Colorado ARES® Raises the Bar on Amateurs' Wildfire EmComm Response; Amateur TV Plays Vital Role

BY RICHARD FISHER,* KI6SN

"It has been a terrifying past few weeks in Colorado, both here on the Front Range and west across the Great Divide," wrote Jack Ciaccia, WMØG, in July from Boulder.

The worst fires in state history had been ravaging Colorado, and as ARRL Colorado Section Manager, Ciaccia kept his fingers on the pulse of the emergency communications provided by a legion of radio amateurs across the state.

His reflections were posted on the Amateur Radio Emergency Service (ARES®) website chronicling hundreds of hours of amateur radio service during the firestorms in June and July.

"There were dozens of Colorado ARES® volunteers on site at any one of eight fires across the state," Ciaccia wrote in his preliminary report (photo A). There were twice as many EmComm operators, as well, "on standby and on resource nets who were being constantly rotated in shifts to relieve their brethren on duty throughout these busy weeks – operating on a 24/7 basis."

WMØG noted that "coordination of the operations on a disaster of this size takes strong, strategic leadership, flexible and responsive tactical management – and dedicated and trained personnel. Fortunately, here in Colorado, we have all of that within our statewide ARES® organization."

*1940 Wetherly Way, Riverside, CA 92506
e-mail: <ki6sn@cq-amateur-radio.com>

Managing Masterfully: SEC NØESQ

Section Emergency Coordinator Robert Wareham, NØESQ (photo B), who had oversight of the ARES® Area Command, "worked extremely well in managing resources between multiple districts and missions," WMØG said. "Special acknowledgment goes out to ARES® Districts 15, 16 and 22 for lending personnel and equipment to D14 in support of the Waldo Canyon Fire response," Ciaccia said. (***IN DEPTH:*** *See pictures and Reuters video from the Waldo Canyon Fire near Colorado Springs, < http://huff.to/M96XFU >. – KI6SN)*

Wareham had visited the ARES® Incident Command Post in the amateur radio operations trailer in Colorado Springs, which "proved to be an excellent resource from which to coordinate resources for the Waldo Canyon Fire—our most active incident. Hundreds of people utilized Red Cross shelters in El Paso and Teller counties."

In a June 14 *Denver Post* article, Randy Long, K7AVV, of Masonville, said since June 10 he had

Photo A– On June 27, fire crews in Cache La Poudre Canyon battled the High Park wildfire in the Arapaho and Roosevelt National Forests and Pawnee National Grassland. The fire was started by a lightning strike on June 9. (Courtesy of U.S. Forest Service)

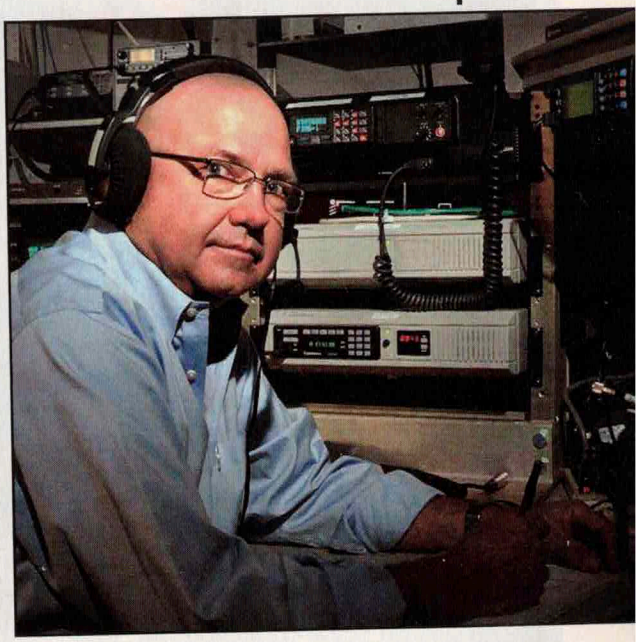

Photo B– Colorado Section Emergency Coordinator Robert Wareham, NØESQ, who had oversight of the ARES® Area Command, "worked extremely well in managing resources between multiple districts and missions," Section Manager Jack Ciaccia, WMØG, said. (Courtesy of Colorado ARES®)

been "managing operators staffing eight-hour shifts around the clock." They set up portable repeaters and relayed messages between the fire lines and command posts. About 40 operators volunteered to provide EmComm.

