



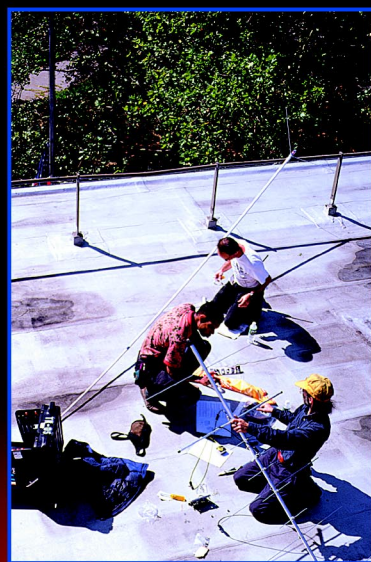
QST

November 2001

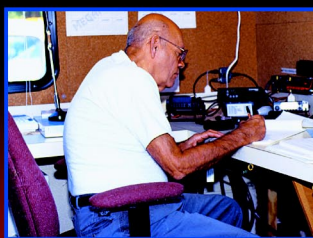
Official Journal of
ARRL
The national association
for AMATEUR RADIO

devoted entirely to

AMATEUR RADIO



*The Radio Amateur is
PATRIOTIC...
station and skill always
ready for service
to country and community.*
—from The Amateur's Code



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THE AMERICAN RADIO RELAY LEAGUE INC



The American Radio Relay League Inc is a noncommercial association of radio amateurs, organized for the promotion of interest in Amateur Radio communication and experimentation, for the establishment of networks to provide communication in the event of disasters or other emergencies, for the advancement of the radio art and of the public welfare, for the representation of the radio amateur in legislative matters, and for the maintenance of fraternalism and a high standard of conduct.

ARRL is an incorporated association without capital stock chartered under the laws of the State of Connecticut, and is an exempt organization under Section 501(c)(3) of the Internal Revenue Code of 1986. Its affairs are governed by a Board of Directors, whose voting members are elected every three years by the general membership. The officers are elected or appointed by the directors. The League is noncommercial, and no one who could gain financially from the shaping of its affairs is eligible for membership on its Board.

"Of, by, and for the radio amateur," the ARRL numbers within its ranks the vast majority of active amateurs in the nation and has a proud history of achievement as the standard-bearer in amateur affairs.

A *bona fide* interest in Amateur Radio is the only essential qualification of membership; an Amateur Radio license is not a prerequisite, although full voting membership is granted only to licensed amateurs in the US.

Membership inquiries and general correspondence should be addressed to the administrative headquarters; see page 10 for detailed contact information.

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"IT SEEMS TO US..."

We Are Not Alone

The day dawned perfectly in the north-eastern United States. It was the sort of late-summer morning that heralds the imminent arrival of that most glorious of seasons: autumn, with its iridescent foliage and crispness in the air that makes the drawing of every breath a pure delight. It was a great day to be alive.

At 8:48 AM all that changed. The world changed, probably forever.

There is no need to describe here the horrific events of that second Tuesday morning in September, not that mere words possibly could. The images are burned into our minds and will stay with us as long as we live.

For those who lost loved ones the void can never be filled. For the rest of us, time may take some of the edge off the pain. Passing years may cause us to forget how helpless we felt as we experienced a chain of catastrophes unprecedented in American history, utterly incapable of knowing when or whether they would end. This may happen, but for now it seems impossible. Nothing, it seems, can ever be the same.

The attacks occurred on American soil, but it was not simply a national tragedy. We now know that it was an international tragedy, with people from more than 60 countries and every major faith tradition counted among its victims. But in the first moments of that terrible morning it was natural for Americans to feel isolated from the rest of the world. Our own jetliners, symbols of American technological prowess, had been turned against us. If we could not even trust our own mechanical creations, who and what could we trust? Were we alone in a world that suddenly had turned unimaginably hostile?

The answers soon began to arrive. Here in Newington they came in the form of emailed messages of condolence and support from radio amateurs throughout the world that began to arrive that very same morning, first as a trickle but soon as a flood. They came from our sister societies and individuals in countries as diverse as Japan, Madagascar, Germany, Turkey, Iceland, Egypt, Suriname, Lebanon, Oman, Pakistan, Syria, Yugoslavia, Hong Kong and dozens of others. Some shared their stories of why the United States occupied a special place in their hearts—stories of great sacrifices made by GIs, of aid given when it was most needed

after World War II, or simply of kindness shown by an individual American that reflected the best values of our open society. Thanks to the thoughtfulness of our unique, global Amateur Radio fraternity, before that awful day had ended we were privileged to know what many Americans would not discover until later in the week: We are not alone. The entire civilized world shares our grief and our outrage.

Less than a lifetime ago the United States and its allies were fighting a two-ocean war against ruthless, implacable enemies. Today we count these former enemies among our closest friends. Some of the first messages offering comfort and support came from countries that experienced their own brush with the Apocalypse delivered by American bombers. Their friendship today did not spring from defeat and subjugation. Rather, it sprouted from seeds planted by what Tom Brokaw calls The Greatest Generation—my father's generation, the generation that not only won the war but equally importantly, also won the peace. Will my own generation do as well? Decades from now, will our children and grandchildren live in a world where today's enemies are friends? Or will they be forced to retreat into armed camps, suspicious of differences, unable to know the wondrous diversity the world has to offer?

As the war on terrorism is launched it is difficult to hold such lofty thoughts for long. The wounds are too fresh and too deep. Living one day at a time is challenge enough. Yet, as radio amateurs we can at least do this much. As the terrorists and their few sympathizers look for evidence that the civilized world is tearing itself apart, let them draw no comfort from what they hear on the ham bands. We are communicators. Let us communicate our resolve that the world must remain united in the face of terrorism. Let us communicate our respect for one another across the boundaries of nationality, religion, cultural background, and the other myriad ways society seeks to group us. Let us communicate our desire to increase our understanding of one another.

And let us remember the radio amateurs who died on that terrible Tuesday morning. Even as we look with hope toward the future, we know that our fraternity is the poorer for their loss.—David Sumner, K1ZZ

We regret to report that the following Amateur Radio operators are listed among those missing from the World Trade Center and Pentagon disasters:

Steven A. "Steve" Jacobson, N2SJ, 53, of New York City.

William V. "Bill" Steckman, WA2ACW, of West Hempstead, New York.

Michael G. Jacobs, AA1GO, 54, an ARRL member from Danbury, Connecticut.

Robert D. "Bob" Cirri, Sr, KA2OTD, 39, an ARRL member from Nutley, New Jersey. A Port Authority police officer, Bob was

helping to evacuate workers from the building when it collapsed.

William R. "Bill" Ruth, W3HRD, of Mt. Airy, Maryland, who died in the Pentagon attack.

Gerard J. "Rod" Coppola, KA2KET, 46, of New York City.

Winston A. Grant, KA2DRF, 59, of West Hempstead, New York.

