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HELP — A Lifesaver Plan That Works

Dallas-Fort Worth Metroplex Helicopter Emergency Lifesaver Plan (HELP) brought different jurisdictions and skills together to work toward the common goal of coping effectively with airport disasters. It offers some points to consider for any community group considering such a plan

by
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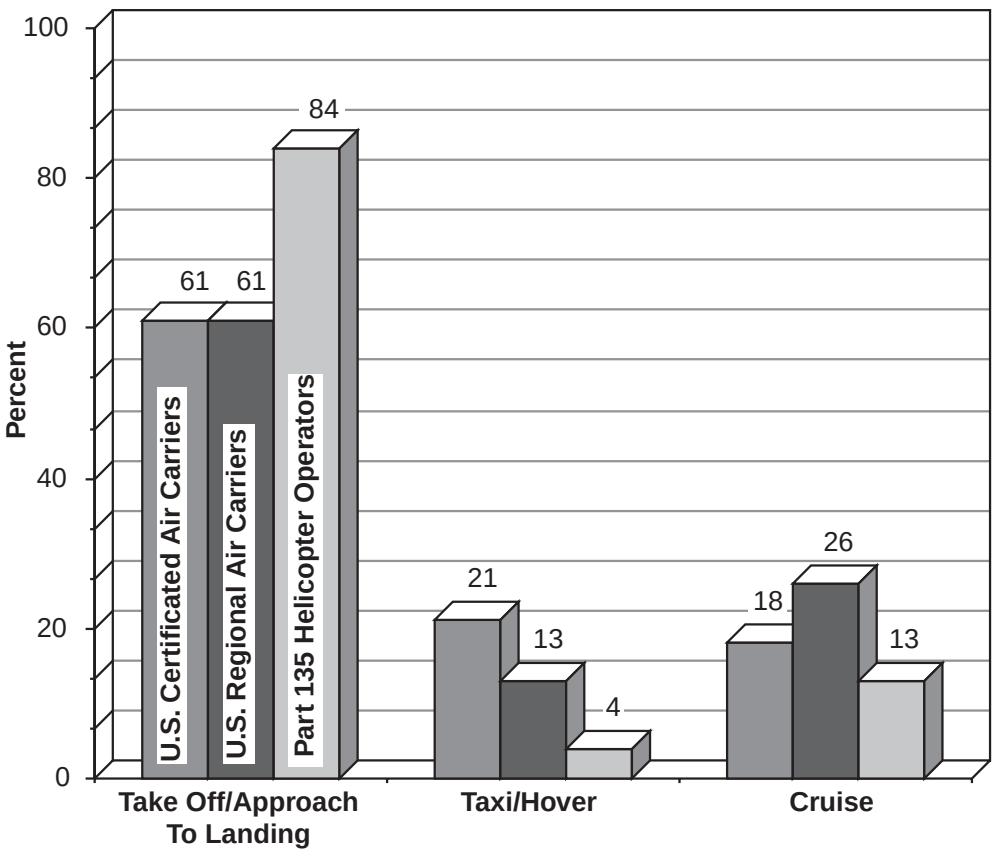
Persons, too often, are not aware of the varied services that helicopters perform in their communities. That lack of awareness frequently contributes to a lack of cooperation when some of those services are implemented for the first time. Unfortunately, emergency medical services (EMS), and associated disaster plans, are two of the most important services provided by helicopters, yet those operations are often fought against by the very population that would benefit the most from those services in a real emergency.

There is a limited awareness of what helicopters contribute to communities that must be overcome in order to implement positive programs that utilize helicopters. For instance, there is a limited awareness of helicopter support, in the form of shuttle operations between major airports located near each other, and perhaps from central locations in cities that use those airports. Helicopters support airlines and airports, but helicopters do not need airports to take off and land.

Except for involved communities, there is little or no awareness of helicopter support for the oil and gas industries — from exploration to its day-to-day sustenance. In the Gulf of Mexico, 600 aircraft operate more than 1.9 million flights per year and transport three million passengers and large amounts of cargo among 2,900 offshore structures. The average flight time per segment is slightly more than 20 minutes, but some helicopters may make between 100 and 150 landings during a single day of extended daylight. The ratio of takeoffs and landings between helicopters and large fixed-wing transports might be as low as 10 to 1 or as high as 100 to 1.