NØESQ, "along with Long and a handful of ARES® volunteers, reported to the National Guard Armory in Fort Collins as the nearby High Park Fire encircled the Buckhorn and Horsetooth mountains—the sites for some of the public safety communications towers for Larimer County," WMØG said. (Photo C)

"These are the kind of things we train for day in and day out," Wareham told the *Post*. "We just want to keep the people in this county safe." The story said there are about 50 repeater sites in the mountains.

"Shortly after the High Park Fire broke out, radio amateurs in Estes Park and Fort Collins were called upon to provide communications support to the American Red Cross. Hams set up antennas and a cross-band repeater to provide communications from Red Cross Headquarters in Estes Park to their facilities at the fire base, as well as to a Red Cross evacuation center that had been set up at a local high school."

Ciaccia said under Wareham's leadership, the EmComm command structure "had the capability to expand as necessary. Due to the amount and size of the wild land fires, a State Area Command was set up with ARES® Regional ECs reporting twice daily with fire updates, logistical information, schedules, and so on."

This data was coordinated and reported to the served agencies and sent to the Colorado State and FEMA operation centers. "The High Park Fire in Fort Collins, the Flagstaff Fire in Boulder and the Waldo Canyon Fire in Colorado Springs were being managed as Type I (high-severity) fires simultaneously," Ciaccia said.

Shifting from Field Day to Fire Duty

"In the midst of the High Park Fire in District-10 in Larimer County," WMØG reported, "a fast-burning fire broke out in the town of Estes Park in a forested residential section near the east entrance to the Rocky Mountain National Park. (Members of) the local ARES® group—which coincidentally had been practicing emergency preparedness skills on ARRL Field Day —immediately were able to transfer their attention, communication skills and equipment to the real-time emergency at hand."

The High Park Fire was very large and destructive. At containment, it had burned an area larger than Rhode Island—more than 88,000 acres. More than 250 homes had been destroyed.

"The communications tasks here were varied and the agencies needing communications assistance were many," Ciaccia said. "ARES® D-10 simultaneously provided auxiliary communications to the Red Cross, the Larimer County EOC, the Colorado State Patrol, the USFS and the Incident Command Post."

Radio Amateurs on the Front Lines

The EmComm operators, "both experienced and newly enlisted, performed very well throughout the nearly-three weeks of their involvement," WMØG said. "The group was called upon to be prepared to replace communications for the County Sheriff's Communications Repeater which was in the midst of the fire and in danger of being destroyed early on.

Photo C– A communications tower at the top of Rist Canyon is surrounded by scorched earth as the High Park Fire ravaged the area west of Fort Collins, Colorado. A legion of Colorado ARES® and RACES radio amateurs provided emergency communications to fire crews and authorities across the state. (Courtesy of Dave Steinke, USDA)

"Mutual aid was provided by NØESQ in the form of the newly-built Pod-Comm," a rugged communications box with amateur radio HF/VHF/UHF voice-and-data capable radios and statewide trunked system radios.

"It was an extremely useful tool and the need for more of these units deployed strategically throughout Colorado showed they definitely would be beneficial to the ARES mission," he said. News of D-10 ARES®'s work was carried in a *Denver Post* news story.

There's More: Quick Action in Boulder County

Just as the fire teams were getting a handle on the High Park Fire, WMØG wrote, "notification came in to Allen Bishop, KØARK, the EC of D-11 Boulder County ARES®, that a lightning bolt had set off a fast-moving and potentially dangerous wildfire just above the town of Boulder on a peak of one of the city's scenic Flatiron Mountains.

"I happened to be traveling with Allen," Ciaccia said. "We were coming back from visiting the High Park Fire. We immediately responded to the Boulder County EOC where we met the Boulder OEM Director, Mike Chard, who gave us his immediate requirements for deployed ATV (amateur television) to be looking at the fire and for packet communications to be deployed to his designated evacuation shelter.

