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Publisher's Blog

The Yin and Yang of Airport Security

With terrorists constantly changing their tactics, the need to continually update screening technology, procedures and systems seems obvious. But how we change them makes all the difference in the world. It can make everyone safer or devastate our entire airport system. [\[more\]](#)

State of Play

All too often when we look at our airports, businesses and

Emergency Operations

New Training Center in Atlanta Uses Controlled Live Fire

By Rebecca Kanable

As published in: [Airport Improvement Magazine - November-December 2009](#)



Not being prepared is not an option at Hartsfield-Jackson Atlanta International, the world's busiest airport, serving more than 90 million passengers annually.

A new \$14 million Aircraft Rescue and Fire Fighting (ARFF) training facility gives the airport's 218 firefighters ready access to the training they need to be prepared, and to meet or exceed certification requirements, says Hartsfield-Jackson senior project manager Jim Lucas.

Facts & Figures

Project: Aircraft Rescue and Fire Fighting (ARFF) Training Facility

Location: Hartsfield-Jackson Atlanta International Airport

Owner/Operator: The City of Atlanta/Department of Aviation

Cost: \$14 million

Before the new facility opened in July, firefighters trained about an hour away at the Georgia Public Safety Training Center in Forsyth, or the airport brought a contracted mobile training unit on site. Both incurred extra expense; the former left the airport without its full complement of firefighters.

Hartsfield-Jackson's previous ARFF training facility was displaced in the 1990s by the construction of the airport's south cargo facility. The old facility, says Lucas, was not cutting-edge.

The new state-of-the-art center allows firefighters to "practice the way they play," says Fire Department Capt. Rick Clemons, citing an old sports analogy. "We don't do anything differently than we would do in real life," says Clemons.

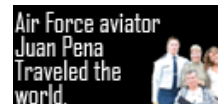
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industry, it's difficult to pinpoint when direction has changed or momentum has shifted. When did we fall into a recession and then climb out? When did sustainability become so important to airports? When did a \$4.50 PFC become inadequate? [\[more\]](#)

Goats, Horses & Tents

Just another day at the airport. What, you may ask, do goats, horses and tents have to do with running an airport? The answer is everything. Everything creative that is. [\[more\]](#)



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Industry Insider

The Benign Neglect of Our Nation's Aviation System

As one who has been a devout student and player in our nation's transportation policy and politics, I call on the U.S. Senate to pass the Aviation Reauthorization legislation. [\[more\]](#)

Sharing Knowledge

Baggage systems are a key operating component of any airport and shouldn't be an afterthought. They should receive the same attention as runways, control towers and/or any other critical function that is at the heartbeat of an airport. [\[more\]](#)

Size: 10 acres

General Contractor: Archer Western

Construction: About 18 months to create live-fire training

Pyrotechnics Design: Kirila Fire Training Facilities

Ignition System Design & Construction: Kirila Fire Training Facilities

Real Fire, Remotely Controlled

The 10-acre training site includes three elements: an aircraft shell, a burn pit with another aircraft mockup and a control/observation building.

Although it's not the most high-tech element of the training facility, the yellow 737 shell may be the most noticeable. It's used for emergency evacuation drills and mass casualty exercises.

Training with live fire takes place inside a 152-foot diameter pit, which houses a 75-foot-long steel plane with a sprinkler system inside to keep it from warping. The burn pit is supported by two major components: the control facility, which is considered the heart of the operation, and the fueling area.

Fires are ignited and controlled from inside the two-story control building - about 500 feet away from the burn pit. In addition to the control area and a large observation room, the building has a debriefing room for 30 firefighters, outside safety showers, first aid equipment, break rooms, locker rooms and restrooms.

Before a training fire is ignited, the pit is completely covered with a water blanket. Fuel is then floated on the water blanket, which causes the fire to move and simulate environmental forces like wind. The blanket also protects the burn pit's electronic components below, Lucas explains.

Outside the pit, an open area allows fire vehicles to pull up to the fire from any direction, for either pump-and-roll exercises or stationary fire extinguishment.

Fueling the Fire

Inside the pit, different types of fires can be created with different fuel types, including propane, fossil fuel (jet fuel) or a combination of both. Most airports, explains Clemons, use only propane for training because jet fuel is more expensive and more difficult to control from an environmental standpoint - especially without an automated control tower like Hartsfield-Jackson's. Using jet fuel, however, helps create a more realistic training environment, he adds.

Additives are sometimes used to reduce fuel fire smoke. The downside to mixing an additive with jet fuel, notes Lucas, is that it makes the fire hotter, 4,500 to 5,000° F, which can be detrimental to equipment.

When a training exercise is complete, a state-of-the-art recycling system separates the water and oil, and allows unburned fuel to be reclaimed and reused for another training exercise.

On Location

Fire commanders at Hartsfield-Jackson can choose several locations for practice fires, including the aircraft tail, wings, engine, brakes, hydraulic lines and wheel wells. Fires can also be set in two areas at the same time.