There is a general lack of awareness regarding comparative accident rates. The greatest accident experience for helicopter air taxi, supplemental and regional air carrier operations, occurs during the takeoff and landing phases. Conversely, the experience for each is less in the cruise phase (see Figure 1).

It is both unrealistic and misleading to compare helicopter and fixed-wing accident rates using only the traditional ratio of accidents per 100,000 flight hours, i.e., comparing 10-minute cruise segments for some helicopters with 10-hour cruise segments for some wide-body fixed-wing aircraft. Statisticians may not change their methods of determining accident rates, but there should be an awareness that the helicopter compares



Flight Phase of Pilot Error Accident
Figure 1

very favorably with large fixed-wing aircraft using the ratio of accidents per 100,000 departures (see Figure 2). (Helicopter statistics for these comparisons were provided by the Helicopter Safety Advisory Conference, which is composed primarily of operator and user organizations in the Gulf Coast area.)

Good Data are Elusive

Unfortunately, the U.S. Federal Aviation Administration (FAA), cannot provide reliable data regarding the number of active helicopters, the operational applications or even the flight-hour exposure. Flight-hour exposure is particularly important because it is the basis for currently determining comparative accident rates. Using reliable flight-hour data that we compiled for Bell-manufactured aircraft, we estimate that the accident rate computations for U.S.-registered helicopters would be reduced by 20 percent if reliable flight-hour reports were available. Using takeoff/landing data as a comparison base would be more realistic and provide more beneficial information.

Communities are less aware of traditional helicopter applications. Helicopters fertilize our crops and spray them with pesticides. They lay pipeline where other machines fear to tread. They erect powerline towers; string the wires between towers; and when electrical service is connected, they patrol and defoliate the power line rights of way. They erect bridges and other large structures. They serve as a bridge for harbor pilots at seaports. They protect forests through unequalled firefighting techniques. When they are used for logging, they can do so selectively — in a manner that brings envy to surgeons and joy to environmentalists. They lift every conceivable external load. They help us at work and at play. They are used as ski lifts, not just up mountains but also *between* mountains.

Some communities are oblivious to what should be obvious; helicopters are keeping them better informed through news gathering. They protect them from danger; helicopters are used by law enforcement worldwide because they are uniquely adaptable for traffic watch, crime prevention and detection, civil disorders, public event monitoring, and emergency rescues. Helicopters have unquestionably been proven in many applications — not the least of which is the role they play in an increasing number of life-threatening situations, especially those helped by helicopter EMS.

EMS Gets a Bum Rap

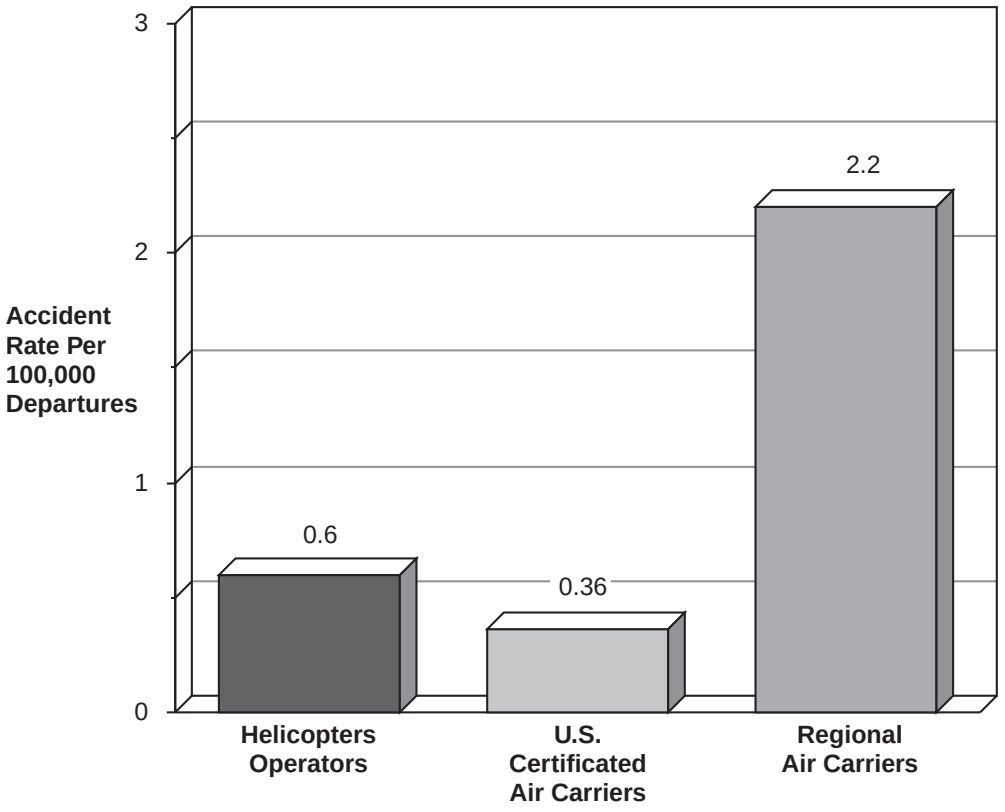
Unfortunately, I believe that the media — newspapers, magazines, radio and — television have created or reported unverified data from biased or self-serving sources which have actually depicted EMS as a life-threatening activity. Many communities frequently have been provided information that tells of only the misfortunes of EMS missions.

