RECOMMENDATIONS AND BEST PRACTICES FOR IMPLEMENTING A SIMULATED AIRCRAFT ACCIDENT AND EMERGENCY RESPONSE DRILL DURING A REHEARSAL SHOW

30 DAYS OUT
• Aircrew Rescue/Firefighting (ARFF) notified that emergency response drill (ERD) should be conducted during rehearsal show (typically held on Friday at most weekend shows).

UPON AIR BOSS ARRIVAL AT SHOW VENUE
• Air boss, (air traffic control (ATC) if applicable, airport director (AD) if necessary) and waiver holder meet with ARFF and discuss rules of engagement (ROE) for ERD.
• Air boss should discuss how long the ERD will take and how long it will take for ARFF to recover back into their positions following the drill. Plan the sequence accordingly. (For example, if the air boss determines that the drill itself will take 20 minutes and ARFF will take another ten minutes to return to position, then air boss should build a 30-minute slot into schedule for the rehearsal show.)

REHEARSAL DAY PERFORMER BRIEFING
• Air boss will inform everyone that an ERD should take place and review ROE, but will not issue specifics as to the time and location of drill.
• Air boss will have a private conversation with performers scheduled to perform prior to and after ERD is to take place for situational awareness. ATC considerations, particularly at 139 airports with 121 ops.

General observations, and potential Rules of Engagement
• No water or foam will be used during this drill. (To save time for refuel and minimize the risk of anything being damaged by the use of high pressure water or foam.)
• ERD is not to be commenced in the middle of a performer’s routine. The performer needs to run through an uninterrupted sequence.
• Do not use a performer aircraft to simulate an emergency aircraft (To ensure that a helpful and important drill does not become the cause of damage to a performer’s aircraft).
• The emphasis of the drill will be on 1) communications between ARFF crews, air boss and ATC; 2) ARFF crews leaving their ready position(s) and traveling as quickly as possible to emergency site; and 3) ARFF personnel arriving at the emergency site and announcing their availability to engage with fire suppression, emergency extraction, etc.
• At the start of ERD, air show announcer will state that this is a drill and repeat that announcement through the drill so to keep those onsite and the media from being alarmed.

AT CONCLUSION OF DRILL
• Verify all ARFF units are in back in ready positions on flight line and ready to recommence show.
• If ARFF team does not roll within ten (10) seconds or does not reach the incident scene ready to engage within sixty (60) seconds, air boss and CFR must debrief what went wrong and determine ways to adjust and be within industry standards prior to the next show day. This should be done even if the team does make the goal, but there is consensus that they could have done better. Air boss, waiver holder, ARFF, ATC and AD should be in agreement.

POTENTIAL MEDIA IMPACTS
• With rehearsal days typically also serve as media day, these drills are likely to draw media attention to the potential of an accident and the topic of air show safety. Event organizers should have talking points ready, with emphasis on the drill being just one part of the air show’s commitment to and preparation for being ready for a wide variety of possible incidents. Because the topic often comes up with the press anyway, the drill will provide event organizers with an opportunity to discuss emergency planning frankly. ICAS will make available a sample list of talking points for interaction with media on this issue.
A WORD FROM THE ICAS SAFETY COMMITTEE

Although the ICAS investigation into the fatal accident and the emergency response at Travis AFB last Sunday is still underway, initial reports related to the ARFF response should serve as a reminder of the importance for event organizers to coordinate with ARFF to ensure that effective and expedient action is taken in the event of an emergency. The following items should be considered essential elements to brief with your ARFF team.

• In all correspondence, telephone discussions and meetings, air show personnel should begin by acknowledging that ARFF personnel are subject matter experts on incident/accident response during standard operations at that airport. But they should also emphasize that air show operations are, by definition, non-standard, and that normal protocols at that airport will likely be less-than-completely effective in air show-related emergencies.

• Prior to the event, event organizers should receive emergency extraction information for each performer at their show and make this information available to ARFF for review.

