



IT'S ALL ABOUT CONTROL

The International Fire Instructors Workgroup urges more focus on fire behavior

STORY & PHOTOS BY KRISS GARCIA

Australia immigration had me in their control. Most electronic visas are approved immediately, but 13 hours before my flight, I was informed that customs would get back to me within 12 hours. On my third call to the Australian embassy in Washington, D.C., the problem became apparent: My name was associated with the word “attack.” It wasn’t until I explained the concept of a positive-pressure fire attack that they relented. Control, I would soon discover, would be a theme of this trip.

I was on my way to Australia for the second annual meeting of the International Fire Instructors Workgroup (IFIW), a loosely organized group of recognized fire practitioners from across the world. The group’s mission: to participate in an annual informal meeting aimed at blending cutting-edge international expertise. This blending isn’t just between countries; it’s also between the practical and the scientific. Hypotheses are presented and then challenged in the educational as well as practical sense, as this group generates and then disseminates the newest information related to the fire service.

IFIW BACKGROUND

Last year Stefan Svensson, a fire instructor/scientist from Räddningsverket Revinge, Sweden, brought together 14 internationally renowned fire instructors in command and control, fire tactics and fire science, representing nine countries.

This year the IFIW was sponsored by the Institution of Fire Engineers (IFE) of Australia with the theme “Finding the Common Foundation.” Why Australia? Australia’s fire service is professional, well educated and overall very impressive. But they’re also a little like one of their famous inhabitants, the kangaroo. The kangaroo is the only creature with a pocket, yet its arms are too short to reach it. The Australian fire service has a tremendous amount of knowledge and cutting-edge innovations, yet for most of the world they’re hard to reach.

The IFIW is based on a few premises:

- There’s a tremendous amount of information about fire still to be discovered;

- Singly, none of us has the answer;
- The universal nature of physics as related to fire is at best a fledging science; and
- The most obvious requirement for becoming a true fire practitioner is having the ability to understand fire behavior, not just from the tetrahedron point of view, but also from an in-depth analysis of how our tactics affect the fire's behavior.

KEYS TO CONTROL

The idea of controlling—rather than reacting to—became an underlying theme of the conference that kept surfacing regardless of the topic. One of the hardest things this group must control is their individual passion. This is challenging because the individuals were chosen to be part of the IFIW precisely because of their passion.

But control factors into fires in other ways, too. When considering any critical incident, we must remember the invaluable contribution competent and respected incident commanders (ICs) make to the successful control of our incidents. Competency and respect are pivotal elements because they decide whether fire crews will trust and follow the IC as they control incidents. ICs build this trust well before any incident as they interact, educate, train and generally take care of their crews on a daily basis.

Control is also a critical factor in a fire's potential energy and subsequent behavior. Given the resources and capability of various agencies, ICs must be able to meet the fire at its threshold of control. Another way of saying this: Deploy your resources in such a manner that their efforts won't be wasted and personnel won't be put in harm's way unnecessarily. *Example:* A single engine company may not be able to safely control the energy presented by a multiple-room, single-family dwelling fire. Doubling the resources should increase the threshold of control so that more of the fire's potential energy can be controlled in a safe manner.

Looking at the fire problem in this fashion, we can agree that if we can't safely take control of the fire with the resources on hand,

we might not be able to make an aggressive interior attack until sufficient resources are on scene. If additional resources aren't available, the IC should complete a rapid risk assessment to determine if an interior attack is feasible. If not, the question then becomes, how can we best decrease or relocate the fire's potential energy to safely make an interior attack?

Any one of our prescribed tactical operations may work to control a fire's behavior, with obvious pros and cons. It's when our routine tactical options can't adequately control the energy that we must readjust and use other proven tactics.

Note: IFIW members recognize that the easiest thing an initial IC can do is attempt an interior attack, even if their risk assessment doesn't warrant it. The hardest thing to do is to stop our Pavlovian response and go defensive or transitional to avoid putting our firefighters in harm's way.

A MELTING POT OF TACTICS

The IFIW believes that a blend of tactics may offer the safest and most effective option for many of the fires we encounter.

As this group works toward developing a best-practice opinion, it appears that as an international fire community we should consider the blending of rapid ventilation and gas cooling as practices to control the lethal fire environment. We should also work to build understanding of how our tactics can predispose extreme fire behavior. Regardless of what country you're in, all fires react according to the same physical laws as they expand from an area of high pressure to an area of lower pressure.

Specifically, the group discussed the following parameters:

- If immediate interior operations don't appear to be controlling the fire and gases and moving them away from interior crews, we should attempt to decrease the fire's energy through control or absorption of BTUs with adequate water using a disciplined approach of rapid ventilation and controlled door-entry procedures.



Crews demonstrate that there's not enough exhaust from the structure by observing the space above the fan's pressure cone, known as the barometer of interior conditions. If this space is showing thick smoke or flame, there's not enough exhaust to safely use positive pressure attack.



Crews wait until they are fully prepared to enter the structure with good door entry techniques so that their actions will not facilitate fire growth and spread.



- Once the energy has been decreased to a controllable level, we can then work to control the interior environment through rapid and aggressive ventilation.
- As fires expand, they seek areas of lower pressure. Therefore, the simple act of opening the attack entrance door often results in a substantial area of potential fire spread toward the newly created low-pressure area where our interior crews are entering. If crews can't use pressurization to keep the fire from going to an area of lower pressure or to the exterior of the building (away from entering crews), the fire may have too much energy for the resources we have on hand. We may have to use other, more remote tactics to try to bring the fire's energy within our threshold of control.

- When we consider the area of lowest pressure near the fire, we must ensure that the exhausts we create are of sufficient size to keep the fire and hot gases moving away from firefighters as they exhaust from the building.

Regardless of whether a pressurized assisted attack is used, fire department resources must consider their ability to take control of the fire scene and safely make the highest possible level of positive impact. From a safety and tactical point of view, we must control where the energy is and where it's going. In practical application, this may mean that if you arrive at a single-family dwelling that has a tremendous amount of energy with multiple rooms involved, you may consider keeping members out of the path of that stored or potential energy until you have sufficient resources to control it.

A CYCLICAL PROCESS

As this group works together to develop an international best-practice approach to controlling fire attack, it appears to me that we're like a mixture of test pilots and scientists. The pilots (firefighters) fly innovative planes (fire attack theories) into different types of practical scenarios. The scientists study the results and use them to modify the planes (theories), and the testing cycle begins again.

So where do we go from here? A few days is hardly enough to absorb the ramifications of all the information presented at this meeting. Next year the IFIW will meet twice, once in the United States and once in Canada. These meetings will continue our quest to identify the keys to controlling fire behavior—and to controlling our tendency to reject new tactics and theories when they differ from what we've previously been taught. As Henry David Thoreau said, "It is never too late to give up our prejudices." 🔄

Kriss Garcia is chief of American Fork (Utah) Fire & Rescue. He recently retired after 26 years with the Salt Lake City Fire Department, most recently as battalion chief. An instructor for the National Fire Academy, Garcia is a voting member of the Air Movement Control Association standard-review committee and a member of the NFPA 1021 Technical Committee.

More Online!

More highlights from the IFIW's meeting are available online:

- Kriss Garcia shares how the Australian fire service manages rehab and limits its firefighters' exposure to carcinogens on PPE. <http://tinyurl.com/AustraliaRehab>
- Stefan Svensson discusses recent findings from a Swedish study that found fire service instructors are at higher risks than firefighters for significant physiological changes. <http://tinyurl.com/instructorsatrisk>