"We activated the ham gear located at the Boulder County ARES® position at the EOC and started a resource net on a designated repeater frequency while maintaining operations on our main 2-meter repeater," Ciaccia said. "Within 20 minutes, a P5 ATV picture was being received at the EOC and transmitted from a member's home who had a good angle to the fire. "Another portable ATV crew dispatched to the back side of the fire for another TV angle. An hour into the fire we had packet, voice and ATV video communications coming into the EOC." *(**SEE:** "ATV's Vital Role in Colorado's Firefight." —KI6SN)*

On to Waldo Canyon, Colorado Springs

WMØG soon got news that thousands of people were being evacuated and many homes were in immediate danger of being destroyed in the Waldo Canyon Fire raging in Colorado Springs. "We all know now just what a tragic fire this turned out to be—the most destructive in Colorado's history," Ciaccia said. (Photo D)

"That title had been put on the Four Mile Canyon fire in Boulder in 2010 and just a week (earlier) had been newly claimed by the High Park Fire. Now the Waldo Canyon Fire would be the latest holder of that dubious title. Two innocent lives lost, almost 400 destroyed homes valued at more than $110 million will be the tragic legacy."

RMHam Comm Trailer Called to Action

D-14 hams in the Colorado Springs area were immediately on the scene doing almost all of the same activities as those who were needed at the High Park Fire. "Only this time, many more evacuation centers would need to be staffed and ham radio communications gear and personnel installed," WMØG wrote. "After coordinating with our SEC, it was determined by the D-14 EC, Bill Heckler, and Regional EC, Sharon Agun, KCØPBR, that deployment of the versatile and well-equipped Rocky Mountain Ham Communications trailer would be a great asset to have as an ARES® command post."

Within the day, the RMHam Comm trailer (photo E) and ARES® D-22 staff

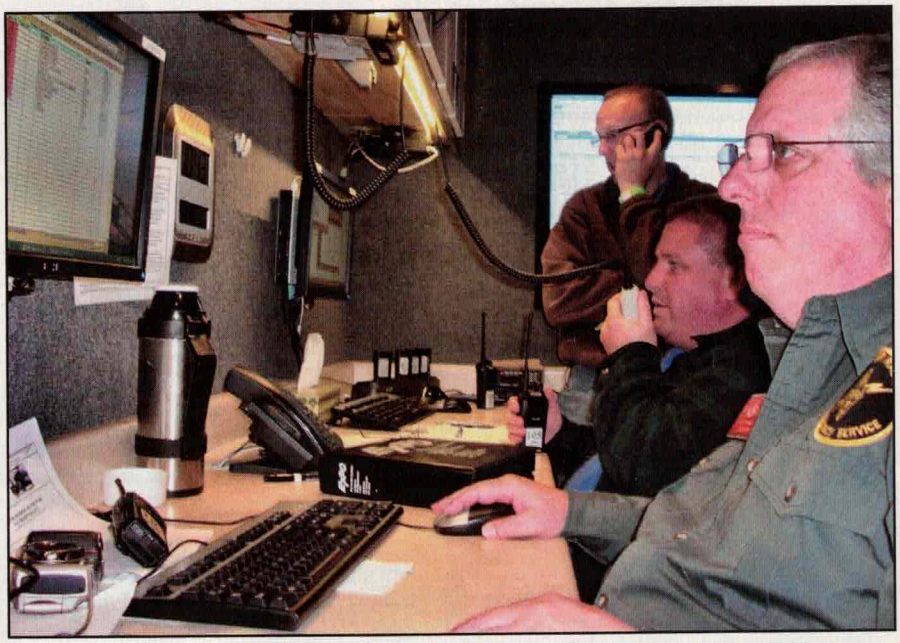

Photo D– Carrying on emergency communications during the Waldo Canyon Fire from the RMHam Comm trailer are, from left, John Maxwell, WØVG; David Markham, WØCBI; and Jeff Ryan, KØRM. (Courtesy of Colorado ARES®)

Photo E– Deployment of the versatile and well-equipped Rocky Mountain Ham Communications trailer was "a great asset" as an ARES® command post. (Courtesy of Colorado ARES®)

ATV's Vital Role in Colorado's Massive Firefight

Among the many resources and skills Colorado ARES® brings to the EmComm table, amateur television (ATV) ranks among the most important, according to ARRL Section Manager Jack Ciaccia, WMØG. It played a critical role in fighting fires that have ravaged the state this summer – and has been a key element in Boulder County ARES®'s (BCARES) quiver since the mid-1990s.

"It is the singularly most requested item our served agency – Boulder County Sheriff and his OEM – wants in any emergency," he said. "We have been utilizing ATV for more than 15 years."