• Event organizers should coordinate with performers and ARFF to schedule emergency egress training upon arrival at your venue. Ensure that the training is being received by those ARFF crews that will be scheduled to work throughout the event. While military bases and civilian part 139 certified airport firefighters receive extensive training and have numerous qualifications, often the type of aircraft demonstrated at air shows is unique and these ARFF teams in most cases have very little experience with them.

• In that same sense, the response times required for these airports to meet standards are not suitable for an air show environment. It is essential to communicate the following needs to ensure that ARFF response time is kept to a minimum.

• Communication Plan – Simply put, keep the communications plan as short as possible. Your ARFF teams should be pre-briefed with the air boss and ATC so that, if they see an accident, they are to GO! Right then; don’t wait, GO! The air boss and ATC will get the other aircraft out of their way. Briefing these emergency procedures is a mandatory item in your performer briefing and should be kept as simple as possible to minimize any delays in the response.

• ARFF Teams at the ready – Often one of the largest sources of contention between event organizers and ARFF is the need for them to be ready to go instantaneously. It is expected that ARFF crews are suited up (bunker pants on with jackets and hoods at the ready) and in the trucks with the engine running and ready to go. At no time should ARFF crews have family or friends at the trucks. Folding chairs and any other items should never be positioned in front of the trucks. If enough crews are unavailable to provide breaks, then food and beverage should be brought to the trucks and a portable restroom provided at each truck.

• Placement of ARFF vehicles – ARFF trucks should be tactically prepositioned to provide the shortest and most direct routes to show center. While every airport layout is different (location of connecting taxiways, terrain etc.), a general guideline would be to have trucks located at both ends of the crowd line or at the corner markers, and another truck (preferably a rapid intervention vehicle) located at show center. Always consider connecting taxiways and obstructions when planning where to preposition your assets. In all cases, your ARFF trucks must not be buried behind the crowd line and must be dedicated to the flight operations portion of your event, and never positioned in such a way that their direct access to the aerobatic box is impeded by the public or other obstructions.

• Types of response vehicles – In addition to the typical large airport ARFF trucks, ICAS continues to emphasize the need for rapid intervention vehicles to be implemented into your response plan. These pickup trucks or ATVs can typically get to the accident scene much quicker than the larger trucks and -- although they carry only a limited supply of water and foam -- they have the potential to extinguish a small fire or keep one from quickly spreading, thereby buying additional time to extract the aircrew. Additionally, these vehicles provide access to some areas that the larger trucks may not be able to get into. These fast attack vehicles are usually deployed at, or very near, show center.

Preposition an ambulance dedicated to flight ops in front of the crowd line at, or very near, show center. And, we strongly recommend prepositioning an end loader or large fork truck with off road tires near show center in the event the aircraft comes to rest inverted or needs to be lifted/pushed to facilitate emergency extraction of the aircrew.

Concerning response times, the air show industry standard is that rescue vehicles are expected to be on the roll within 10 seconds of impact. Understanding that no two airfields are the same, it is expected that by thoughtful prepositioning of your equipment, ARFF equipment should be at the incident site and engaged within 60 seconds.

ICAS also endorses implementing an emergency response drill into your rehearsal day. The timing and nature of the incident will not be briefed with ARFF prior to the drill.
RAPID RESPONSE TO EMERGENCIES: LEARNING FROM THE UNFORTUNATE EXPERIENCES OF OTHERS

Earlier this month, a Christian Eagle crashed while performing low-level aerobatics at a riverfront air show in Plock, Poland. The pilot, Szufa Marek, was killed in the accident, but – for North American air show professionals – the emergency response is worth our collective attention.

After a series of tumbling maneuvers left him too low to safely recover, this video shows that he impacts the water approximately 43 seconds into the video segment. If you let the video run, you’ll note that the first rescue boats don’t arrive at the accident scene until the 2:10 mark in the video, almost 90 seconds after the accident. And, when that first boat arrives, one man in the boat can be seen taking off his shirt/jacket, at about the 2:30 mark. He is not equipped with fins, mask or other underwater rescue equipment. The first would-be rescuer does not enter the water until 2:56, two minutes and 13 seconds after the crash. By the 3:15 mark, several other people had entered the water, but none of them appear to have the equipment needed to make an underwater rescue.

