In emergencies, the Army's ham station, K4USA, can operate in the field with this portable transmitter

ARMY HAMS to the RESCUE

By Richard F. Dempewolff

THIS is K4USA — King Four Uncle Sugar Able — calling CQ, CQ, CQ. Come in for a rag chew."

The man at the radio transmitter, beaming the general "seek you" signal familiar to anyone who has ever fanned the ham frequencies on the short-wave sector of his radio dial, may be a top-ranking military officer these days. Reason?

Uncle Sam's military establishment is a "ham." In fact, it's a whole network of hams known as MARS, the Military Amateur Radio System. Established less than a year ago, the net already comprises some 1000 military and organized reserve radio hams throughout the United States, Panama and Hawaii. Other overseas outposts have just been set up in Labrador, Newfoundland and Turkey. Soon MARS may reach out to encompass most of the country's 75,000 licensed civilian amateur radio operators, who fill their designated channels with enthusiastic chatter 24 hours a day.

Some folks (and there are some) who think of hams as slightly daft hermits who spend every waking moment in an attic corner diddling with dials on a plumber's nightmare of homemade radio equipment might wonder why the Army would want to join the act.

Chaplain St. Onge and his radio were key links in communications during the Greenland icecap rescue

Forced down on the Greenland icecap, the men in this C-47 were picked up with the help of Chaplain St. Onge and the Army ham net. Note snow dugout that sheltered the crewmen

The military doesn't wonder at all. It's no newcomer to the ham bands. Major Rawleigh Ralls, Chief MARS, Air Force, and Captain E. L. Nielsen, Chief MARS, Army, explain it simply: "Before the war, the AARS (Army Amateur Radio System), a blueprint for the present MARS, proved the value of hams beyond all question. In every theater of war, amateurs formed a hard core of military radio personnel. Hams became the instructors at Army radio schools, the research engineers who helped develop radar, the small manufacturers who adapted, perfected and built much of the efficient modern field radio equipment that contributed toward the winning of World War II."

The military thinks it would be nice to have such a backlog of skilled radio talent again. Then, there's another and even more important use for a good ham network in peacetime. It has to do with the very nature of a ham.

There's nothing in FCC regulations that says a ham must do anything besides "bat the breeze" with brother hams in China, Afghanistan or Bemidji in order to keep his license. But, when floods hit Texas last year, amateurs with portable transmitters and put-put generators rushed to the stricken area. Where telephone and telegraph lines were wiped out, they set up emergency communications, aiding the Red Cross and other rescue services to maintain contact with scattered rescue teams and the outside world, sending messages to relatives of survivors and dead. In earthquakes, tornadoes, big forest fires and explosions, amateur radio operators always come running with their home-grown apparatus to help out.

It was to organize and coordinate this

It was a jato-equipped C-47 with landing gear like the one shown here that rescued the stranded flyers

vast potential of emergency communication that the Army and Air Force last November quietly hoisted two spidery, signal-squirting antennas to the roof of the Pentagon Building and went to work.

MARS is controlled from two stations, operating on a wide range of frequencies. Eventually, the net will use lightweight teleprinters, facsimile machines and a host of other modern time-saving devices.

K4USA is the Army's central ham shack atop the Pentagon. The Air Force sends its chatter from K4AF in an adjoining part of the building. Net control stations are set up at Army posts and airfields in each of the six Army areas in the United States. These stations, in turn, provide the link with control stations on the state level—to which local members report.

How does the network operate when disaster hits? Suppose there's a gigantic munitions explosion in a New Bedford, Mass., plant. The telephone exchange is reduced to rubble, telegraph lines are down, local radio stations are demolished. For blocks around, buildings are piles of broken masonry. Dead and injured lie along the streets.

But there's a MARS ham in the suburbs, whose 100-watter sits safe and sound on a table on the sunporch. He has seen and heard the explosion. A quick visit with local police and Red Cross workers gives him an appraisal of the situation. There's a dire communication emergency. The ham reports into the net.

W2USA is the MARS control station for the First Army area in New York. Our ham sends a QRR signal there. QRR is practically synonymous with the old SOS.

From W2USA, Capt. Richard Speer has the message relayed to the Pentagon. A check with Red Cross National Headquarters verifies the communications emergency and the help of MARS is requested. The network is in business officially.

