CAPT. DAVE WELLS (FedEx Express), ALPA Cargo Safety Project Team member, has a quiz for you: You're flying a B-747-400ER freighter tonight. The airplane has a maximum takeoff weight of 910,000 pounds. That's 455 tons of metal, fuel, boxes, and, not to forget, people. What minimum aircraft rescue and fire-fighting (ARFF) services are required at the U.S. airports where you will take off and land tonight?

Answer: None!

Capt. Bill McReynolds (FedEx Express), chairman of the ALPA President's Committee for Cargo, says, "When we tell people about all the safety issues with cargo ARFF, they say, 'No, that can't be.'"


FedEx DC-10 at BOS


Snozzle

BOXHAULERS BU

ALPA HOSTS A CARGO ARFF SYMPOSIUM TO SHARE AIRPORT FIREFIGHTERS AND FIND SOLUTIONS TO CO

The cargo airline industry is thriving, profitable, and growing, expected to double or even triple in the 20-year period from 2003 to 2023. The cargo fleet includes some of the largest airplanes ever built.

But the cargo airline industry suffers an accident rate *three times* that of the passenger airline industry—and the accident rate of "ad hoc" cargo airlines is *seven* times that of the passenger airlines. These higher accident rates might reflect, in part, the fact that half of cargo flights, versus less than 20 percent of passenger airline flights, occur at night.

Twenty percent is also the proportion of cargo airline accidents that involve fire. Unique aspects of cargo operations put flight crews—and ARFF personnel—at a disadvantage: All-cargo airplanes have fewer exits and no requirement for main-deck active fire suppression. All-cargo flights may or may not have emergency exit slides, or persons aboard aft of the cockpit bulkhead available and trained to fight a main-deck fire. Freighters often fly fully loaded, with no easy access to an onboard fire, and they usually carry much more flammable material than passenger flights—not to mention dangerous goods (including lithium batteries) not permitted on passenger flights.

At a major hub, you might have excellent round-the-clock ARFF facilities staffed by fellow professionals who have received specific, hands-on training on cargo aircraft and issues. Or the major hub may have 24/7 ARFF, but the ARFF personnel are not trained on cargo and lack information about your airplane type, the cargo you carry, and the best ways to fight cargo fires.

Or you might fly into or out of an airport that has ARFF, but it's woefully inadequate for your airplane. Or the ARFF folks are wearing a different hat at 2 a.m., driving the perimeter road on security patrol and thus tremendously compromising their ability to provide ARFF services. Or the airport has the equipment, but the ARFF folks are released after the last passenger flight launches or lands. And as already noted, the airport might have no ARFF at all.

No 'One Level of Safety' for cargo

In January 1996, as a result of a vigorous campaign by ALPA, the FAA issued a final rule aimed at bringing commuter airline operations (10- to 29-seaters) conducted under FAR Part 135 up to the more stringent standards of FAR Part 121 to establish "one level of safety" for large and small passenger airlines. The new rule did not, however, address discrepancies between passenger airlines and cargo airlines—including the lack of requirement for cargo ARFF—because for Part 139 14 CFR to be applicable, an airliner must have 10 or more paying passengers.

The fiery collision of a Beech 1900 and a King Air on intersecting runways at Quincy, Ill., in November 1996 triggered NTSB recommendations and eventually led to new FAA regulations in 2004 that expanded mandatory ARFF to commuter airlines—from 30-seaters and larger to all regional airliners seating 10 or more passengers. But once again, the new regs didn't include all-cargo airliners—though freighters may have as many as 27 persons (flight crew, plus such "supernumeraries" as couriers and animal handlers) aboard!

In March 2004, the NTSB held a 2-day symposium on cargo airline safety; several ALPA air safety representatives,

including members of the ALPA President's Committee for Cargo (PCFC), participated and gave presentations. Ellen Engleman-Connors, then NTSB chairman, urged the attendees to work together to resolve the issues discussed at the meeting—one of which was the need for cargo-specific ARFF training.