In contrast, look at this video of Adilson Kindleman’s accident during the Red Bull Air Race in Perth, Australia in April of 2010. In the video, he impacts the water at the 13 second mark. Within 14 seconds of the accident, two different jet skis operated by fully-equipped rescue specialists appear in the frame. Within another 15 seconds, a larger boat is seen approaching the crash scene. And by the time the video ends, 42 seconds after the crash, rescuers are poised to begin their rescue. We know from eyewitness accounts and other video that the rescuers were underwater, helping the downed pilot less than a minute after impact. Kindelman survived the accident with only minor injuries. Individuals familiar with details of the rescue believe that he would not likely have survived if he had spent even another 15-20 seconds underwater.

Although it may be tempting to criticize the Polish show organizer for their slow response, the truth is that very few air shows are prepared to respond as quickly and professionally as the Red Bull personnel did. The sad fact is that slow responses to emergencies in our business have had tragic consequences many times over the years…not just in other parts of the world, but here in North America. And not just small or unsophisticated shows, but even our largest and most well organized events. For most air shows, the emergency response is a document in a loose-leaf binder that they hope to never use. For Red Bull officials, the emergency water response plan was something that they had discussed in considerable detail with all of their pilots just days before Kindleman’s accident.

The take away? If you and your team are not prepared to execute a precise, thorough, frequently practiced emergency response, the most likely outcome will be that your emergency response personnel will respond slowly and arrive too late or arrive without the equipment needed to affect a successful response/rescue/extraction.
ARFF: MORE THAN JUST RAMP DECORATION

Over the years, the air show industry has successfully (mostly) lobbied to have aircrew rescue/firefighting vehicles and personnel positioned on the flight line at air shows in such a manner that they are able to respond quickly to any crash within the air show aerobatic box.

Unfortunately and sometimes with tragic results, the responsiveness of these ARFF teams has not always been as fast or as coordinated as circumstances demanded. Many air show veterans can remember family picnics and cook-outs held under the shadow of a fire truck. In other cases, important details related to when and how ARFF vehicles would respond were not coordinated prior to the show or during the pre-show safety briefing, resulting in confusion and misunderstandings in the key seconds immediately following an air show accident.

ARFF is more than a box on a pre-show safety check list that needs to be checked. It is a philosophy/procedure/process that needs to be understood, de-bugged, effectively communicated and constantly re-visited.

A few specific pieces of advice that are driven by real-world example and tragedies…

• ARFF/airport control tower/airboss issues are best resolved BEFORE an accident, not during the critical seconds following an accident. Nobody wants a second accident involving ARFF vehicles crossing a runway that is being used by a landing aircraft, but it is critical that ARFF vehicles not be left waiting for tower clearance as they respond to an accident. ARFF should always have the right of way. This issue must be resolved during the pre-show safety briefing.

• ARFF personnel should be briefed to be in a state of readiness that assumes in accident is imminent throughout the waiver period. From the second the first aircraft begins to taxi to the moment the last aircraft shuts down, ARFF personnel should be prepared, standing next to their equipment and ready to roll within a few seconds. Among other things, that means that the ARFF vehicles cannot be used as a viewing stand for non-ARFF personnel watching the air show. This also requires some consideration by the organizer in that ARFF personnel and their vehicles should have clear access to the ramp and runways with NO crowd line obstructions. The organizer should ensure the crews in pre-staged positions must be fed, watered, shaded, and have sanitary facilities at their pre-staged position.