CORRESPONDENCE

"OUR HEARTS GO OUT TO OUR AMERICAN FRIENDS"

As he toured "Ground Zero," the site of the World Trade Center in New York, United Nations Secretary General Kofi Annan spoke for many when he said: "This is not just an attack on New York or the United States but on the whole world." Those sentiments are underscored by the outpouring of support we at ARRL Headquarters received in the aftermath of the events of September 11. A representative sample of the messages received from abroad follows.

◆ Our heartfelt condolences to the families and friends of the victims.—*Shozo Hara, JA1AN, Japan Amateur Radio League*

◆ On behalf of the radio amateurs of the UK and the Radio Society of Great Britain, I am writing to you at the ARRL to express our deep shock and sadness at the terrible events of today. In common with the rest of the civilised world, we send you our deepest sympathies at what appears to be a huge loss of life.

The ARRL and all the American people are in our thoughts at this tragic time.—*Don Beattie, G3BJ, President, RSGB*

◆ My family and I as well as all the hams in Germany will stand by your side in solidarity in the struggle against terrorism. I think it is good to know that numerous hams all over the world are in thoughts with you in this darkest hour of America.

Today, I am 60 years old and I will always remember your GIs who gave me at the end of World War 2 in 1945 the first chocolate in my life as a present. Still today I want to express my thanks for this.

My wife and I will also always remember that it was your people who made it possible (Marshall Plan and Care Package) that we as schoolchildren got a warm lunch every day from 1945 onwards.

I visit your country very often and I know about the great freedom and how beautiful your country is. May the Lord protect you and your country.—*Manfred, DL4DKM*

◆ I, on behalf of all the members of the Egypt Amateur Radio Assembly (EARA) and all Egyptian families, deeply express our condolences for the victims and their family and all the US people. This event is not only the disaster of the US, but of mankind in the 21st century. We strongly condemn this terrorism! —*Mohamed El Kafrawi, SU1KM, General Secretary of the Egypt Amateur Radio Assembly*

◆ I have not yet been able to come out of the shock the terrorist attacks on USA have given me. It's a strange coincidence that Sept 11th is celebrated as International Peace Day. The earthquake here in January this year was a natural calamity but this nasty act of men is unforgivable. I feel very

much concerned and express my sincere condolences to all Americans and others living there.—*Praveen Manani, VU2XMX, Gujarat, India*

◆ On behalf of all the members of the Ukrainian QRP Club I offer condolences to you and the American people because of barbaric acts of terrorism which caused considerable human losses.

We believe that the United States of America will bravely overcome this grief and the terrorists will be punished. With respect, *Peter Grytsay, US1REO, President of the UR-QRP Club*

◆ Our hearts go out to our American friends.—*Jean-yves, F8LDX, in west Normandy near Utah Beach*

◆ I am very pained and saddened by what has arrived at your country. It is incredibly, unimaginably cruel—I do not have words to qualify these acts of horrible terrorism! All the American people [have] my sincere condolences and all my support from France.—*Laurent, F8BBL*

◆ We present our condolences to the American people and wish you courage to stand this pain.—*Jerry Sidorov, UA9AR, Chelyabinsk, Russian Federation*

◆ My condolences to all Americans in this moment.—*Jorge Ortiz, LU6HI*

◆ Our most heartfelt sympathy from all radio amateurs to the victims of the brutal terrorist act that you have suffered.—*EA3NP from Spain and 25,000 more radio amateurs*

◆ At this horrible time, we are all Americans.—*Bernd Haefner, DB4DL, Deutscher Amateur Radio Club*

◆ On this very sad occasion marking the recent disastrous terrorist attacks on the symbol of democracy and human civilization of the 21st century, we express our most heartfelt feelings of sorrow and sadness and extend our support [to] the great nation of USA. We have forwarded to you the enclosed letter which we have written in Arabic, our native language, to ensure that our feelings are profoundly presented as they occur in the depth of our hearts.—*Mohamed Abbas Al-Holi, 9K2DR, Manager, Kuwait Amateur Radio Society*

◆ Please accept our deepest sympathy for the terrible tragedy of the American people. Our thoughts are with you.—*Dimitar Petrov, LZ1AF, President, The LZ CW Club*

◆ I want to express our deepest regret about the tragic incidents. Please accept our sincere condolences for the nation of the United States of America. We all deeply condemn this ugly terrorist attack. May God have His Blessings and Mercy on all victims.—*Aziz Sasa, TA1E*

◆ Deepest sympathy from Indonesia to the

victims and families. May God bless them.—*YBOCRT*

◆ We Icelandic amateurs send our deepest condolences to our ARRL friends because of the tragic events taking place in your country.—*Vilhalmur Sigurjonsson, Secretary, IRA (Islenskir Radioamatorar)*

◆ To all the people of the United States, I send my most sincere condolences. I hope that the perpetrators of these atrocities will be very soon brought to justice.—*Charlie Blake, MOAIJ*

◆ Our condolences for the tragedy suffered by the American people today and particularly any radio amateurs who might have been affected.—*Pedro Seidemann, YV5BPG, Radio Club Venezolano*

◆ I just want to express my condolences to the American people for your great loss and tragedy. You all have my support and prayers in this time of need. I really wish I could be of assistance, rather than just following the news reports, but at least I can send you my thoughts.—*Chris, SM2UJW*

◆ On behalf of CP1AA, the Radio Club Boliviano and myself, please convey our feelings of sorrow.—*Mario, CP1AA*

◆ It is hard to find words to express the shock, the horror, and the profound sadness of the terrible events of last week. It seems that physical distance offers no protection from the gnawing sense of horror. Just want you to know that we are all with you in fighting this thing.—*Martin Potter, VE3OAT*

◆ A brief message to send my condolence to the US people. God bless freedom.—*Pascal Grandjean, F5LEN*

◆ Condolences from all Swedish hams to the victims of this terrible and unbelievable act.—*Hawk, SM5AQD*

◆ Today, here, we all are Americans. Please accept my heartfelt sympathy. God bless you and yours.—*Jean-Marc, F5SGI*

◆ On behalf of the members of the Hungarian Amateur Radio Society (MRASZ) I would like to express the deepest sympathy of Hungarian radio amateurs to our fellow radio amateurs in the United States and to the families and the loved ones of the victims of this horrific tragedy. We share in your grief, our hearts are with you.—*Lazlo Berzsenyi, IIA5EA, President, MRASZ*

◆ On behalf of the Wireless Institute of Australia (New South Wales Division) I offer our condolences for your members affected by the heinous act just past in NYC. We know your members will be doing all they can to help out in this situation which has left me, personally, feeling horrified, stunned and empty. Please pass on our thoughts in support of your members.—*Patricia Leeper, VK2JPA, VK2 Divisional Secretary*

◆ What sort of deranged minds can plan and carry out such indescribable, inhuman atrocities at such magnitude in cold blood leaves me bereft of suitable words. Having had a much smaller taste of it three years ago in Nairobi and Dar es Salaam we have had experience of such an event and have special feeling for you all. I, all officers and members of ARSK send our sympathy and condolences and join you in your national grief.—*Ted Alleyne, 5Z4NU, Chairman, ARSK, Nairobi, Kenya*