Now, something else happens. All MARS stations have two sets of call letters. When K4USA is just "rag chewing," it is simply K4USA. But, when it's working the net as official MARS, it switches to regular Army frequencies and becomes WAR. Likewise, K4AF becomes AIR. Member stations with private "W" call letters change their "W" to "A" or "AF."

So, using calls WAR and AIR, the Army and Air Force control shacks in the Pentagon go out over the MARS channels, alerting all hams in the New Bedford area: "QRR, QRR, QRR—attention all MARS members. This is the MARS headquarters station. Stand by on this frequency for instructions."

The rest is routine. Hams in New Bedford are ordered out to the disaster area with portable rigs; others monitor the frequencies from their home sets and relay messages. The Red Cross needs ambulances quickly. In a few minutes, a roving MARS member on the scene has made the request, which is relayed to Washington. Military commanders in the Pentagon authorize 50 ambulances sent out from nearby military establishments. That order goes out over WAR and AIR to Massachusetts Army posts and airfields on the network. A few minutes later, the ambulances are rolling.

Meanwhile, the local MARS members in New Bedford are busy messaging back and forth between separated rescue parties, helping coordinate operations. After all necessary equipment, doctors and other aids have been ordered, MARS hams then go to work relaying personal messages to

Future Army hams practice code at Fort McPherson's radio school, attended by regulars and reservists

Last winter, during "Operation Snowbound," plowing and rescue operations were directed by Army ham radio

relatives of casualties and survivors. It is all done quickly and efficiently.

MARS already has had a chance to show its stuff. Last December, a C-47 with seven men on board crash landed on Greenland's bleak icecap. Air Rescue Service planes scouted the wreck, saw the survivors waving their arms, but couldn't land due to rugged ice and snow conditions. They needed special equipment—and quickly.

At his tiny amateur radio station—VO6AN—in Goose Bay, Labrador, Army Chaplain Alexis St. Onge, an incurable ham and now a MARS member, talked with the returning rescue party and learned their plight.

VO6AN was on the air a moment later with a QRR. In a short time, K4USA was coming through in good shape. The contact was maintained and became the main line of communication between the Air Rescue party and Washington throughout the dramatic rescue.

Over the hookup, Air Rescue men described the tough conditions. Washington experts quickly radioed from the Pentagon to Army posts in widely separated parts of the country to procure the special equipment that would be needed. They ordered it flown to Greenland immediately.

Hours later, a big plane took off from an airfield in Greenville, S. C., with a glider in tow. The glider had a special tow hook that would not only release it for a landing

Left, acting governor of Wyoming, Arthur G. Crane, directs snow rescue work on an Army network. Below, sergeant prepares a tape at K4USA for code-practice broadcast

Atop the Pentagon Building, Air Force personnel erect an antenna for broadcasts beamed by MARS station K4AF

while the tow plane continued to fly, but would also catch a dropped line from the tow plane. Thus, it could be dragged aloft again after picking up its cargo of survivors.

At Wright-Patterson field in Dayton, mechanics hurriedly prepared another plane, a C-47 with combination wheel-ski landing gear and jato units—just in case the glider missed. It, too, thundered toward the icecap.

The whole world knows the outcome. The glider cracked up on landing. A Fortress went in after it and ditto. But the C-47 made it in safely, picked up the survivors of all three crashes and took off easily with its jet assist.

The point is that without a good through line of communication it might have been weeks before proper equipment

Radio is almost an obsession with hams. This Army officer didn't let a stay in the hospital interfere with his fun. He took his ham set with him

was brought to the scene and the frozen survivors rescued.

MARS hams don't just bat the breeze all the time between disasters. There's plenty of official duty. Members must report into the net at specified times for MARS news and instructions. Semiofficial messages—Father's Day greetings from soldiers and sailors overseas, family death messages, minor orders — pour from K4AF and K4USA at a rate of about 50 a day. The boys engage in DXing and traffic handling in simulated emergencies. Every night from the Pentagon shacks, operators send Morse code practice tests, starting at 5 words per minute and working up to 35. The day of the brass pounder is not yet over and all MARS members must report for these lessons in order to develop what's known as a "sweet fist."