• Cockpit extraction details are an issue that should be discussed by the aircraft pilot with at least one member of each ARFF team that might respond to an accident. That ARFF team member should be briefed on canopy ejection, harness issues, fuel and oil shut-off, master switch off position and any other issued deemed to be important enough to discuss by the pilot in command. And event organizers and air bosses should actively facilitate these discussions. Pilots want these briefing to take place, but they will sometimes be hesitant to make an issue of it if the necessary ARFF personnel are not made available to them on the ramp or during the pre-show safety briefing. And, if the ARFF personnel change on Sunday, then the emergency extraction discussion should be held again.

The one common theme among event organizers who have experienced some kind of accident or safety incident is that none of them thought it would ever happen at their show. When it comes to emergency response, it is best to hope for and work towards the best, but assume and plan for the worst. If you and the personnel associated with your event assume that there will be an accident of some sort sometime during air show weekend and plan so that you can respond appropriately whatever that accident might be, you will be in a much better position to respond if and when that accident occurs.
How to Effectively Pre-Position ARFF Equipment at your Air Show

By Dennis Dunbar, Co-Chairman, ICAS Event Organizer Safety and Operations Committee

Aircraft Rescue and Fire Fighting or ARFF (previously referred to as Crash Fire Rescue or CFR) plays a critical role in any air show emergency plan. ARFF has evolved significantly from the days when “putting the wet stuff on the red stuff” was the standing order. Today, ARFF technology, training and response have evolved into a multifaceted approach to saving lives. In the air show environment, ARFF philosophy can only be effectively implemented at an air show with proper pre-positioning of your ARFF team.

Planning where to stage your ARFF equipment at an air show begins early in the planning process. If the airport hosting your air show is certificated under Part 139 of the Code of Federal Regulations (CFR), you must submit a Ground Operations Plan (GOP) that addresses the impact that your air show may have on Part 139 requirements. The GOP must be submitted to your host airfield’s Airport Certification Inspector and approved prior to submitting your waiver application (7711) to your Flight Standards District Office (FSDO). (Although certain regions have sometimes been willing to work both the 7711 and GOP concurrently, ICAS recommends checking with both your FSDO and Airport District Office (ADO) to verify the procedure in your region.)

Once the GOP is approved, the airport certification inspector will send a letter to the airport operator and notify the appropriate FSDO. Although the GOP includes many Part 139 issues related to the air show, it is the “Capability and Special Emergency Response Procedures” that relate most directly to ARFF issues. (For a complete list of items to be covered in your GOP, refer to the document entitled “Ground Operations Plan for Part 139 Certificated Airports” developed by the ICAS Event Organizers Safety and Operations Committee, or visit http://www.faa.gov/airports/airport_safety/airshows/ to directly access the FAA’s latest information.)

Here is the relevant excerpt from Part 139 Ground Operations Plan:

Aircraft Rescue and Firefighting (ARFF) Capability and Special Emergency Response Procedures

- If necessary, indicate pre-positioning of ARFF vehicles during air show activities to maintain ARFF Index and response requirements. Identify emergency access routes around the crowd area.

- Identify additional ARFF personnel required during air show activities and address other duties assigned to ARFF personnel.

- Indicate if hazardous materials procedures and training are needed for emergency response personnel related to the air show (hydrazine, liquid oxygen, smoke, etc.).

- Describe any special emergency procedures established for the air show that are not addressed in the Airport Emergency Plan.

If the airport where you are holding your show is not a Part 139 certificated airport, you may proceed directly to the waiver application process with your FSDO. However, it is good practice to build your own GOP for internal use. While the ARFF-related information that you provide to the FAA on your waiver application meets the minimum requirements of the FSDO, the information requested regarding ARFF staging is very limited. Essentially, the waiver application only requires that you depict your CFR locations on a to-scale map and indicate if you will have a physician, ambulance, fire truck, crash wagon or other CFR vehicle at your event. While completing the 7711 may satisfy the FSDO’s need to issue a waiver or authorization for your event, significantly more planning and preparation are required to be ready to meet any emergency that may arise during your event.
The primary purpose of your ARFF personnel and equipment is to rapidly and effectively respond to an aircraft emergency at your air show, and to keep your performers and spectators safe in the event of an emergency. This requires your ARFF team to be properly prepared and positioned to respond immediately upon notification. Here are some suggestions on steps you can take to ensure that you and your team are properly prepared to handle an emergency situation in front of the crowd line at your air show.