◆ Please receive my condolences for the terrible loss of life that those terrible terrorist acts have inflicted on your people. Be assured that here in my nation, our thoughts are with all the families that have lost their relatives and next of kin. We monitored the emergency net frequencies posted via the Internet just to be on standby in case any ionospheric skip relay might be needed on 40 or 20 meters.—*Arnie Coro, CO2KK, Havana, Cuba*

◆ I, on behalf of all the (ASTRA) Tunisian Amateur Radio Assembly members, and all Tunisian families, deeply express our condolences for the victims and their family and all the US people. God bless you and all US families.—*Mustapha Landoulsi, DL1BDF, DARC Amateur Radio Coordinator for Arabian countries and Brazil*

◆ We are in a state of shock after the indescribable act of terrorism inflicted on your country. What hurts Americans is painful for all of us. We share the sense of outrage with people across the world at the terrible events last Tuesday in New York and Washington and we send to all Americans our deepest sympathy and our prayers at this time.—*Tadek Raczek, SP7HT, Kielce, Poland*

◆ On behalf of the executive committee and all the members of the VERON, the Netherlands section of IARU Region 1, I would like to express our deep condolences for the victims and their families and to the US people in general. We strongly condemn this terrorism.—*Kees Murre, PA2CHM, IARU Liaison Officer, VERON*

◆ On behalf of the members of LPRA (Liga Panamena de Radioaficionados), we would like to express our deep condolences for the victims of this tragic incident. We condemn any such terrorist activity against humanity.—*José Garcia A., HP8AJT, LPRA, Coclé, Panama*

◆ On behalf of the whole Swedish community of Radio Amateurs we wish to convey the shock felt by all your friends here in view of the horrendous crimes committed by some reckless terrorist group and that we all have been watching in horror on our television sets.—*Gunnar Kvarnefalk, SM0SMK, President of Foreningen Sveriges Sandareamatörer (SSA); Eric Lund, SM0JSM, Office Manager, SSA*

◆ I, on behalf of the members of the Executive Committee and the general members of Union de Radioaficionados Andorrans (URA) would like to express our deep

condolences for the victims of this tragic incident. We hope the amateur community will successfully extend their hands of co-operation towards mitigation of the sufferings of the distressed and their families.—*Joan Sauri, C31US, President of URA*

◆ On behalf of all the PARS members, we would like to express our deep condolences for the victims of this tragic incident. We condemn all such terrorist activities against humanity. This event is not only a disaster of the US, but of the whole mankind and world.—*Nasir H. Khan, AP2NK, President, Pakistan Amateur Radio Society*

◆ TARL members express deep condolences to all US citizens.—*Nodir Tursoon-Zadeh, EY8MM, Tajik Amateur Radio League*

◆ To all Americans, deep condolences.—*Hrane Milosevic, YT1AD, President of SRJ, Amateur Union of Yugoslavia*

◆ On behalf of my family and myself please accept words of the deepest sympathy and solidarity at the very moment when your nation is under attack of those who again ignore moral principles of human beings.—*Wojciech Nietyksza, SP5FM, IARU Region 1*

◆ To everybody involved in any way, may I offer my sympathies and let all Americans from whatever origins know that England and the rest of the United Kingdom will stand beside you in whatever action our governments decide is appropriate. As a medically retired (lost a leg) Police Officer, specialising in anti-terrorist work, I really do understand what you have to deal with. May I also pass on sympathies on behalf of the International Police Association Radio Club (GX4IPA) as Chairman.—*Thomas J. Reilly, G0NSY, Emergency Radio Liaison Officer, RSGB*

◆ For now just my tears to all your people. God bless you all. We need as soon as possible to rethink what kind of world we will leave to our children.—*Jorge Luiz Lunkes, PT2HF*

◆ Be sure of our understanding, our compassion, and our support.—*Tim Hughes, G3GVV, IARU Region 1*

◆ On behalf of the members, staff, volunteers, directors and executives of Radio Amateurs of Canada, I personally wish to express our sincere condolences to our American friends. In particular, our thoughts go out to the many Radio Amateurs and their families that may have lost their lives while helping others during this sorrowful event.—*Ken Oelke, VE6AFO, President, Radio Amateurs of Canada*

◆ On behalf of the Executive Committee and members of the Jamaica Amateur Radio Association (JARA) I send you and all US amateur radio operators our condolences for the victims of this tragedy and our feeling of great indignation.—*Gerald Burton, 6Y5AG, President*

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By Rick Lindquist, N1RL and Diane Ortiz, N2DO

9/11/01: “This is *Not* a Test.”

Amateur Radio operators mobilized within minutes of the first attack on the World Trade Center, then responded magnificently in the Washington, DC, area and Pennsylvania.

On September 11, 2001, and in the days and weeks since, Amateur Radio operators have demonstrated their readiness, perhaps as never before. While Amateur Radio Emergency Service and Radio Amateur Civil Emergency Service training might not have readied them to fully comprehend the terrible events of that day, Amateur Radio operators were among the first to volunteer their stations, their skills and themselves.

“The SET is cancelled; this is the *real thing!*” said ARRL New York City-Long Island Section Emergency Coordinator Tom Carrubba KA2D, who only weeks earlier had been outlining plans for his section’s Simulated Emergency Test in October. The events of September 11 changed all of that, and without the

luxury of the sort of advanced warning that might occur in a weather-related disaster. Amateur Radio was up against its greatest challenge ever.

“We found ourselves faced with a disaster that no one in their wildest dreams could have ever imagined,” Carrubba said. “And this one was right in our own backyard.”

“This is Not a Test!”

Providing emergency communication tops the list of reasons that validate Amateur Radio in the eyes of the FCC. Given the ubiquity of the cellular telephone these days, some have predicted this particular mission would evaporate. When the terrorists struck in New York City and Washington September 11, however, commercial telecommunications

systems—wired and wireless—were severely compromised. New York City broadcasters using the World Trade Center antenna went dark.

As soon as the nature of the threats was recognized, federal, state and local officials declared states of emergency. Along with other federal agencies, the FCC shut down. No one knew what to expect. RACES teams found themselves suddenly and unexpectedly activated, not just in the immediately affected areas of New York City and Washington, DC, but across the US. ARES groups went on alert everywhere.

Montgomery County, Maryland, Deputy RACES Officer John Creel, WB3GXW, said nothing in his experience had prepared him for “the feeling that went through my mind when I picked up

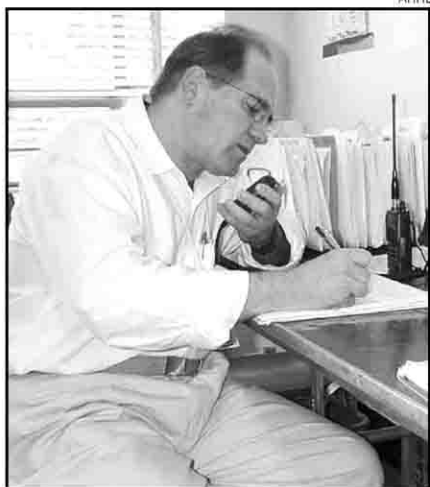


American Red Cross Disaster Telecommunications Staff Partner Jay Ferron, N4GAA (right), points to Ground Zero as ARRL President Jim Haynie, W5JBP (center), and ARRL Hudson Division Director Frank Fallon, N2FF, look on.