ALPA hosts Cargo ARFF Symposium

In one of the most significant followups from that meeting, 76 folks from the airline and ARFF communities met at ALPA's Herndon, Va., offices Nov. 13-14, 2007, for an energy-charged Cargo ARFF Symposium organized and hosted by ALPA's PCFC.

Attending the Cargo ARFF Symposium were the following:

- 27 ALPA representatives from nine pilot groups—Alaska, Atlas Air, ASTAR Air Cargo, ExpressJet, FedEx Express, Gemini Air Cargo, Kitty Hawk Aircargo, United, and US Airways;
- 17 fire/rescue and airport representatives from seven U.S. airports—Boston Logan; Baltimore-Washington International; Grand Forks, N.D.; Metropolitan Washington [D.C.] Airports Authority; Reno-Tahoe, Nev.; San Jose, Calif.; and
- 32 government and airline representatives from outside of ALPA—Air Transport Association, Airbus, Boeing, American Association of Airport Executives, Cargo Airline Association, Cargo Airline Association of Singapore, FAA, Flight Safety Foundation, Independent Pilots Association (UPS), Kalitta Air, Life Mist Technologies, National Air Traffic Controllers Association, NTSB, Teamsters Local 1224, Transport Canada, UPS, and *Aviation Fire Journal*.

Cargo-specific ARFF training

The need for cargo-specific training for ARFF personnel was a major theme of the Symposium. While no U.S. airports are required to provide cargo-specific training to their ARFF personnel, some conscientious self-starters in the ARFF community are trying to provide it nevertheless.

Capt. Les Omans, retired fire chief at San Jose (Calif.) International Airport and now an ARFF training consultant, declared, "Firefighters will try to carry a hose into Hell and put it out—but they don't know enough about the airplanes and the cargo they carry."

Sgt. Eric Johansen of the DFW Airport Fire Services Department noted, "The airport fire department is just a substation of the municipal fire department—the firefighters coming onto the airport will do much of the work" of containing and extinguishing a fire after the initial response by the ARFF personnel, "so that makes training even more important."

Training was a major theme for another DFW representative—Fire Chief Brian McKinney, who said no truly realistic ARFF training facility simulators (i.e., steel airliner mockups in a computer-controlled fire pit) are available anywhere in the United States for training ARFF personnel on such vital tasks as operating cargo doors. Interior trainers are only configured for passenger airliners, and though the FAA began subsidizing regional ARFF training facilities in the 1990s, no funding is available for cargo trainers. DFW has a homemade training device with an interior fireplace, a manual cargo door, and panels for practicing piercing and penetrating, "but it doesn't realistically simulate what you guys are actually flying," McKinney advised.

McKinney had high praise for FedEx: On Aug. 30, 2007, he wrote to the company, asking for use of an intact freighter for ARFF training. On September 4, he received a reply: "The airplane will be there September 17." The B-727 has all systems intact, and DFW firefighters may cut and pierce the fuselage.

DFW's plans for the future include constructing new large aircraft firefighting simulators, with a cargo component included. One simulator may be configured as a combi.

Christian Schmid of Airbus' Fire Protection Systems Group and Capt. Robert Mathis of the Boeing Fire Department provided detailed information about their freighter models—including how to open different types of cargo doors from the outside of the airplane. Both manufacturers


UPS DC-8 at PHL


FedEx DC-10 at MEM


FedEx DC-10 at MEM

URN, TOO

E INFORMATION WITH OMMON PROBLEMS.

By Jan W. Steenblik, Technical Editor

From left, the ARFF response when this DC-10 landed in a blizzard with an uncontained engine failure in BOS was outstanding; multiple errors hampered the ARFF response at PHL and MEM, plus in other cargo accidents elsewhere.