**ARFF Plan: It’s a philosophical commitment, not a piece of paper**

The shows that have the strongest and most well-respected emergency response all have the same basic approach to ARFF. Everything they do is predicated on the assumption that there WILL be an accident during the show and that, when that accident happens, they WILL be positioned and prepared to initiate an accident response that saves one or more lives.

Shows that see their ARFF planning as a block to be checked off or a document that they have in a loose-leaf notebook are almost invariably less prepared to respond in the event of an incident. These shows think of reviewing the emergency response plan as one of those pre-show obligations they have, like ordering porta-potties or submitting a waiver application. So, when an emergency arises, they are not ready to execute their plan because, all along, they approached emergency response as a remote and unlikely contingency, not as a critically important aspect of their show that they should be ready to professionally and successfully execute with no warning.

**Dedicate an appropriate level of ARFF capability to respond to events that may occur during the waivered period in front of the crowd line**

ARFF personnel and equipment must be available in sufficient quantities and in position to respond at all times when the waiver is in effect and aircraft are operating as part of the waivered event. When creating a GOP, plan to separate your first responders into two areas of responsibility: those who respond to events in front of the crowd line and those who respond to events behind the crowd line. Those assigned to support flight operations and respond to incidents in front of the crowd line should have unrestricted access to the aerobatic box. At no time should spectators be allowed in the vicinity of these dedicated first responders.

If an emergency arises behind the crowd line that requires the supplemental use of ARFF equipment that has been tasked to support the flying operations, the air boss must be informed immediately and he must initiate a “knock it off” to performing aircraft. If dedicated ARFF equipment and personnel are not immediately available, the show stops. It’s that simple.

While air shows provide a unique and potentially valuable public relations opportunity for your local fire departments, no equipment accounted for in your GOP should be used for public relations purposes. We highly recommend that an additional fire truck and ambulance be brought in to the event to serve as your dedicated public relations vehicles. Children can climb all over these vehicles and firefighters can “suit up” these children as desired. But the personnel and equipment outlined in your GOP should be available to respond immediately in the event of an emergency without being obligated to “untangle” themselves from a public relations mission.

**Pre-position ARFF equipment in locations that will provide the most direct and quickest response time**

While Part 139 certificated airports have emergency plans based on standard operations, air shows provide an environment that can be best described as non-standard. While a firehouse may be built in a location to provide an appropriate response during standard operations, air show lay-out plans may -- and usually do -- require ARFF equipment to be pre-positioned to provide unrestricted access to the aerobatic box. At most air shows, ARFF assets are typically positioned in more than one location. And the firehouse is seldom properly positioned to be the right place to stage ARFF assets during air show weekend to respond to air show incidents.
If you are able, consider spectator line of sight when determining where to pre-position CFR equipment, but the final determining factor must be ease and speed of response.

**Consider the use of specialized equipment on air show weekend**

Depending on the type of aircraft participating in your show and the physical lay-out of your airport and aerobatic box, you may decide that it’s appropriate to supplement standard AARF equipment with something more specific to the nature of air shows. Many shows are now using “fast attack” type vehicles: pick-up trucks or four-wheel vehicles with portable heavy-duty fire extinguishers that can be deployed and arrive on-site faster than the standard heavy-duty equipment that might be used to respond to an airliner or military aircraft accident. This type of equipment is sometimes used by fire departments to fight brush fires in backcountry-type locations and is likely available for your show’s use during air show weekend.