At the American Red Cross radio room in Brooklyn, Daytime Shift Manager Mark Dieterich, N2PGD (standing), checks the volunteer shift schedule. Simone Lambert, KA1YVF, handles schedule management from the World Trade Center Disaster Relief Communications registration Web site. Both volunteered from Rhode Island.

ARRL



John Allocca, WB2LUA, was among the operators at the Red Cross Brooklyn headquarters.

the microphone and said the words, "This is not a test!"

Americans were just learning of the events unfolding at the World Trade Center when the Pentagon attack occurred and a fourth aircraft crashed in rural western Pennsylvania. In the immediate aftermath of the crisis, telephone lines were jammed, and cell systems overwhelmed. Chaos reigned.

Amateur Radio played a role in helping to restore order. "Never have I felt more strongly about what a great privilege it is to be part of the extraordinary global community of Amateur Radio," declared ARRL President Jim Haynie, W5JBP, as amateurs sprang into action to do their part.

New York City-Area Amateurs Respond to "The Real Thing"

Terrorists had crashed two airliners into the World Trade Center. The famed Twin Towers then collapsed, setting off a chain of events that involved all of New York City's rescue services. With air travel suddenly suspended, countless passengers found themselves stranded with nowhere to go.

The first to respond were New York City firefighters, police and other rescue workers. Many of them were lost as the buildings fell. Most are still unaccounted for. As this is written, the total number of people missing stands at more than 6400.

As it turned out, New York City's Office of Emergency Management had been located on the 21st and 22nd floors of the World Trade Center. Many local officials had been evacuated to the mayor's "bunker" nearby. It also became unusable in the hours after the attack.

ARRL Hudson Division Vice Direc-

tor Steve Mendelsohn, W2ML, works for ABC News and was in Manhattan during the World Trade Center attacks. He called the scene there "surreal," with police checkpoints set up along highways and military jets criss-crossing the skies above the city.

Former ARRL Headquarters staff member Warren Stankiewicz, NF1J, was in Manhattan from the West Coast on business when the attacks occurred. "The damage is unbelievable," he reported the evening of the attacks. "Grand Central was a panic, and the trains were packed beyond belief. I talked to one woman who had walked four miles with borrowed shoes to get to the train."

But, as Mendelsohn was to later observe, "A city thought of by many as cynical pulls together as few others have in times of crisis."

With a state of emergency in effect, Amateur Radio's resources soon mobilized. Ivan Rodriguez, KC2CHE, of

Brooklyn, told ARRL that the New York City ARES net came alive within five minutes of the first plane attack. "It's the first thing I thought about," he said. "We may be needed."

Answering the Call

As lower Manhattan quickly took on the look of a war zone, New York City ARRL District Emergency Coordinator and RACES Radio Officer Charles Hargrove, N2NOV—who served as the ARES/RACES incident commander—put out a call to the ARES and RACES leadership. Hargrove and his staff found themselves thrust into the midst of the activation.

New York City-Long Island Section Manager George Tranos, N2GA, huddled with Carrubba at the SEC's Long Island home as the activation got under way. ARES and RACES concentrated their efforts to provide support for the New York City OEM and for American Red

The Youngest Volunteer

Ten-year-old Beverly Holtz of Huntington, Long Island, New York, was distraught after hearing of the tragedy at the World Trade Center.

"I slowly explained what the news footage meant," said her father Fred Holtz, K2PSY. "The first thing she said was that she wanted to help."

Neither of them realized just how soon she would get the chance.

About six years ago Fred Holtz had revived his interest in Amateur Radio. Soon his young daughter showed an interest in the hobby. Together they studied the electronics, and Beverly was especially interested in the questions on emergency procedures.

"I told her that they were very important and you never knew when you would need them," Holtz said.

Father and daughter joined the local radio club and started going to meetings. Eventually she took the FCC exam for the Technician license and passed! She couldn't wait for her license to arrive and was ready to get on the air.

Beverly's new ticket finally arrived Friday, September 14, and she was officially KC2IKT. The next day she and her dad were running errands in the car, listening to an emergency net on a local repeater, when they heard a call go out for volunteers to staff a shelter as part of the response to the World Trade Center attack.

"We can do that!" Beverly told her dad. Fred Holtz called net control and explained that his daughter was only 10 and wanted to help.

"No problem," they were told. That afternoon they reported to the Red Cross shelter in Valley Stream, New York. Some 40 European students were staying at the shelter after being stranded when flights were cancelled at the nearby airports in New York City.

Using her dad's hand-held transceiver, Beverly answered questions from net control, relayed health-and-welfare traffic and was the only radio operator for the entire eight-hour shift.

"I was very impressed that [net control] treated her as an equal and that she was able to do it," her dad said. "She really had a trial by fire!"

Beverly said that the eight hours seemed like one hour. "I can't wait to do more," she said. "It made me feel good to help."—Diane Ortiz, K2DO

FRED HOLTZ, K2PSY



Beverly Holtz, KC2IKT

DIANE ORTIZ, K2DO



David King, AA2KV (right) gets an assignment from Dave Pizzino, WB2EAR, who's handling radio duties at the Red Cross Headquarters in Brooklyn.

DIANE ORTIZ, K2DO



ARRL Manhattan Emergency Coordinator John Kiernan, KC2UN, works the phones during the New York City activation.

New York City Broadcasters Regroup

The collapse of the World Trade Center brought down the master TV transmitting antenna that served most New York City broadcasters as well as amateur and other repeaters. "The broadcast community is in absolute shock," said Hudson Division Vice Director Steve Mendelsohn, W2ML, who works for ABC News. "We all knew transmitter engineers, we all knew people who worked up in those towers near those big television transmitters, and they're gone."

TV and radio stations that had sites on the World Trade Center rushed to make other accommodations, Mendelsohn said. WCBS, channel 2, which maintained a backup transmitter site on the Empire State Building, offered assistance and space to help the other stations get back on the air from its site, he said.

"None of the other transmitters exist anymore. They're in the rubble along with the master antenna system, hundreds and hundreds of two-way radio system antennas, and boxes and, of course, untold thousands of people who perished."

One antenna site now being used by some New York City broadcasters is the Alpine, New Jersey, tower erected decades ago by Major Edwin Armstrong, the inventor of FM. The 425-foot tower is located on the Palisades overlooking the Hudson River. Several stations were operational with low power from the Alpine site. Other stations switched to back-up sites elsewhere in the city, but a permanent central site to replace the World Trade Center remains under study.

MICHAEL FENICHEL, KB2OLW



WPIX transmitter engineer Steve Jacobson, N2SJ, shown here atop the World Trade Center, was among those lost when the building was attacked and collapsed.

Cross relief and recovery efforts. The logistics were unbelievable.

