NEW FIREFIGHTING TECHNOLOGY

In my 'Firebombers Incorporated' novels, I write about a firefighting force that uses the latest technology to fight wildfires. Some fire managers have walked away shaking their heads at the concepts in my stories, muttering that they are 'pie-in-the-sky' and that they will never become reality. Well, guess what? Many of them *have* become reality. New chemicals, new techniques and advanced equipment are becoming available.

Typically, when you see a firefighting helicopter attacking a fire, they're using water, not retardant. The problem with water, even Class A Foam, is that wind scatters some of the drop and low humidity along with the heat of the fire accounts for much of what's left. It's estimated that only about 10-20% of a water/foam drop makes it into the heart of a fire. But that's about to change. The latest firefighting chemicals include a promising new gel, Aqua Gel K from Phos-Chek, which can be mixed with water in a portable dip tank where the helicopters load up without landing in order to get back to the fire quicker. More water reaches the heart of a fire because it's protected by the gel. Using gels, fixed-wing aircraft are no longer restricted to fighting fires by building a chemical line well ahead of or on the flanks of the fire – they can now attack the head, or front, of the fire directly. The US Forest Service is qualifying several types of gels at Pocatello, Idaho at this time. CDF, or CalFire as they are now known, already completed an 18-month study and will begin using gels soon.

Aqua Gel K is also useful for fireproofing homes. By spraying the gel onto a home, then saturating it with water, a home or other structure will survive a burnover, even if left unattended by firefighters, for up to 48 hours, sometimes longer. This allows more homes to be protected without having to station firefighters everywhere. Phos-Chek is working on a home protection kit much like a competing product, Barricade, already produces. The nice thing about the Phos-Chek product is that it doesn't dissolve asphalt like Barricade, making it less harmful to your home.

Another Phos-Chek product holds out hope for treating tinder-dry brush. G75 is a fire retardant that can be sprayed onto plants, either living or dead, and acts as an effective barrier to fire all through the fire season. Once the rains arrive in the fall, the G75 gets washed off the plants into the soil, where it acts as a fertilizer to promote regrowth in areas that do get burned. There was a segment on the news about a fight between LAFD, Brentwood homeowners and CalTrans in the Sepulveda Pass. Brush had really piled up along the 405 freeway and Brentwood homeowners were worried about it catching fire and burning their homes. CalTrans refused to remove it for two reasons: Aesthetics and toxins.

Clearing all that brush out of the pass would leave bare earth, which would turn into mudslides in the rainy season and duststorms in the summer. Worse, there were toxins that had accumulated from the traffic through the pass over the years, ranging from lead to beryllium to mercury, chemicals CalTrans workers would be exposed to in clearing out the brush. If, however, G75 was sprayed on the brush in the pass, the brush could be left intact preventing mudslides and dust storms, CalTrans workers wouldn't be exposed to the toxins, and homeowners would be protected from a raging wildfire. A water tender could spray the retardant up the hillside 100 feet using either G75-W (which goes on clear) or G75-F (which goes on red, so that the operator can see what's been treated, then dries clear).

What if you could predict where a fire was going? What if you knew beyond the shadow of a doubt exactly where to position your resources to stop a fire dead in it's tracks before it reached populated areas? Sound like science fiction? Don't be so sure. Landfire, an ambitious program that several federal agencies are pursuing right now, aims to do just that. By mapping every square foot of land in the US, including Alaska and Hawaii, as to vegetation type, fuel load, past fire history and over a hundred other factors, USFS, BLM and the Nature Conservancy hope to provide enough information to computer fire prediction programs to allow them to accurately predict where a fire is going to go. It's already worked on a fire outside of Hungry Horse, Montana, in the summer of 2003. The incident commander had limited resources with which to fight the fire, and so appealed to the scientists working on Landfire to help. Two scientists fed the data available into a computer and came up with what turned out to be an accurate prediction of where the fire was

heading. The incident commander was able to have his firefighters there ahead of the fire and to stop it dead in its tracks before it reached the town or the important power lines nearby. By late 2008 they hope to have all 50 states mapped. How well it will work when put to the test by multiple fires remains to be seen, but Hungry Horse provided a hopeful glimpse of the future.

Several fire departments are also working on fire prediction software. One of the most advanced is the one LAFD helicopter pilot Steve Robinson has put together. Working with Redlands-based ESRI, his project already proved successful on the late-2006 Topanga fire, limiting damage to a handful of structures and no homes, despite the low humidity and high winds, a combination which, in the past, has led to terrible destruction in that same area.

And there is heavyweight help on the way as well. A DC-10 Supertanker is being retained by CalFire with an 'On-Call' contract. This monster air-tanker can deliver 12,000 gallons of retardant on a fire and was credited with providing about 60% containment of the Esperanza Fire in just half-a-dozen drops last fall. It was also estimated by CalFire officials that if the DC-10 had been used within three days of the beginning of the Day Fire, that conflagration, which cost over $70 million to suppress, could have been roped in at a cost in the tens-of-thousands of dollars.

Using gels, a new application for the DC-10 may be available: Weather modification. Studies have been done that show that drops at around 10,000 feet can noticeably increase humidity and lower temperature on a fire below. If smaller air-tankers could follow the DC-10 in and drop on the subdued fires before the cooling abated, a powerful one-two punch could be delivered to the fire. Further studies need to be done, but the outlook is promising. And if a consortium of state and municipal fire agencies can provide a seasonal contract to replace the on-call contract, this aircraft could be available with only a 1-hour delay as opposed to the current 24-hour delay.

Night Vision Goggles (NVG) can turn night into day for pilots. Fixed-wing air-tankers have long been banned from flying at night because of the danger of colliding with terrain, with wires, and with each other. New Generation III NVG, however, is beginning to change all of that. With the latest in night-vision technology, fixed-wing pilots can finally hit the fire when it's at it's most vulnerable, during the night when the fire 'lays down', becoming less active. Helicopter pilots can already fly at night if properly equipped. If fixed-wing air-tanker pilots can be added to the order of battle, the effectiveness of their planes essentially doubles due to being available 24-hours a day.

Couple all these advances with the ability to fly aircraft at night using night-vision goggles, or NVG as they are also known, and you have a combination that could tear the heart out of any fire. Imagine attacking a fire at night, when most fires 'lay down' to a reduced amount of activity. Fire prediction software could plot the projected path of the fire, firefighters could protect structures in the area with gels, then coat the brush and trees with G75 retardant, setting up a fire-resistant barrier. The DC-10 could do a high-altitude drop with gel, further reducing fire activity, and both helicopters and fixed-wing air-tankers could use their NVG gear to allow them to pound the hot spots into submission. Firefighters would then be able to sweep into the area to extinguish any lingering fire and begin the mop up. What a difference this would have made in fires like The Cedar Fire, Oakland Hills, or The Esperanza Fire, fires where lives were lost.

So as you can see, what I've written about as fiction in years past is becoming a reality. But never fear, I will continue coming up with with new firefighting technology and techniques. And who knows, reality may catch up with these new ideas in the near future!