**Ensure that all ARFF personnel and equipment are ready to roll immediately**

This is the single biggest ARFF challenge at many events. Even when your ARFF team is positioned perfectly, if they are not ready to roll immediately, they may as well be back in the air conditioned firehouse. The team chosen to operate in front of the crowd line must realize that they are expected to be continuously ready to roll from the moment they report in position until they return to the firehouse at the end of the show. This means that they are suited up, equipment at the ready, vehicles running and ready to “roll” immediately. No lawn chairs, no cookouts and absolutely no family members in or on the trucks. Those few seconds could be the difference between life and death. Unfortunately, these issues are far too common at air shows. Be firm with your first responders and ensure this isn’t the case at your event.

**Ensure that an end loader and a qualified operator is included in your ARFF response**

Like so many other lessons in the air show business, the importance of having a heavy lift piece of equipment and qualified operator has been learned through past tragedies. An end loader either with a bucket or forks capable of lifting demonstration aircraft and, in some cases, moving the aircraft to assist in the extraction of a performer is a must-have piece of emergency equipment. The vehicle must be able to operate on unimproved surfaces with the speed and agility to keep up with other CFR vehicles. Performers have lost their lives unnecessarily because of the lack of this essential piece of equipment. If your ARFF department doesn’t have one of these, your airport maintenance department or city likely does. Integrate them into your emergency plan and ensure they are available at all times.

**Assign a single point of contact with direct communication to the ARFF team to be co-located with the air boss. Ensure that this person has the authority to “roll the trucks.”**

Air show accidents can happen in an instant, and when you least expect it. The fastest way to initiate a response is for the air boss to look to his side and say “Roll CFR!” If the air boss and the ARFF point of contact (POC) are on the same page, it only takes a look. During flight operations, this POC needs to always be available, but not underfoot. There is no time for the air boss to look for him when an emergency occurs.

**“Tires… win races!” And, in this case, may save lives**

This may seem to be a given, but at shows where the host airport does not have a dedicated ARFF team, a local fire department may take the lead ARFF role for the event. Ensure that the equipment dedicated to respond to an aircraft accident has the ability to venture off prepared surfaces. This holds true for your end loader or large fork truck as well.

**Egress training**
While not all performers will choose to participate in egress training, the event organizer should ensure that the opportunity exists for all performers to meet with the ARFF teams at their aircraft. This is a valuable opportunity for performers to brief ARFF personnel on their aircraft’s unique characteristics and egress procedures your ARFF teams may not be familiar with. Egress training should be accomplished prior to that performer’s first flight from your airport.

**ARFF representatives must be present at the performer briefing**

This is actually required in the special provisions section of the air show waiver. While we recommend that the air boss has a detailed meeting with ARFF personnel prior to the performer briefing, it is still required that a representative from ARFF attend. Prior to the show, it is recommended that all performers send to the air show director their emergency egress procedures, any unusual details about the aircraft and any other information deemed necessary to relay to ARFF personnel. But the pre-show performer safety briefing is an excellent opportunity for the air boss to encourage egress training and sidebar briefings between performers and ARFF personnel prior to their demonstration. Remember: the purpose of the briefing is to de-conflict and work through any remaining issues, but prior preparation is key to ensuring that everybody’s expectation on emergency response will be met.

**Brief the pyro field**

While it is certainly important for your performers to know where the pyro field is located in the event of an accident, it is equally important for first responders to be aware of the hazards. While it is typically briefed for performers to remain near their aircraft after an egress and wait for the Shooter in Charge to escort them from the area, ARFF should also be briefed of any particular hazards that may not be readily apparent in the pyro field.

**Crowd line security**

In the event of an emergency, history has shown us that many do-gooders in the crowd may feel that they can assist in the event of an emergency. We have all seen the pictures of spectators storming the crowd line and rushing to the scene of an accident. It is imperative that measures are taken to prevent this from occurring. While hidden dangers such as a pyro field, or not-so-hidden dangers such as screaming fire trucks, make this a hazardous attempt at heroism from the spectator, their actions can delay qualified first responders from reaching the scene of the accident. Your first form of crowd control is the calm but commanding instructions of the air show announcer. Second, your crowd line should be staffed with personnel instructed to keep the crowd behind the “fence” at all times.