Hundreds of Amateur Radio operators from the Greater New York City area answered the call for assistance. Some of the first deployed were from Long Island. In the hours after the attack telephones, cell phones, pagers and other wireless devices were rendered unusable. For as much as a 50-mile radius there was difficulty getting a dial tone, and Internet service was spotty.

Hams communicated via the area's main repeaters, most of which were unaffected by the disaster. Nets were established, and the trained cadre of volunteers, experienced and ready, were organized and dispatched under Hargrove's and Carrubba's joint leadership.

The common ARES/RACES emergency net established on Manhattan's WB2ZSE 147.000 MHz repeater promptly became the primary conduit for emergency traffic. "It made things seamless, and everyone knew what was going on," Carrubba explained. "You don't have to monitor several radios."

Amateurs also shadowed some New York City officials, handled medical traffic, stood by at hospitals and prepared to assist the American Red Cross Headquarters. Other ARES units stood by at local emergency operations centers. The American Red Cross Emergency Communications Service in Queens—one of the many area clubs and organizations that contributed the use of repeaters and spread word that volunteers were needed—activated an emergency net on its WB2QBP repeater. A New York State RACES net was operational on 7.248 and 3.993 MHz handling emergency and government-related traffic.

The Red Cross Role

The Red Cross opened a command center in its Brooklyn headquarters, which became a staging area for the Red Cross Emergency Response Vehicles—or ERVs—as well as for volunteer personnel and supplies. A dozen Red Cross shelters soon were up and running around the clock, with Amateur Radio providing operators, equipment and expertise. In the early hours and days of the response, finding victims trapped in the rubble was foremost on everyone's mind.

Hams were assigned to Red Cross headquarters, the various shelters and other subsidiary Red Cross sites around the area, including the five New York City boroughs—Manhattan, Queens, Brooklyn, Staten Island and the Bronx—plus New York's Westchester, Nassau and Suffolk counties and across the Hudson River in New Jersey. ARES-staffed nets provided the needed communications support, coordinating shelter health-and-welfare traffic and logistics.

Carrubba said the high call volume continued to tax the telephone system in lower Manhattan. Telephone service was available, but it often took 15 or 20 tries to get a call through, so ham radio was bridging the gap. "American Red Cross communications are overloaded, and traffic from the shelters is coming into the New York City net at a rapid pace," he said on Day Two of the response. "The Amateur Radio ops are doing a great job under very difficult and strange conditions, but this is what they have trained for; they are getting it done well."

SM Tranos made announcements and helped coordinate the efforts of the ARES staff. Key players in addition to Tranos,



New York City-Long Island SEC Tom Carrubba, KA2D (left), and New York City ARRL District Emergency Coordinator and RACES Radio Officer Charles Hargrove, N2NOV, compare notes on the ARES/RACES effort.

Carrubba and Hargrove, included Manhattan ARES Emergency Coordinator John Kiernan, KE2UN, and the Red Cross's Jay Ferron, N4GAA.

Other ham radio volunteers were dispatched to staff, establish and maintain communications among the World Trade Center disaster site, Red Cross on Amsterdam Avenue in New York, Red Cross Queens Chapter, the multiple Red Cross shelters in Manhattan and Shea Stadium—home of the New York Mets—where a staging and relief area for the thousands of emergency workers had been set up.

At least in the early going, ham volunteers being transported from the Brooklyn Red Cross facility had to be self-sufficient. Dual-band (VHF/UHF) mobile radios, power supplies, mag-

mount antennas, coax, power cables, boots, dust masks and even respirators, latex gloves, bottled water and snacks were among the requirements for those stationed near "Ground Zero," as it came to be called, where conditions were frequently described as hellish and protective equipment and clothing were a necessity. Shift after shift of volunteers trekked to and from assignments burdened with bulging backpacks.

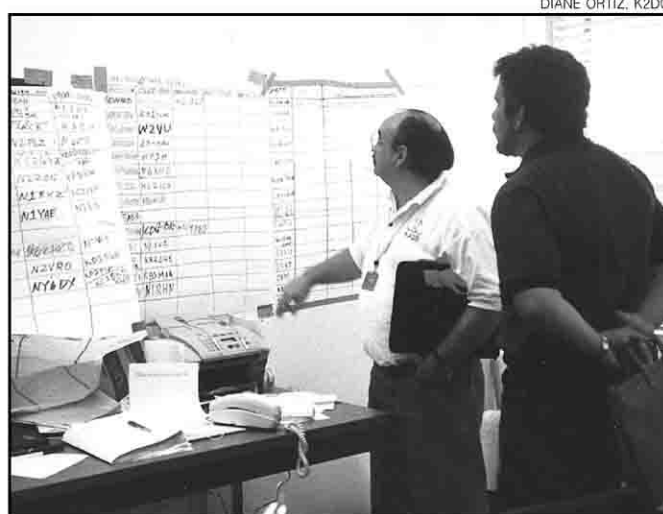
"This requires a big commitment," Tranos advised. The shifts were 12-plus hours, and often it required considerable time to get credentials and transport in and out of restricted areas, especially at Ground Zero.

Amateur Radio operators volunteered from as far away as Canada, Maine, Texas and California. Several visiting hams from outside the area rolled up their sleeves, including Robert Gissing, VE3ZLV, who assisted the Red Cross in Brooklyn. Suresh, VU2LOT, an Indian ham who was already in Northern New Jersey offered his services. Professional firefighter Wayne Souza, KA1LH, from Fall River, Massachusetts, had hoped to volunteer with his New York City brethren but was told his unit was not needed. Souza decided instead to get involved in the ham radio effort. "It was one way that I could still help," he said. ARES initially turned away most long-distance offers of help because there were no provisions to house the volunteers, entry into New York City was difficult, and parking next-to-impossible.

Even so, many wouldn't take no for an answer and said "I'm coming," despite the requirements and risks involved. SEC Hargrove said the outpouring of people who wanted to help was tremendous. "It's



Volunteer Robert Gissing, VE3ZLV (left), briefs ARRL President Jim Haynie, W5JBP, at Brooklyn Red Cross headquarters.



NYC-LI SEC Tom Carrubba, KA2D (left), and NYC-LI SM George Tranos, N2GA, check the volunteer grid for openings.

been hard to keep people away," he said. "That's the kind of disaster it was." The Red Cross's Ferron agreed. "The Amateur Radio community has come out very big and very strong," he observed.

Tranos put it more succinctly. "I'm very proud of my section," he said.

Across the River

New Jersey amateurs also mustered their resources as the emergency unfolded. Hospitals had been designated and shelters set up across the Hudson River to handle any overflow from New York City.

ARRL Northern New Jersey SEC Steve Ostrove, K2SO, said that dozens of amateurs from his section helped with emergency communications following the attacks. Amateur Radio operators were stationed at four Red Cross shelters in New Jersey, helping to back up the spotty telephone communication. Among other things, the shelters provided a haven for those unable to return home because of restricted traffic into Manhattan. Northern New Jersey operators also supplemented and relieved the New York City ARES team.