"WE NEED MORE ARFF AT AIRPORTS—BUT YOU COULD HAVE 10 TIMES AS MUCH ARFF AND NOT DO ANY GOOD IF YOU DON'T HAVE THE RIGHT PROCEDURES."
—CAPT. LES OMANS

WHAT CARGO NEEDS

By Capt. Dave Wells, ALPA Cargo Safety Project Team, and Central Air Safety Chairman (FedEx)

- ARFF capability at all airports during cargo operations
- Fire services training required to include cargo airliners for on- and off-airport fire departments
- Onboard active fire-suppression systems in all cargo compartments
- Lithium metal battery shipments removed from all airliners
- Single, dedicated emergency radio (DER) frequency for all participants [e.g., ARFF personnel, flight crews, ATC]
- Super Lexan for containers
- Fireproof rollup doors
- Standardized aircraft and rescue information from cargo airliners to ARFF commands—*JWS*

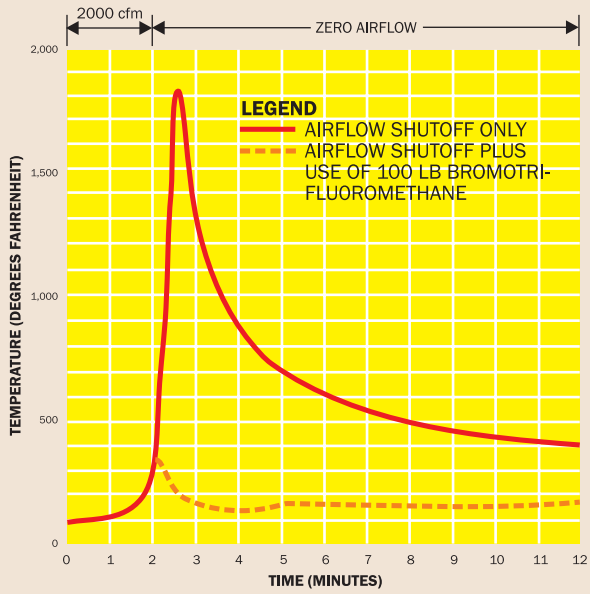
have posted this information on their websites.

Capt. Michael Moody (UPS), chairman of the IPA Safety Committee, reported that UPS has sponsored ARFF cargo training at 11 U.S. airports (ANC, CAE, DEC, DEN, MIA, ONT, ORD, PIA, PIT, RFD, and SDF). The company also has produced the UPS Aircraft Rescue Firefighting Manual, which includes tips for firefighters on how to identify the six different aircraft types in the UPS fleet ("A300 has winglets; B-767 does not"), emergency rescue access for each type, flammable material locations, container locations, and recommended best practices.

Equipment and procedures

Just as important as training are the procedures being trained, and making sure the ARFF folks have the right tools for the job.

Omans declared, "We need more ARFF at airports—but you could have 10 times as much ARFF and not do any good if you don't have the right procedures." He described hands-on, practical tests he had been involved in: "We got four aircraft fuselages and flew in another. For three days, we tried all the tools we could think of to try to force open the doors. We gave up after about an hour-and-a-half on each door. We tried breaking through windshields, cutting into fuselages.



Time/temperature curves showing the effect of an extinguishant in controlling fires in a 5,000-cubic-foot compartment.

"All the saws will cut into an aircraft, but we found out you need a 16-inch cutting wheel—the standard fire department equipment is 14 inches. The best blade was a diamond-tipped concrete-cutting blade. But we also found you need to cool the cut, or the aluminum will melt and foul the blade."

Omans explained that the firefighters' "first step is to cut a hole in the top of the fuselage, to get the heat going up

ALPA PRESIDENT'S COMMITTEE FOR CARGO

In 2001, ALPA created the President's Committee for Cargo (PCFC) to address the unique issues facing cargo pilots. ALPA has advocated the need for all-cargo airlines to be brought up to the "One Level of Safety and Security" that the Association has strived to implement for all passenger airlines. The PCFC works within the ALPA structure as an advocate on issues specific to cargo operations.

The PCFC mission is to do the following:

1. Advise the ALPA president on issues specific to cargo operations.
2. Represent the unique interests of cargo flightcrew members within ALPA.
3. Provide expertise for safety, security, political, and regulatory issues affecting cargo operations.
4. Elevate the profile of cargo crewmembers and their importance to the Association.
5. Provide state-of-the-art resources for cargo pilots and cargo operations.