For a time, Pentagon operators had to pound out the monotonous tests themselves. Even Sgt. Paul Allyn, K4USA's operator, whose fist is sweet enough so that he can send 50 words a minute in good shape, got bored with the routine. Now, he has a Boehme keyer to do the job for him. This is simply a circuit-breaker activated by punched tape. The tape ends can be pasted together, forming a circle of perforated paper. Thus, the same message will go 'round and 'round through the keyer while Allyn simply adjusts the speed to anything from five to 150 words a minute. It takes a pretty hot ham, however, to transcribe anything over 50.

Whether MARS is working on an official

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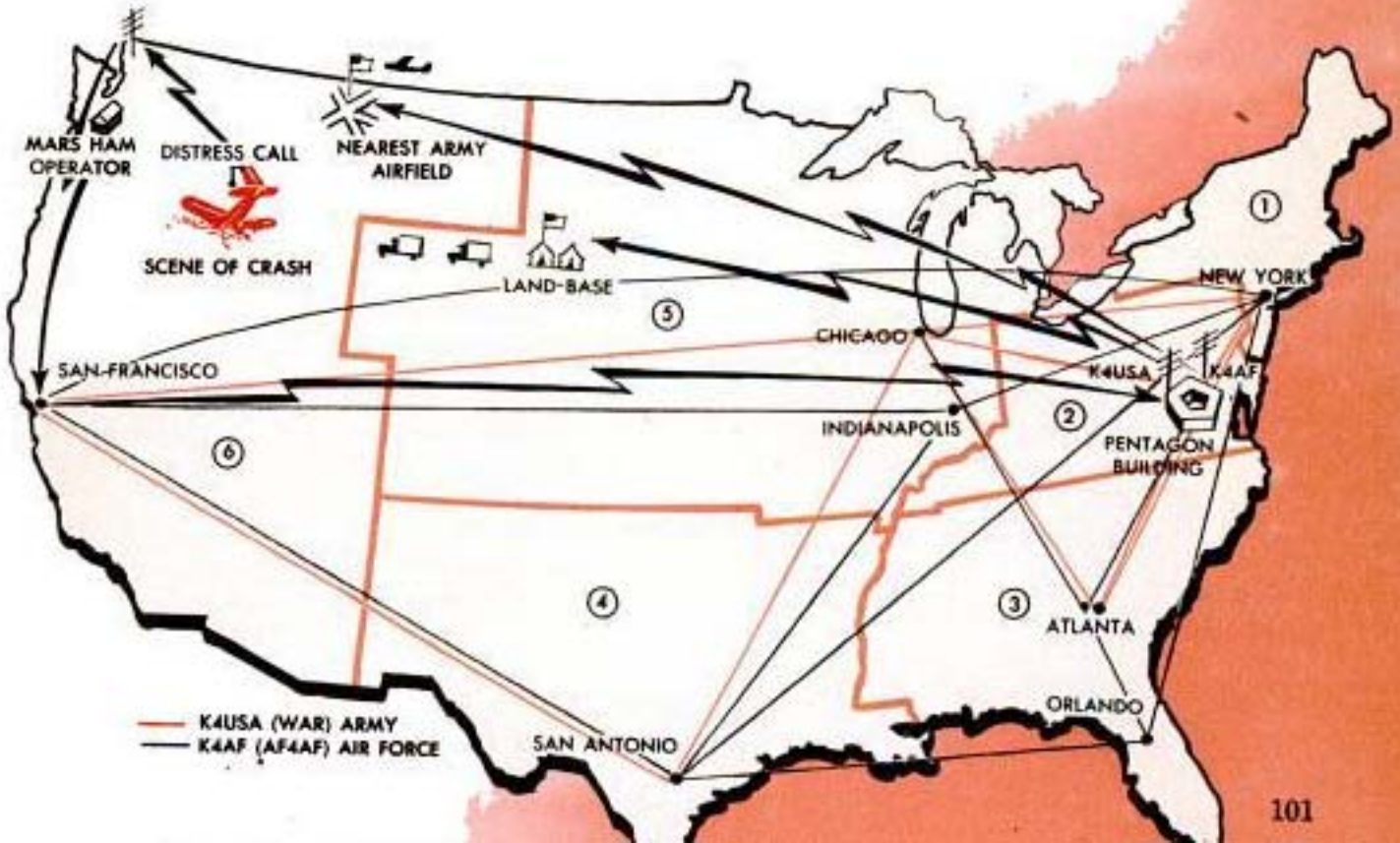
Inside the Army's ham shack atop the Pentagon Building in Washington. From here, net-control station, K4USA, broadcasts to MARS members around world

Army areas, numbered on map, have MARS headquarters. Radio net, maintained by areas, is shown by straight lines on the map, one set for K4USA, the other for K4AF. Also shown is system of relaying word of plane crash to Washington, which orders out rescue teams from the nearest land and air bases



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basis in a disaster or not, member hams are always ready to help people who are in trouble.