A Red Cross emergency net ran on the NO2EL 145.37 MHz repeater, and an ARES net was activated on the WS2Q repeater, with liaison to New York City's ARES/RACES net on 147.000 MHz. The nets were able to coordinate volunteer efforts and blood donations. Several Red Cross chapters in New Jersey were linked by Amateur Radio.

According to Rich Krajewski, WB2CRD, the Jersey City Amateur Radio Club was called on to assist the Red Cross after their repeater atop the World Trade Center was lost in the building's

collapse. Club member Stan Daniels, KB2FY, and John Hunter, KE2ZZ—who drove from South Jersey to help—were the backbone of an effort that set up a 2-meter station that allowed communication with local emergency officials and a Red Cross net. Hams also added 2-meter capability to Red Cross emergency vehicles to help them keep in touch as they delivering cots, meals and supplies to shelters in Hudson County.

About a dozen members of the David Sarnoff Radio Club voluntarily activated N2ARC on the 146.46 MHz repeater September 11 to help the American Red Cross Central New Jersey Chapter in Princeton Junction.

Doing The Iron Man Act

A regular cadre of volunteers—two dozen or more per shift—settled into a routine. Hundreds of prospective volunteers signed up via the World Trade Center Disaster Relief Communications registration Web site, developed at the suggestion of Suffolk County DEC Bill Scheibel, N2NFI, by Joe Tomasone, AB2M. "It allows us to make the best use of the volunteers," Carrubba said. The system worked superbly.

Ham volunteers provided their own protective gear and arranged transportation to and from dispatch locations, often carpooling and sharing resources. Yaesu, ICOM, MFJ and other suppliers came forward with loans of transceivers and accessories.

Amateur Radio volunteers were rotated in and out of areas and duties in an effort to equalize the stress. The mood remained largely positive as the response extended past Day 10, Carrubba reported. Still, volunteers were getting tired, and

some needed to return to their normal lives and jobs. Shifts scheduled to run 12 hours typically were much longer. "The first 30 or 40 hours everybody does 'the iron man act,' I call it, because they're running on adrenaline," Carrubba said. After that, he said, everyone realized they need some rest and unwound a little bit. "The people that are going back are fresh."

One early volunteer, ARRL member John Stuart, K1OE, of Rowayton, Connecticut, found himself inspired by the experience. After signing up and reporting, Stuart found himself part of a group of hams from eastern Long Island. "We each became the 'communications person' for shelters throughout lower Manhattan, reporting needs of the shelter to Red Cross headquarters through a net and also reporting, on hourly intervals, the personnel status of the shelter," he said. All told, Stuart spent about 20 hours in New York. "It was a great experience," he said. "I met a lot of wonderful people, the shelters are providing an important function, and the hams are the communications backbone of the operation."

ARRL President Haynie took an opportunity September 21 to visit with some of the New York-area hams at the heart of the communication effort. "On behalf of the 680,000 ham operators in the US, thank you for doing such a fine job," he said.

ARRL Hudson Division Director Frank Fallon, N2FF, accompanied Haynie on his visit. "From the very first day I have been proud of the way ARRL members in the Hudson Division responded in overwhelming numbers," Fallon said. "So many responded that many, unfortun-

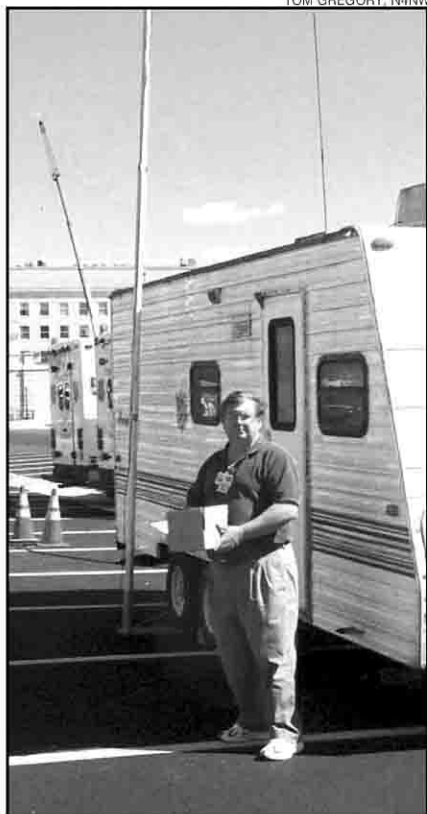


Shift change at Salvation Army Arlington Headquarters, where Jerry Shadle, WA3UTL (left), and Spike Boyd, K9MX, were among the operators for the ARES Pentagon recovery support.



ARRL President Jim Haynie, W5JBP, and ARRL Virginia SEC Tom Gregory, N4NW.

TOM GREGORY, N4NW



Lewis Cheek, K4HR, assisted in configuring the repeater and duplexer on the temporary repeater on loan from the Stafford Amateur Radio Association to Virginia ARES to support the Salvation Army Disaster Relief operation. Tom Harmon, AK1E, who served as incident commander, provided the small trailer housing the machine. The south face of the Pentagon is in the background. This photo was captured prior to US Department of Defense restriction on photography in the vicinity of the recovery operation.

Washington, DC-Area Hams Rally to Support Pentagon Response

In the Washington, DC, area, Amateur Radio rallied in response to the attack on the Pentagon. Montgomery County, Maryland, RACES was activated right away and remained on alert for about a day, as local governments provided what support they could to the Pentagon disaster site. In the immediate aftermath, Montgomery County RACES Deputy Radio Officer Creel characterized the mood of the Amateur Radio community as "somber but professional."

Amateurs provided reliable communication among five civilian hospitals in Montgomery County in anticipation of casualties. Later, the RACES team aided the American Red Cross to overcome telephone system overload. Creel reported that the telephone and cellular telephone system in the DC area was rendered useless within a short time. "It just didn't hack it," he said.

A Federal Emergency Management Agency team was among those that checked into the RACES net the day after the attack to seek possible communication support.

"If you're not a member of an ARES or RACES group, now's the time to seriously consider joining," Creel said, adding his voice to the growing chorus of those recommending that Amateur Radio operators be ready to respond and react. He said it was difficult for him to turn away offers of help from non-members who would not have been allowed access given the "lock-down" situation that followed the attack on the Pentagon.

ARES Marshals Support for Salvation Army Effort

In response to a request from the Salvation Army, Virginia Section Emergency Coordinator Tom Gregory, N4NW, put out a call for hams in the Washington, DC, area to support the Salvation Army's volunteer effort. Amateurs were needed to provide communication to coordinate trucks and supplies. Maryland-DC SEC Mike Carr, WA1QAA, assisted in recruiting volunteers, and Chuck Rexroad, N4HCP, assisted Gregory in the early stages to coordinate the volunteer response.

Gregory said many of the more than 100 volunteers who reported for duty between September 11 and September 18—when the ARES group stood down—gave up time with their families and their jobs. In a few cases, he said, he even wrote letters to employers requesting that volunteers be allowed time off to work the incident.

