays slowed the installation progress. A number of infrastructure changes were required to deploy the system, including mounting RFID readers onto conveyors and establishing new facilities to sort the luggage by RFID.

Swanson Rink, based in Denver, specializes in airport systems design and is working with a number of integrators and technology partners on the McCarran project. FKI Logistex, located in Danville, Ky., is integrating the RFID hardware with the airport's baggage-handling system; Symbol Technologies, based in Holtsville, N.Y., is providing the RFID hardware; and ARINC, in Annapolis, Md., is integrating the software used to track the luggage and associate it with passengers through a secure database.