The relevance of community awareness of helicopter EMS capabilities could literally become a matter of life or death for some individuals residing in many commu-

nities. The American Medical Association (AMA) conducted a sophisticated study and published it in 1983. It concluded that chances for survival are increased by more than 50 percent with helicopter EMS intervention. Incidentally, the only place I've seen the results of this study was in the *Journal of the American Medical Association published June 10, 1983*.

Now we will consider positive community awareness and the birth of the Dallas/Fort Worth Metroplex Helicopter Emergency Lifesaver Plan.

The growing Dallas/Fort Worth area — known as Metroplex — was becoming increasingly vulnerable to casualties for which helicopters could provide rescue services.



Accident Rate Per Departure
Figure 2

First Ingredient is Awareness

Development of Metroplex HELP would involve a large number of organizations that were not familiar with helicopters; the potential could not be fully or properly utilized without comprehensive planning, training and realistic exercises. In short, we had to develop the awareness of several communities before they would help us help them.

The first HELP event was a workshop. Because the fire departments of the cities of Dallas and Fort Worth earlier had requested assistance in formalizing high-rise rooftop evacuations, they were willing to participate. The workshop was conducted in February 1982 in Grand Prairie — a city between Dallas and Fort Worth. At the workshop we demonstrated to each other that we could work together effectively and that with planning and practice, we could address almost any foreseeable mass casualty situation.

Mass casualty situations can arise from a number of situations. In a six-month period, Dallas accommodated 930 conventions attended by 900,000 people. During the same period the Metroplex area experienced five high-rise fires involving three hotels, an apartment and a hospital; there are nearly 600 high-rise buildings in the Metroplex. Significant flooding with drownings, injuries, evacuations and considerable damage losses occurred in 10 of the last 20 years. There are an average of three tornadoes, and each one presenting potential danger to life and property, each year in the 50-mile-square Metroplex area.

As for accident potential, there are 4,500 manufacturers in the Metroplex who collectively employ 1.8 million industrial workers. Transportation industries, such as railroads and trucking, present an equal or greater mass casualty potential to the 3.3 million residents of the Metroplex. On the average, more than one surface transportation accident occurs in the Metroplex each week and involves dangerous or hazardous cargos. There are slightly fewer than one registered motor vehicle for each person residing in the Metroplex.

Learning the Ropes

The Plan required that all participating organizations become familiar with helicopter support requirements. This involved classroom sessions and hands-on training for support organizations with the "Billy Pugh Net" (a net used for rescues by helicopters); video tapes for

training; and field training in which firemen were lifted, while in the net, by helicopter.