At the peak of the activation, Gregory reported an "upbeat" crew of about two dozen Washington, DC, area amateurs staffing six Amateur Radio stations in the immediate vicinity of the Pentagon. Yaesu arranged to loan equipment to the operation.

The ARES activation—with Virginia ARES District 4 Emergency Coordinator Tom Harmon, AK1E, as incident commander—provided logistical support between the Salvation Army's relief and recovery effort on site and the agency's Arlington headquarters. The Salvation Army was providing food and refreshments to the crews engaged in the Pentagon investigation and recovery.

Initially, a portable repeater was set up in a parking lot. The unit let hams run H-Ts at their lowest power settings to conserve batteries. A net was established on the Alexandria 145.17 MHz repeater for the canteen units, and an operator was detailed to the Salvation Army headquarters in Alexandria.

Operating conditions were less than ideal. "What we're finding is that communication is very difficult because of the tremendous amount of noise from the construction-type equipment and the generators providing power for the lights and support staff," Gregory said as the response was ramping up. Because of the noise level, on-site managers opted to rotate operators in and out of the immediate vicinity of the attack as frequently as possible.

"There's the emotion of it, and there's the tremendous amount of noise, and it's very grating on you because you can hardly hear the radio to communicate," Gregory explained. In addition, the cellular telephone network was swamped, and, because the Pentagon remained open, there was a lot of other RF in the vicinity to complicate matters.

But Gregory said what shocked him the most was the devastation visible 100 meters from the building. "The destruction is total," he said.

Gregory described the entire area as "very crowded with people" inside and outside the Pentagon. "People and equipment cleaning up, finding bodies, finding plane parts, firefighters still checking for hot spots, hoses, equipment," he said. "The damage to the building looks worse when you are right next to it than it does on TV."

The site remained under an umbrella of tight security, and soldiers armed with M-16s and police controlled entry to the fenced-in compound. A temporary road was constructed from Washington Boulevard extending several hundred feet to the hole in the building in order to move

ately, were turned away." Ultimately some 500 amateurs would answer the call for volunteers.

"It really has been our finest hour! It has made us all very proud to be Amateur Radio operators," Fallon said.

John MacInnes, a Red Cross communications officer based in Tucson, Arizona, approached Haynie with high praise for the Amateur Radio community and for ARRL. "We wouldn't be where we are today without the ham radio operators," he said. He told Haynie that he should be very proud of his organization and asked him to relay his message of thanks throughout the amateur community.

The New York City ARES/RACES operation in support of the American Red Cross stood down the week of September 23.

heavy equipment. Hams who volunteered had to run a strict security gauntlet. "Candidly, if you have outstanding parking tickets or some other issue where you may be wanted, you will not get an access ID but may get taken into custody!" Gregory warned potential volunteers.

Harmon put it another way: "Security is so tight that the wind does not blow across the parking lot without approval."

Gregory said that newcomers viewing the ghastly damage for the first time often were speechless. "I found that it took me a few minutes to realize the gravity of what was going on and the importance of what we hams are doing in our own small way to help out," Gregory said. "The devastation of that building is awesome, and it puts things in perspective and it certainly made me proud to be an Amateur Radio operator and serve the people of the United States by offering this support."

ARRL President Haynie briefly visited the ARES Pentagon team September 17. Gregory said he appreciated Haynie's encouragement at a difficult time. Accompanying Haynie were ARRL First Vice President Joel Harrison, W5ZN, FCC Special Counsel for Amateur Radio Enforcement Riley Hollingsworth, and ARRL Virginia Section Manager Carl Clements, W4CAC.

Haynie spoke briefly on the net and thanked the amateurs on hand for volunteering. Hollingsworth—initially called in to check into the possibility of interference to the Pentagon site repeater—volunteered to operate, if needed, and offered to loan the ARES team the ham gear he had in his vehicle, Gregory said.

Gregory said amateurs who volunteered did not let their emotions get in the way of doing a good job. "It's helping them to help out," he said. "It's part of the healing process."

As the Salvation Army regained the ability to manage its own support operations via telephone, the need for Amateur Radio ended September 18, and the supporting ARES operation terminated.

"Amateur Radio performed exactly as it was supposed to," Gregory said afterwards. "We responded to the need to provide communications where none were available." He said the Virginia ARES organization stands ready to jump in again "at a moment's notice" if the need arises. "If someone calls on us, we're ready to respond," he said.

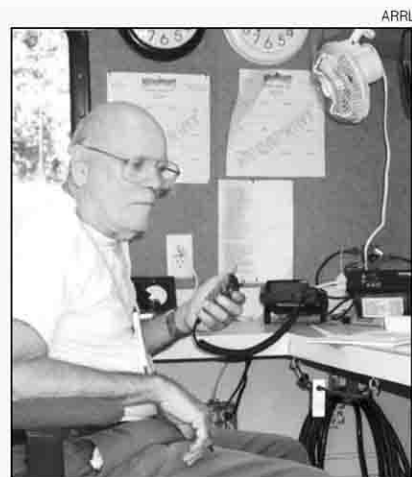
Harmon said he continued to be impressed throughout his time at the Pentagon site by all those who volunteered. "Position and job are relatively unimportant," he said, since *all* folks there are required to make that small town function."

Georgia Amateurs Travel "Up North" to Help

A group of Georgia amateurs accompanied Southern Baptist Convention Disaster Relief crews to the New York City area in the wake of the September 11 terrorist attacks on the World Trade Center. The hams provided communication support to the Convention's mobile kitchens and shower units, deployed at the request of the Federal Emergency Management Agency.

The communications van of the Chattahoochee Baptist Association Amateur Radio team was stationed at a staging area at the Raritan Valley Baptist Church in Edison, New Jersey. Operating as W4CBA, the volunteers in Edison utilized the nearby New Jersey Institute of Technology Amateur Radio Club's K2MFF 147.225 MHz repeater in Newark to communicate with deployed kitchens and showers in the old Brooklyn Navy Yard and near Ground Zero in Manhattan. Amateurs were accompanying volunteers from eight states into the field as they served meals to relief workers and displaced residents.

According to Jackie Whitlock, N4JJW, the call from FEMA came



Ed Cravey, KF4HPY, at the controls of the Chattahoochee Baptist Association's W4CBA mobile unit in Edison, New Jersey. Cravey is an ARRL member from Gainesville, Georgia.

the day after the attacks. By September 14, two kitchens had been deployed, with a third unit in reserve at Edison. In their first 36 hours on the scene, 89 volunteers had served more than 7500 meals at the Manhattan and Brooklyn sites.—*Brennan Price, N4QX*

Another amateur team consisting of Vienna Wireless Society and Arlington County Amateur Radio Club members and other amateurs provided communication and technical support to the American Red Cross relief effort at the Pentagon site. Arlington County ARES Emergency Coordinator Alan Bosch, KO4ALA, said his team was able to stand down September 22.