Pyrotechnics designed by Kirila Fire Training Facilities are engineered to show that several situations can occur from one fire. In one training scenario, a hydraulic line breaks on a wing, causing fuel to spray into the air and hit another ignition source, which causes a large ball of fire to erupt in an explosion.

In another scenario, an engine catches fire, which causes a fuel line inside the engine to burn and drip fuel out of the engine, creating a "three-dimensional fire" with fire falling to the ground and igniting fuel on the ground.

Live By Design

Designing and building a foolproof ignition system - reportedly the most difficult technological challenge of the entire facility - fell to Kirila Fire



Jerry Kirila



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The Virtues of Transparency

We hear a lot about transparency lately, especially in light of the federal stimulus package that is introducing \$787 billion into the national economy. [\[more\]](#)

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Training Facilities. According to owner Jerry Kirila, the facility's igniters will repeatedly withstand 3,000° F jet fuel fire.

The challenge of any fire trainer, Kirila says, is to create a realistic fire in a safe environment, and construct it so the training exercises can be performed over and over.

At Hartsfield-Jackson, he notes, a fire can immediately be extinguished from the control tower.

"Without a control tower, the alternative might be dumping jet fuel from a 55-gallon barrel, which doesn't allow much control for how much or how fast the fuel flows out," Kirila explains. "The person lighting the fuel can also track residual fuel away from the training area. It's not safe and it wastes fuel."

At Hartsfield-Jackson's training center, a button is pushed from inside the control building to pour out the fuel. Another is pushed to start the ignition system.

Sometimes, keeping a training fire burning inside an aircraft engine can be difficult. That won't be a problem at Hartsfield-Jackson, says Kirila. "You need three things for a fire: an ignition source, fuel and oxygen," he explains. "The trick is to create enough passage for the oxygen to keep fueling the fire."

Fire really is a living, breathing animal, he adds.

"Most people don't know how it acts until they understand the science of fire," he says. "Then they can predict what the fire is going to do. What we're trying to do with the fire training scenarios is flirt with the limits of controlled and out-of-control fire."

Seizing Opportunities

For firefighters, the centerpiece of training is not necessarily the fire, but the experience working hose lines, communicating with the truck operator, knowing what's needed and what everyone is doing, and learning how to approach a fire, Kirila says. Training scenarios, he explains, teach everyone how to work together to combat a fire.

"When they're done with these scenarios, they have fought fire and can feel confident when they roll up to a real scenario," he says.

Prior to the official opening of the training center in July, firefighters used the facility for annual FAA fire certification in April and annual mass casualty training in May.

"Now we can do lots of things, and we can train when we need to - night or day, without having to fit everything into one, two or three days," Clemons says.

Hartsfield-Jackson firefighters routinely train once a month, but their new on-site training center allows more flexibility in the schedule.

"We want to have the best trained firefighters to handle whatever a situation may be," Clemons concludes. "With a training facility such as ours and with the support of the Department of Aviation, we have that opportunity - and we're seizing that opportunity."



Surpassing Fleet Standards

With 10 fire trucks, Hartsfield-Jackson Atlanta International Airport has double the number required by the FAA and International Civil Aviation Organization (ICAO) standards for an Index E airport.

Exceeding the minimum standards fulfilled retired Chief Harold Miller's vision for appropriate fleet size at the world's busiest airport. With 10 trucks, the airport can dispatch five trucks to an incident and still have

the necessary level response in reserve to keep other runways open.

Although the airport's Oshkosh Corporation trucks were delivered in 2006, Capt. Rick Clemons says they're still cutting-edge. Eight of the Striker 3000s have a roof turret and a bumper turret, he notes. Two have a high-reach, extendable turret on top and a bumper turret.

According to Gary Kogut, Oshkosh Corporation regional sales manager of airport and municipal products, the trucks carry 3,000 gallons of water, 420 gallons of foam and two 500-pound dry chemical systems. Clemons particularly appreciates being able to use water or dry chemical and the dual capacity of the trucks' handlines.

The roof turret has a flow rate of 375 or 750 gallons per minute (gpm) while the bumper turret is capable of 600 or 1,200 gpm. Two turrets can operate at the same time, but an interlock system prevents both from running on high flow at the same time. The bumper turret has a dry chemical nozzle.

With combined capacity of 30,000 gallons of water, 4,100 gallons of foam concentrate and 10,000 pounds of dry chemical agent, Hartsfield-Jackson can accommodate large aircraft and function as a Category 10 facility according to the ICAO.

The trucks' two swing-out handlines can be pulled out perpendicular to the trucks or out of the side compartment and pulled toward the front. One handline is water/foam; the other is water/foam with a Hydro-Chem nozzle.

The trucks also have infrared cameras, which allow firefighters to focus on the hotspots of an aircraft, and a monitoring and data acquisition system, which Kogut compares to the black box on an aircraft.

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