Opening the ALPA Cargo ARFF Symposium, ALPA's president, Capt. John Prater, asked, "Do we need a separate committee for cargo?

"Yes," he declared emphatically. "Absolutely."—*JWS*

and keep the fire from spreading horizontally. The second step is to contain the fire inside the airplane."

Boeing's Mathis recommended that firefighters make "a major effort" to enter the airplane through the hatches and doors, and use the designated chop out/cut out areas only if other efforts to enter the airplane fail. "Crash charts" available on the Boeing website, Mathis added, show the chop out/cut out areas.

Opening Boeing main cargo doors manually, Mathis cautioned, takes time and requires specific tools—a screwdriver, a ½-inch socket, and a drive wrench, because the locking bolt must be rotated 115 turns to open the door. On the other hand, if the drive wrench spins faster than 500 rpm, it may strip the bolt.

FedEx Express plans to begin using a main-deck fire-suppression system (above) in its airplanes in August. The airline plumbs a fire bottle (left) directly into the hazmat container.

Mathis stressed that firefighters need this kind of specific information, the right tools, and regular hands-on practice at performing such tasks that are unique to fighting cargo fires.

New technology

Some encouraging developments are under way to improve ARFF technology.

DFW's McKinney said that his department was trying to develop DFW into an ARFF testing facility. He showed a video of field tests of the Pyrolance, a new penetrating nozzle that quickly drilled its way into car bodies, a light airplane, a widebody fuselage, a cinder block, and a cargo container.

Other systems and devices intended to suppress or extinguish an onboard fire don't directly relate to cargo ARFF. However, they can be critically important not only in increasing the flight crew's chances of getting an airplane with an onboard fire safely on the ground, but also increasing the chances that the airplane's occupants will escape the burning airplane and that the ARFF personnel will be able to contain the fire and reduce the overall damage.

Wells described FedEx's tests of a pallet blanket that can be draped over a cargo pallet to greatly retard spread of a pallet fire by denying oxygen to the flames. FedEx also has tested an overhead main-deck active fire-suppression system that looks very promising.

Capt. Ken Young (ASTAR), a member of the ALPA President's Committee for Cargo, the leader of the ALPA Cargo Safety Team Project, and the principal architect of the ALPA Cargo ARFF Symposium, questions a Symposium panelist.

CARGO ARFF INFO AT CREWROOM.ALPA.ORG

To view the presentations made at the ALPA Cargo ARFF Symposium, visit www.alpa.org; or visit the ALPA members-only website, Crewroom.alpa.org, and click on the Events tab, and scroll down to Archived Events. Under the Cargo ARFF Symposium item, click on "click here to download speaker presentations."

To learn more about the ALPA President's Committee for Cargo, go to Crewroom.alpa.org, click on the drop-down menu of Committees, and click on President's Committee for Cargo.—*JWS*

The role of Congress

But what about the fundamental disconnect—that *no* ARFF is mandatory for all-cargo operations, even those with airplanes as large as B-747s, at U.S. airports?

Several pilot participants in the Symposium stressed that this situation will not change until Congress changes U.S. Code 44706—a law you have probably never heard of, but which supercedes FAA regulations. So until U.S. Code 44706 changes, airport certification, Part 139 applicability, and the ARFF index apply only to passenger airliners.

In opening the ALPA Cargo ARFF Symposium, the Association's President, Capt. John Prater, declared, "We plan on using whatever strength and power we have to do whatever we can to correct the problems" with cargo ARFF. "If it means going to the Congress—the slow approach—we won't shy away."

Welcome news to the pilots in the room, though no one expects these issues to be resolved overnight. After all, ALPA's dogged work to require certification standards for airports with *passenger* service (FAR Part 139) spanned 35 years. Perhaps bringing the air cargo world up to the same standards won't take quite as long.

However long it takes, ALPA and the President's Committee for Cargo are in this for the long haul.