Army Space Assists With Western Wildfire Fighting

By MAJ Laura Kenney

When you think about fighting the devastating power of a forest fire, the first images that surface are those of heroic, brawny firefighters — soot and sweat smeared — battling the searing flames literally first hand.

Today's technology, however, has added a new dimension to fighting this particular "enemy." The peculiar ability of wildfires to creep slowly, or leap quicksilver, has hindered man's efforts to subdue them for centuries. Now, it's actually possible to "outsmart" these natural disasters.

Satellites and computers are allowing firefighters to predict the course of a fire, plot hot spots and trigger points, and plan the best ways to outmaneuver these destructive infernos.

Satellites are where Army Space Command comes in. Army Space soldiers and civilians, equipped with the latest in sophisticated technology, joined the firefighting force this summer. By combining Space-based capabilities — satellite imagery and infrared data of the fire area — soldiers and civilians in the Command assisted the forestry service in mapping boundaries, locating hot-spots, and keeping an eagle eye on crucial trigger points.

Two years ago, Army Space was asked to provide a satellite picture of wildfires burning in Idaho, and the Command was able to provide hard-copy images of the fire within 48 hours. This summer, they updated a Web page dedicated to the fires every two hours.

This year, the Colorado wildfires — almost in Army Space's backyard — were the first to come under the "eyes" of the satellites used by Space operators here. The Hayman giant, which in its heyday consumed over 137,000 acres, destroyed 65 homes, killed a forever unknown but massive number of animals, and caused more than 38 million dollars worth of damage, was the first to be 'captured' by satellite.

"We were very eager to help," said LTC Robert King, Army Space Forces executive officer. "I think everyone wanted to pitch in someway, be it through donating comfort articles or those adventurous souls who would have been, if allowed, up there side-by-side with the firefighters.

"As soon as the request came in from the forest service, we jumped on it. We were just one piece of the firefighting puzzle, but if it helped contain it any sooner, or helped someone avoid hazard, then we did a good thing."

Military forces can be called upon only when certain criteria of danger are met, and the forces available to fight fires nation-wide are depleted. That level was reached early on with the Hayman fire. The Air Force responded with slurry planes, Fort Carson, Colo. with engineers and actual firefighters, and then Army Space — with its 'eye in the sky' — became a crucial player.

The images, taken by spectral sensors, provided topographical information. The infrared data offered textual information regarding the intensity of the burn at a given point. The combination of images and data enabled those on the ground to maneuver to the best advantage.

The spectral images were provided by the Spectral Operations Resource Center (SORC) division of Army Space. The Center's mission is to exploit images gleaned from commercial and civil satellites for operational and tactical forces.

The infrared data was supplied by another branch, 1st Space Battalion's Joint Tactical Ground Station (JTAGS), which accesses information from the Defense Support Program satellite constellation, used primarily for missile detection.

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The maps were posted on a link to the Army Space Command Web site, available to all, but aimed primarily at the Forestry Service and firefighters.

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U.S. Forestry Service representative Melinda McGann said, "We've worked with this level of technology before, and it's invaluable. We took infrared pictures at night, when things were cooler, and, combined with the products we got from Army Space, I think we compiled an extremely clear picture of the fire. And you can always fight so much better when the 'enemy' is clearly seen."

The Hayman fire was the first that Army Space assisted with, but the even deadlier Arizona fires also received keen satellite attention. The Web site link was originally named Colorado Fires, but was changed to Western Fires as Army Space expanded the mission to include other fires in the western part of the nation.

"We had the ability and the desire to help. It's a great thing, what the technology can do, but it's just as important that it was operated by soldiers, airmen and civilians wanting to help their neighbors. And in some cases, it literally was neighbors, or even themselves, as we had quite a few homeowners in the danger zones. So everyone was very upbeat about being able to do something positive," said JTAGS Systems Integration Officer, Chief Warrant Officer Jeff Sprague.

One Army Space contractor who worked with the spectral imagery admitted, "My interest in this was frankly very dual sided. I knew what the technology could do, which was exciting. But I'm also a homeowner whose house was endangered. I'd lost my home to fire before, not a forest fire, but I definitely didn't want to go through it again. This technology can help many in similar situations," said George Wood.

SFC Louis Torrez, a JTAGS analyst who worked on the fire, said he found the mission immensely satisfying. "I found a 'hot spot' registering a '5' and immediately phoned the Forestry Service. When we saw anything of that magnitude, we didn't wait for the two-hour updates, we called right away. They sent out a chopper and confirmed it was a dangerous point, so we simultaneously provided assistance, and validated our system."

Weekly meetings were held between Forestry officials and crews from Army Space working on the fire to provide feedback on how efficiently the system worked. The Forestry Service requested that a liaison be provided to serve at the command post to assist in interpreting data.

As the Hayman fire was largely contained at the time, Army Space officials concentrated on the next burgeoning danger zone, which proved to be the Missionary Ridge fire. A liaison from JTAGS was sent, SFC Marc Van Horn.

"We were still learning, and they were still learning, but I definitely knew that the Forestry Service felt we'd really been able to help. Like any new program, refinements needed to be made, but I saw this as being positive proof of the value of satellites," said Van Horn.

Interest in those abilities was keen. At every weekly meeting, new faces showed.

"I can't overemphasize what a contribution I think your people and your technology can make," said attendee, Bill Mills, Wildland Risk Management Officer for Colorado Springs. "We've been in situations in the past where the only warning we might get is a neighbor running up to our truck when we're out on patrol, telling us the fire jumped a line, or was threatening his house."

"I don't want to sound like Chicken Little — the sky is falling — but, we'd sure like to know if it is, and with you guys providing up-to-date information, we can do our jobs so much more efficiently. And since my primary job is evacuation and the saving of human lives, quick information is the key."

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