**Determine emergency route(s) from the airport to a medical facility**

In the event that an emergency in the aerobatic box requires immediate transportation to an off-site medical facility, your plan should ensure that emergency routes in and out of the airport are available. Consider spectator traffic flows into and out of the airport when planning your route. Emergency routes should utilize roads dedicated to emergency traffic only and any gates along the route should be staffed to allow unrestricted access throughout the event hours.

**Med-evac helicopters**

The medical evacuation (med-evac) helicopter has become a “must have” lifesaving device at air shows throughout North America. Much like the dedicated ARFF equipment, a dedicated med-evac helicopter should be staffed at all times and ready to launch at a moment’s notice. When pre-positioning your med-evac helicopter, keep a 200-foot radius around the helicopter free of persons and property that could be damaged during lift or taxi. Ensure that a communication plan is in place to alert the helicopter of the emergency and follow-on instructions. Most private med-evac helicopters will offer their services at no expense. But ensure that they do not intend to allow public access to the helicopter or set up a display that must be torn down prior to launch. Some
operators will agree to provide two helicopters, one dedicated to the air show response and one for public relations (and can be used as a spare) if notified early enough in advance.

...But what if it’s an “over-water show?”

While many of the above mentioned items can be directly translated to an over-water show, timeliness of response is stressed again due to the risk of drowning. Multiple dive teams in high speed rescue boats or jet skis strategically located around the aerobatic box are recommended to ensure a quick response and the ability to reach multiple victims in different locations. Like the ARFF equipment at airports, rescue boats must be staged so that they have direct unrestricted access to the aerobatic box. Dive team members should be prepared with equipment to extract pilots from their aircraft and carry spare air bottles to provide to performers in the event they are trapped inside the aircraft. Flotation devices should also be on hand to allow the plane to be brought to the surface to aid in extraction. A dive team POC with direct communication with the rescue boats should be co-located with the air boss and have the authority to deploy the boats immediately. Typically, a combination of U.S. Coast Guard and local emergency personnel are needed to sufficiently staff multiple dive teams. Due to potential frequency incompatibilities, this may require that more than one POC be located with the air boss to ensure rapid deployment of all teams. Ensure that there is a plan to get victims from the water to shore-based medical facilities. Consider where a rescue boat can get a victim to an ambulance or a waiting med-evac helicopter in the shortest amount of time. Additionally, ensure that there are enough emergency vessels to prevent boating spectators from rushing to and impeding rescue operations. And be sure to thoroughly brief all of these issues to your ARFF personnel and to all air show performers during the pre-show pilot safety briefing.

More than one show has built an over-water rescue plan around the assumption that a very large ship will reposition in time to provide assistance to a pilot who lands in the water. This does not pass the common-sense test and, though they may not express their concerns to the event organizer or ARFF personnel, the performers know that this is not a realistic plan for providing emergency response if it is ever needed.

...But what if an accident occurs “off airport?”

Typically, airports use their existing mutual aid agreements to respond to aircraft incidents or accidents that occur off airport. The event has a responsibility to their community to ensure that an effective mutual aid agreement is in place. In the event the agreement isn’t applicable to an event such as an air show, steps are taken to fill the necessary gaps. Your airport fire chief or airport manager can assist in facilitating these relationships and local expertise is often necessary to determine areas of responsibility.

These are some key tips to consider when determining how to effectively pre-position ARFF equipment at your air show. While these suggestions deal primarily with what occurs in front of the crowd line, similar diligence is required to account for emergencies that occur behind the crowd line.

ADDITIONAL RESOURCES

The ICAS website includes a wide variety and large number of documents related to emergency response, including sample emergency response plans, power point presentations from past ICAS conventions, and emergency response-related articles from back issues of Air Shows Magazine. To see a full listing and short description of each item, visit: http://www.airshows.aero/Docs/75.