The Plan Gets Organized

Following the workshop, we formed a coordinating committee to identify resources, determine requirements, organize realistic mobilization procedures and devise safe operation and control procedures. The major considerations were:

1. Implement only for situations which exceed the capabilities of commercial EMS helicopter services.

2. Establish centralized points to validate the criticality of the reported threat.

3. Establish levels of threat for resource requirement determinations, based upon the number of 'victims' involved.

4. Establish a callback procedure to authenticate alerts.

5. Establish discrete communications frequencies and call signs.

6. Provide for an airborne command control helicopter and a separate communications network.

7. Provide specialized helicopter familiarization training for ground personnel.

8. Coordinate the establishment of temporary reserved air space for disaster areas.

9. Establish helistops and staging areas within each jurisdiction.

10. Coordinate mutual assistance agreements.

11. Designate an intermediate staging area for transferring victims from large to medium helicopters for delivery to medical specialty centers.

12. Maintain current photographs of high-rise roof tops, hospital heliports, jurisdictional heliports and staging areas.

13. Conduct periodic meetings of the coordination committee and publish revisions to the Plan.

14. Participate in proposing and planning periodic exercises (including requests for exemptions, hold harmless agreements, etc.).

15. Conduct critiques with all participating organizations following each exercise.

16. Promote the Plan through briefings and orientations for non-participating municipalities.

The original Plan was completed and distributed in August 1982. It provides the rapid availability of resources, at no cost to the municipality, that would otherwise exceed the community's financial capabilities.

A number of aircraft are committed to the Plan: Twin turbine 212s or 412s committed by Bell; medium single-turbine Bell UH-1 helicopters provided by the Texas Army National Guard and the U.S. Army Reserve; large twin-turbine Boeing Vertol CH-47s flown by the Texas Army National Guard; and large turbine Sikorsky CH-53s operated by the U.S. Marine Air Reserve.

The first full-blown exercise, in November 1982, involved a simulated high-rise rooftop evacuation in Dallas. The city activated the emergency center to carry out a mass casualty scenario. (Incidentally, exercises require more planning than actual events.)

The Plan Gets Tested

The city helicopter was launched when the scenario elevated a simulated fire to a second alarm. A fire officer was on board to evaluate the rooftop situation. After determining there were more than 10 people on the roof who could not descend through the fire floor, a Level 2 HELP alert was initiated. This action automatically alerted additional Level 3 resources for a standby if the emergency escalated. Bell launched one of its 412s and the Texas Army National Guard launched a UH-1 to accomplish the rescue. CareFlite, the local commercial EMS Bell 206 was alerted through the fire department network.

The rescue helicopters arrived within 15 to 20 minutes, respectively, each with a 10-person Billy Pugh Net connected, but stowed to permit a faster en route speed. During this period, the city's Bell 206 positioned two rescuers on the buildings to attend to the victims and provide an orderly evacuation. This helicopter then assumed airborne command control and requested the local FAA to establish a temporary airspace restriction around the area. In the meantime, the CareFlite 206 arrived to provide contingency hospital transport.

The rescue helicopters deployed their nets from a low hover and one took firemen to the roof with cutting

tools and breathing apparatus to remove obstructions. The rooftop rescue commenced immediately at the rate of 10 victims every two minutes, a staggered four-minute round trip for each of the two rescue helicopters. If it had been necessary, these two helicopters could have rescued approximately 600 persons without refueling.

This might be an appropriate time to explain why we use a 10-person net as opposed to putting people inside the helicopter:

1. People can be moved into and out of the net faster.

2. Net size limits the number of people and therefore the weight the helicopter will be required to lift.

3. Optimum aircraft center of gravity can be maintained.

4. Operations can be made from different and smaller areas on roof and staging areas.

5. Concern is eliminated that would accompany a landing on a structure where weight-bearing integrity might be compromised by fire damage.

6. Hazards are eliminated that might be associated with landing a helicopter in the midst of distressed victims.

The only significant helicopter operations problem was difficulty and delay in establishing the temporary airspace restriction by the FAA air traffic control center. Because the FAA supported the Plan and its exercises, this problem was solved immediately.

Practice Makes Perfect

A similar HELP exercise was conducted in Fort Worth in May 1983. Again, Bell dispatched a 412, and the Texas Army Guard dispatched a CH-47.