During "Operation Snowbound," when the prairie states were under a dozen feet of snow, several MARS boys were out pitching in an unofficial capacity.

WØHSO, which is M/Sgt. John McKinney, a National Guardsman in Grand Island, Neb., operated an Army mobile station for four weeks. He scouted and reported important roads blocked with snow, so rescue equipment could be sent to clear them. He found snowbound farm families and radioed for relief.

During this same disaster, the Pentagon stations were monitoring the frequencies, as were most of the members on the network—just to keep alert. AIR radioed WØIDR, 63-year-old rancher named Dominick Rolli, who was running a Jeep around the snowbanks, "fishing out Army boys from the drifts." Since power lines were down, Rolli used a put-put gasoline generator for his BC610 transmitter to keep rescue parties and the MARS net informed of his activities.

MARS members are always cooperating with other hams to do favors for people. W2RGP is a building engineer with a ham shack on the 16th floor of a New York apartment house.

He uses his facilities to let Americans in the American-held zone of Germany talk to relatives in the States from ham stations over there. Recently, he put through a "telephone patch" for a man in South America, so he could talk with a brother in New York to whom he hadn't spoken for 40 years.

Even K4USA and K4AF get in on the act with this sort of thing. K4USA picked up one William Braud, broadcasting from W30ZA aboard the S. S. Joshua Tree in the Red Sea, 40 miles off Suez, not long ago. Braud said he had a wife and child in Baltimore whom he hadn't seen in months. So, while he waited, Master Sergeant Allyn, with an assist by a Baltimore ham, linked him into the telephone lines and Mr. and Mrs. Braud had a long, friendly chat.

On rare occasions, a sour note creeps into MARS, though it has never happened with a network member. Last spring, K4AF picked up a desperate QRR from a ham in Puerto Rico. Hurriedly, in broken English, the man stammered that a tidal wave had hit the island, washed away 200 homes, killed vast numbers of people and created a national emergency.

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Sgt. James Williams, operator for K4AF, quickly notified the Red Cross and made his report. Hours later, the Red Cross announced that the report was false. "Probably just some bored ham trying to stir a little excitement," says Williams.

All told, MARS hams are pretty much the same as hams anywhere. The walls of K4USA and K4AF are papered with QSL cards from all over the world. QSLs are postcards, giving call letters and information, which hams send to each other after they have made contact. Many MARS stations have QSL cards, even from Russian hams. Every network member has one ambition—to get his "WAAFB" and "WAAP" certificates—which mean "Worked All Air Force Bases" and "Worked All Army Posts."

Meanwhile, the network is building fast. Eventually, the chiefs hope to supply key stations with facsimile and teleprinter equipment. With these, messages will be sent 10 times faster. The teleprinter transmits its impulses through an oscillator, the impulses are picked up on the other end and transcribed into print by the receiving machine at a rate of 60 words a minute. The signal transmitted over the air by the teleprinter sounds like a big diesel engine in the distance — a long, deep, wavering note with rapid, muffled breaks.

Until these speed demons do the work, MARS hams will continue to develop "sweet fists," and practice traffic handling for the day when a big emergency calls them out.

Comes the Flying Assessor

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land usage and bigger crops. They rarely object to assessments because they can compare the photographs with those of farms in their neighborhood and check relative assessments.

The first step in preparing the pictures for tax use is to mark off the area by sections, which are broken down to the usual 40-acre squares. Section corners are accurately located on the photo map by general survey data and known landmarks. The photograph is marked to show township, range and section. From the ownership records, property lines are laid out on an acetate overlay so they can be changed if necessary. Such data as soil type, slope, water resources including irrigation facilities, are entered right on the picture. This task is a gigantic one as there are 93 distinct soil types in western Oregon alone. Values range from 50 cents an acre in the

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