It has been used primarily in the fight against wildfires, "due to the ability to send requested live pictures available back to a windowless EOC (Emergency Operations Center)," WMØG said, giving fire managers "a real-time look at the fire and possibly the effect of a flame retardant drop, water drop, and so on." It can give them a look at the terrain and the fire's encroachment, as well (photo F).

Yesterday and Today: All Impressive

"During the Four Mile Fire back in the fall of 2010—where 168 homes were lost—the BCARES ATV crew was spotting endangered residences via their telephoto lenses and coupled with the known GPS coordinates and compass directions provided from the ATV crews, were able to identify exactly where the home was," Ciaccia said. "This allowed the heli-tankers to drop a quick load onto those homes while the Hot-Shot teams were dispatched. At least a half-dozen homes were saved via the ATV crews proactive involvement."

When the recent Flagstaff Fire (in Boulder) was escalating, the Type I (high-severity) fire assessment crews, which had come from Southern California, "complimented Boulder County Sheriff Joe Pelle and the OEM over and over on the efficiency, equipment and personnel . . . They had never seen a county-level EOC in the United States running with such capabilities and professionalism," Ciaccia said. "They did not know that live TV could even be done!" (Photo G)

The crews made a point to visit the BCARES ATV remote positions around the fire and "were amazed by what the BCARES crews were capable of doing" in transmitting video from such remote and rugged locations. "They told BCARES that if and when the fire escalated to a Type I fire under their command, they would like BCARES to continue sending TV pictures for their Type I team's use, too," he said. "The fire never reached more than a Type II (medium-severity) fortunately, and no residences were ever threatened due to the quick response by the local wildfire teams."

The ATV camcorders used by BCARES have infrared capability, as well, "and we find that when darkness comes there is usually nothing visible but smoke. The infrared video gives the EOC and the Command Post a look at what is under the smoke—*the hot spots*. In those infrared shots, you can also see the firefighters on the scene if you need to." (Photo H)

ATV has also been used for monitoring areas where flooding is possible, where there is *no other way* to get a wireless video picture out because of the rugged terrain. "We utilize homebrew ATV portable repeaters to get the signal up and out of the canyons back into town," WMØG said. "The same method is used in any remote locations we might have to serve."

KH6HTV's Expertise and Generosity

All of the transmitting ATV equipment BCARES uses was built "by our ATV guru, Jim Andrews, KH6HTV, <http://www.kh6htv.com> (photo I), who splits his time between his home here in Boulder and his home on Maui," Ciaccia said. "Jim also provides to the community—at his own expense—a very nice ATV repeater on a hill overlooking Boulder that is utilized by the local hams with their own ATV gear on a weekly ATV net. It is used, as well, during these emergency situations. We utilize 70cm, 23cm and 33cm frequencies in both AM and FM modes for video transmission and 2-meter voice coordination of the crews.

"We have developed rugged Pelican® boxes <http://www.Pelican.com> with custom-made video switching and distribution abilities plus additional signal amplification, and so on," Ciaccia said. "We can give any combination of pictures up to a quad-split picture from four different cameras and switched either at the EOC or at the remote site." (Photo J)

ATV EmComm Training, Readiness

ATV training is provided by the BCARES group "and any new member can even borrow a portable ATV setup to get familiar with that mode," Ciaccia said. "That gear is available from the BCARES extensive cache of ATV equipment. This is also true for packet, D-Star, WinLink, and so on—whatever modes they typically can field in an emergency. BCARES does not depend on anyone's personal gear when an emergency arises. It is all stowed in a room provided by the Boulder Sheriff's Communications Center under direction of the OEM."