The Plan was later implemented to include a scenario involving the simulated crash of a Boeing 727 in the city of Irving, a short distance north and east of the Dallas/Fort Worth International Airport. The 412 from Bell landed at Parkland Hospital, the major Dallas burn trauma center, and transported staff physicians to the scene to assist in the triage. This rescue helicopter, fitted with six-litters, immediately started transporting victims to Parkland. Outstanding execution of the medical plan made it possible to complete a round trip each seven minutes, including offloading time. The CareFlite 206 also participated in transporting victims.

In addition to providing airborne command control, the Dallas 206 conducted a search of the surrounding area for victims that might not have been accounted for at the immediate crash site.

This mass casualty exercise, the most extensive and successful ever conducted in the United States at an off-airport location, included mutual aid responses by fire and medical services from the Dallas/Fort Worth International Airport, Dallas County, the city of Dallas and eight other cities in the Metroplex.

Preplanning Allows Flexibility

A major problem arose during this exercise when an electrical power outage interrupted the central communications network at the Irving Disaster Control Center. A high degree of preplanning made it possible to work around the problem. As a result of this problem, however, the overall Plan now provides for a mobile van to serve as backup communications for any jurisdiction within the Metroplex. This van can be transported by sling with a Sikorsky CH-53.

The Plan was ready when an actual disaster struck. On the afternoon of August 2, 1985, during peak rush-hour traffic, a Lockheed L-1011 crashed while approaching to land at the Dallas/Fort Worth International Airport.

Except for the aft fuselage and empennage, the aircraft was destroyed by the impact and fire. Of the 163 persons onboard, 134 were killed. The HELP response occurred within 15 minutes after notification. It was immediately apparent that there were relatively few survivors to be helped. We were pleased to have had the capability to provide any assistance that might have been needed.

In March 1988, HELP provided emergency transportation for relief firemen from a number of the Metroplex communities to assist in fighting an extensive grass fire that was threatening an entire community outside the Metroplex. The emergency had resulted from an unanticipated wind shift.

The Plan was called upon again when, shortly after 9 a.m. on August 31, 1988, a Boeing 727 crashed on takeoff inside the Dallas/Forth Worth International Airport boundary. The fuselage broke open and caught fire. Within minutes of notification, the HELP response was in progress. The first responding helicopter, a Bell 205A, went to the designated hospital to transport medical personnel to the accident scene.

Within the first 15 minutes, three medium-twin helicopters arrived at the scene, followed within the next 15 minutes by nine additional helicopters, including a UH-1H from the Bell Army Plant Office and the 205A bringing physicians from the hospital. The CareFlite EMS service had three helicopters involved that were able to provide victim transport. CareFlite receives notification through the primary emergency services network, but it participates in all HELP exercises.

We had a rapid response which provided an enormous capability for transporting survivors. In fact 95, of the 108 people onboard needed little assistance due to an outstanding performance by the aircraft cabin crew.

The Texas Metroplex communities have learned that HELP is an important community asset. And once again, a workhorse in aviation, the helicopter, performs an important service — and the Metroplex communities have a keen awareness of the helicopter's role in this important life-saving program. ♦

About the Author

Paul R. Powers is director of safety and certification for Bell Helicopter Textron, Inc. Previously, he served as director of flight safety for American Airlines and as a career staff safety officer in the U.S. Air Force.

Since joining Bell Helicopter Textron, Powers has worked with the U.S. National Transportation Safety Board, the U.S. Federal Aviation Administration and comparative investigative and certificating authorities throughout the world to enhance helicopter safety and certification activities. During this period, he conceived, coordinated and promoted a Dallas/Fort Worth Metroplex Helicopter Emergency Lifesaver Plan (HELP) designed to cope with mass casualty situations, including rooftop evacuation for high-rise building fires.

During his work with American Airlines, Powers implemented a safety survey program that contributed to cooperative accident prevention efforts between American, other major air carriers and airport support organizations. He prepared an airline emergency procedures manual and developed an audio-visual airport rescue and fire fighting orientation program used in several countries.

Powers, a commercial pilot, with rotorcraft ratings, was the chief of flight safety for the U.S. Air Force Systems Command when he retired as a Command Pilot with more than 11,000 flying hours and 141 combat missions to his credit.

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