Hams Support Western Pennsylvania Crash Site

At the so-called "fourth" plane crash site in rural Somerset County western Pennsylvania, Kevin Custer, W3KKC, reported a busy scene as the investigation continued. Custer, who lives nearby, had arranged preliminary repeater communication into and out of the crash site to help the Red Cross, Salvation Army, Pennsylvania State Police, the FBI and other state and federal agencies on the scene.

"I have communications in place for hand-held coverage of the crash site to our local emergency operations center and three surrounding counties," he said. Eric Hegerle, N3VOC, of the Salvation Army Team Emergency Radio Network reported that SATERN used three linked repeaters for communication between Pittsburgh and the crash site.

"Things have calmed down since the FBI has taken over the site and has secured it as a crime scene," Custer reported a few days into the response. "This place has literally turned into a small city."

Amateurs Contribute to SHARES, SATERN

The World Trade Center attack prompted an immediate response from the SHARES network of federal agencies assisted by the Amateur Radio operators who participate in MARS—the Military Affiliate Radio System. A little-known emergency service, SHARES—the HF "Shared Resources" program of the National Communications System, US Department of Commerce—allies MARS-certified amateurs with federal agency operators when normal communication breaks down. SHARES nets operate on government frequencies outside the amateur bands.

MARS and SHARES rely heavily on the availability of hundreds of trained volunteer operators throughout the 50 states provides as one of the keys to needed connectivity. Amateur participants—selected by Navy-Marine Corps, Air Force and Army MARS managers—provide skilled net control stations as

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well as broad geographical coverage.

Within 15 minutes of the first incident in New York City, the first of many alert messages was transmitted by a MARS member to the Pentagon. Within an hour, a coast-to-coast backup net formed. Among the participants were Federal Emergency Management Agency outposts, Federal Aviation offices, the American Red Cross, and state emergency operations centers, as well as MARS members enrolled in SHARES. Regional SHARES nets also activated across the country, bringing in many additional hams.

Interestingly, one of the first government agencies to require emergency communications was SHARES itself. Located in an office near the Pentagon, the SHARES staff was immediately evacuated. Operations chief Ken Carpenter, KD6DBX, a retired Marine Corps communicator, quickly returned to the air with portable equipment from a safe Northern Virginia location.

The SHARES emergency activation ended September 12. During its 15 hours of operation, the National Communications System headquarters received more than 800 station availability reports from across the US.

Reporting on the parallel Army MARS operation, US Army MARS Chief Bob Sutton, N7UZY, said that 23 state and regional nets had been activated with 229 individual stations participating. These figures do not include numerous Air Force and Navy-Marine Corps members activated.

During the two-day period there was no attack on communication lines—although a massive surge of calls had the effect of blocking normal connections into much of Washington and New York in the initial hours. But MARS and its allies in NCS SHARES had demonstrated their effectiveness in a genuine emergency of international scope. Sutton thanked all that were involved in the MARS support. “You have done a great job,” he said.

SATERN—the Salvation Army Team Emergency Radio Network—activated its HF net on 14.265 MHz shortly after the attacks. The net initially served as a backup communication link to Salvation Army headquarters and units throughout the nation. SATERN helped to coordinate blood supplies across the US and handled health-and-welfare inquiries.

Immediately after the terrorist attack, Salvation Army Major David Dalberg, National Disaster Services Coordinator,

requested a SATERN operation at SATERN territorial headquarters. Bill Davidson, W9SWW, Greg Buttner, N9SA, and Harry Gilling, W9IB, set up a G5RV dipole above the building's eighth story and snaked the feedline 350 feet down to the disaster services area.

The SATERN net operated from the onset of the disaster for two days, then reduced its activity to the regular 1400 UTC net time. SATERN asked Amateur Radio volunteers to continue to monitor the net frequency to pass any needed information.

“It seemed on Tuesday that the entire nation's amateur corps was there supporting the endeavor,” said National SATERN Director Major Pat McPherson, WW9E. “It speaks to the spirit and ‘can do’ reflex of all those dedicating their time and resources to help. It also speaks to the patriotism of amateurs in our nation.”

REACT's Role

At press time, Radio Emergency Associated Communication Teams—REACT International—was seeking additional Amateur Radio operators and licensed GMRS users, primarily to support the Salvation Army's relief efforts in New York City. REACT is a participant of the National Volunteer Organizations Active in Disaster (NVOAD) to help provide coordinating communications and support to the other members of this organization. The ARRL and REACT have a memorandum of understanding.

REACT International Secretary Lee Besing, N5NTG, told ARRL that some shifts had gone unfilled as volunteers started burning out or having to return to their jobs. He said REACT was running 20 volunteers per shift. Jeff Schneller, N2HPO—who's also a SATERN liaison—was helping to coordinate the New York City response.

Charles Bessels of the Southern New York REACT Council reported that REACT teams were assisting the Salvation Army in Manhattan. “REACT units are making rounds to the different canteens around Ground Zero and at other positions,” he said. These included the medical examiner's office, the Javits Convention Center—where volunteers were signing up to help—and the Armory on Lexington Avenue, where families of victims met with officials to give DNA samples and provide additional information. The REACT units were making sure the Salvation Army canteens had all the supplies, fuel and personnel they need. They also handled emergency deliveries of needed items.

“There was a very good working relationship between all parties involved,” Fred Lanshe, N3QLU, a REACT International vice president, said in a report posted on the REACT Web site, www.reactintl.org. “Good communication has been established.”

Federal City REACT volunteers in Washington, DC, equipped with GMRS, also staffed barricades in the Capitol Complex, freeing up uniformed police for more pressing duties. Montgomery County, Maryland, REACT members were said to have assisted the American Red Cross relief and recovery effort.

Staying the Course

In New York, SEC Carrubba urged those who volunteered but were not ARES members to get involved in their local ARES programs. That way, he explained, not only could they take advantage of the various training opportunities, they wouldn't have to wait in line to volunteer, because they'll be assigned from the outset.

The Red Cross's Ferron said hams “do whatever it takes to do the job—and they're doing it.” He advised amateurs everywhere to be preparing now for disaster. “If you know your plan, you're ahead of the game,” he said. “Practice, practice practice.”

Carrubba estimated that it would take many weeks and maybe months before the missing could be identified and the served agencies get back to normal. “This is the *real thing*,” he said, “and Amateur Radio has proved itself to be a valuable resource and service to the community in this time of need.”

In the wake of the Pentagon ARES activation, Virginia ARRL Public Information Coordinator Patrick Wilson, W4PW, reflected that all the amateurs who volunteered were ready and willing to go where asked and stay as long as they were needed. “This is what we do,” he said. “Everywhere we went at the site, people stopped us and thanked us for what we were doing to help the effort. It embarrassed me a little, because compared to what some others were doing, our jobs were a piece of cake. Did and does ham radio play a part where needed? A resounding ‘yes’ is the answer.”

Authors' note: Our thanks to Jennifer Hagy, N1TDY, Brennan Price, N4QX, Jennifer Stocker and Bill Sexton, N1IN, for their assistance in the preparation of this article. We also express our gratitude to the many amateurs and organizations that went unmentioned in this summary account but whose contributions were nonetheless important to the overall success of these activations. QST