Photo F– Live ATV video such as this from the Flagstaff Fire in Boulder gives Colorado fire managers "a real-time look at the fire . . . and a look at the terrain" to help make critical decisions on strategies and managing resources, Colorado SM Jack Ciaccia, WMØG, said. (Photography courtesy of ARES®)

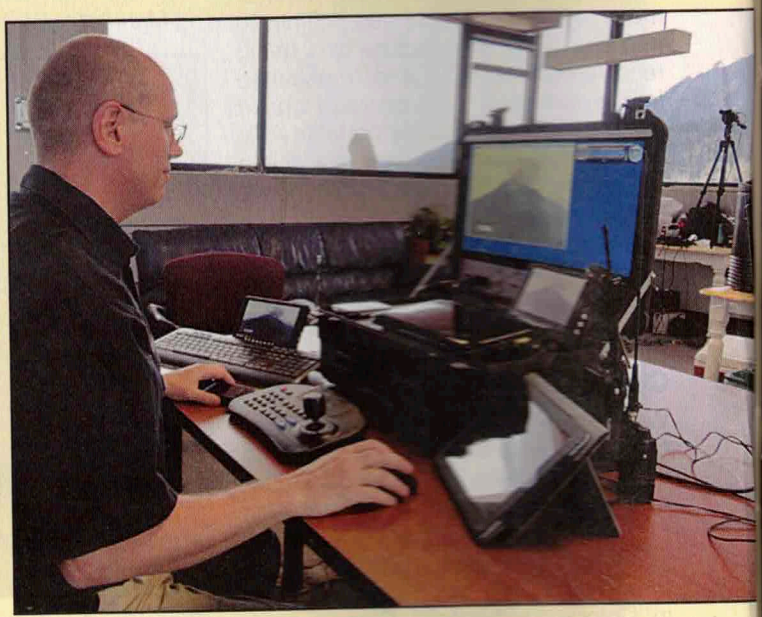

Photo G– Joey Stanford, NVØN, supports ATV ARES® operations during the Flagstaff Fire in Boulder, Colorado.

Photo H– Managers in the Emergency Operations Center watch nighttime ATV video taken of the spreading fire using infrared videography. "You could also see the firefighters on the scene if you needed to," WMØG noted.

At the EOC, the OEM and sheriff have given BCARES a room adjacent to the EOC to house all of its radio, packet, computer and ATV gear. One switch turns it all on.

All the antennas are on adjacent communications towers and there is no waiting time to get ready to run when the team is called out, WMØG added. "A number of BCARES people are trained to run the multiple stations at the EOC. Within the EOC, BCARES has a seat at the ESF-2 position and our people are all trained on WebEOC and we have our own space to store BCARES related information and to address queries as they are happening. To say that we have a good relationship with our served agency is an understatement. BCARES is part of their emergency plan and their response team, *period*."

Real-Life Training in a 'Rather Benign' Situation

BCARES has a Memorandum of Understanding, as well, with the Colorado University Police Department and provides it with ATV to its Command Post during the university's PAC-12 home football games. "The CUPD uses it for monitoring the gates when the crowds are coming in and leaving to make sure they have the appropriate level of personnel and to be able to direct people inside to a lesser used gate if needed," Ciaccia said.

"Also, the ATV is used to monitor any police, fire or ambulance personnel deployed within the stadium to make sure they have sent adequate resources. This activity provides BCARES a great training resource in a rather benign, but real-life situation. The challenges of getting ATV pictures from remote or *blind* areas of the stadium and campus are similar to obstacles we encounter in other activities."

WMØG said the CUPD provides BCARES with ATV equipment as a donation for their use. "Many other college security teams from around the country have expressed an interest in duplicating this sort of volunteer activity, but usually can't find the resource in their area from their local ham radio community."

ATV Interest and Use Spreads

Other ARES® groups around Colorado have recently expressed an interest in developing ATV tool for their toolkits. "BCARES will provide all of the training to them if requested," Ciaccia said. "We foresee a time when we can seamlessly utilize ATV up and down the Front Range of Colorado in a wide-scale emergency if necessary."

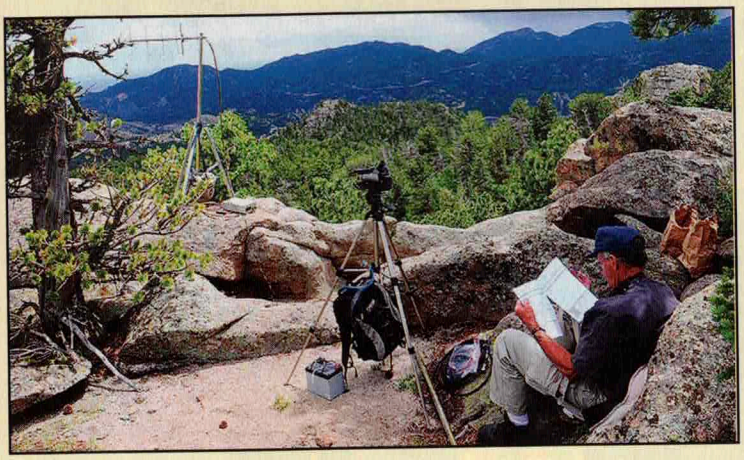

Photo I– Jim Andrews, KH6HTV, who is a driving force in acquiring and using ATV equipment deployed by Colorado ARES®, occupies a video transmission site in a remote location.

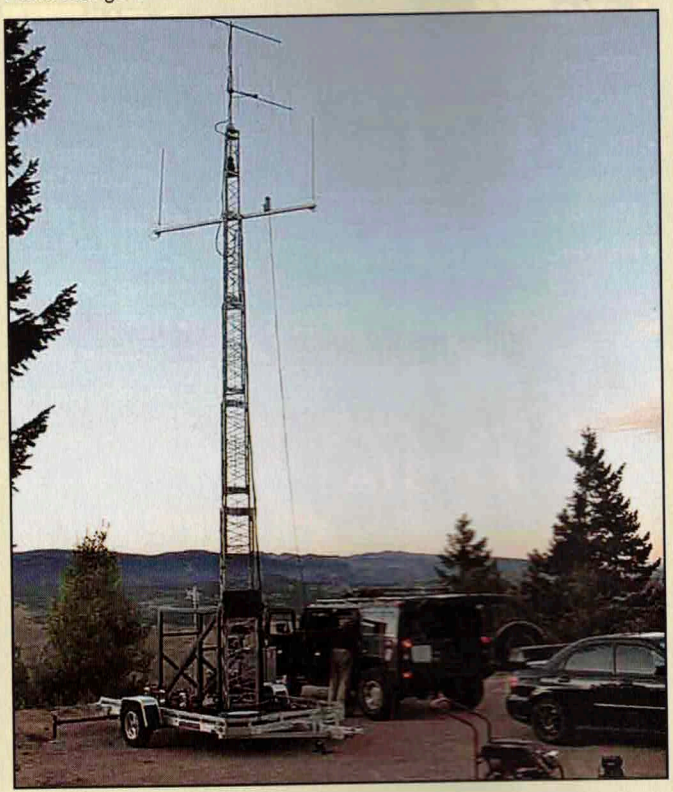

Photo J– Allen Bishop, KØARK, has his ATV tower was set up for transmission of video signals to fire managers in the Emergency Operations Center.

"would be traveling south to bring their ARES mutual aid assets to the scene. Again, our ARES amateurs performed admirably and long. They dutifully completed shifts that were sometimes boring, sometimes overwhelmingly-emotional," Ciaccia said.

Meantime, a new fire was reported on Pine Ridge Mountain west of Interstate Highway 70 east of Grand Junction. "ARES® and RACES (Radio Amateur Emergency Service) members from the west slope responded and (were) involved in various auxiliary communication duties throughout," WMØG said.

Section Manager's EmComm Duties

"My job during all of these fires was primarily to keep ARRL Rocky Mountain (Division) Director Brian Mileshosky, N5ZGT, and ARRL HQ Emergency Communications Chief, Mike Corey, K1IU, informed as to what we were doing," Ciaccia said, adding that the League "was extremely interested in how we were responding and promised any equipment or additional trained personnel if I felt it necessary."

WMØG said he believes when the After Action Reports have been completed, "we will certainly find out what we did right, where we can improve and what didn't work well. All of the items you would expect to see on any critique . . . Our ARES® people proved that they understand and can implement ICS (Incident Command System) and NIMS (National Incident Command System) procedures and can operate shoulder to shoulder with any local, state or federal agency in a major scale emergency.

"I couldn't be prouder than to be associated with this fine group of men and women involved in amateur radio public service and dedicated to emergency communications," Ciaccia said.

Our Change of Plan

In August's "Public Service" column we noted that a feature recognizing the 47th season of the Hurricane Watch Net would be forthcoming in this month's column. Unfortunately, on many levels EmComm events have overtaken that plan, as our reporting here shows. We expect to carry the Hurricane Watch Net piece in next month's edition—*Lord willing, and the creek don't rise.* HWN's is a very interesting and historic story you'll not want to miss. 73, Richard, KI6SN