

Earthquake!

Amateur Radio responds to the northern California disaster.

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The following articles and first-person accounts are representative of the outstanding efforts put forth by Amateur Radio operators during the aftermath of the October 17, 1989, earthquake.

The Ultimate Emergency Test

We hams pride ourselves on being able to provide public service communications when we are needed. Like other emergency groups in California, Santa Cruz ARES members have often pondered the consequences of a major earthquake. Like many of you, we have prepared for disaster situations by participating in training sessions and drills. But, do people take these exercises seriously, or are they just another fun activity—like DXing, Field Day, transmitter hunts, and QSO parties? Did you ever stop to think, "Gee, if this were the real thing, what would I actually do?" There are times when events control our destiny.

At 5:04 PM, Tuesday, October 17, 1989, the third largest earthquake to hit the continental US this century struck Santa Cruz County, California. Measuring 7.1 on the Richter Scale, the 'quake's epicenter was located just eight miles from the center of Santa Cruz. Heavy damage occurred along a 75-mile length of the San Andreas fault—extending north to San Francisco and Oakland, and south to Hollister and Salinas. Damage exceeded \$7.1 billion, making this the most costly natural disaster in US history.

When the shaking stopped—a mere 15 seconds later—592 homes had been destroyed countywide, 2,069 suffered heavy damage, and 9,210 had minor damage. Some 668 mobile homes were destroyed or received major damage. Nearly 10,000 people were displaced from their homes, and two months later, 3,000 remained homeless. Thankfully, only six people died in the county.

The Disaster Area

Santa Cruz County, situated on the Pacific coast about 60 miles south of San Francisco, has a population of 230,000. The principal cities are Santa Cruz and Watsonville.

When the quake ended, the county was effectively isolated. Slides and damaged bridges closed most highways and rural roads to the east and south. Electric power, tele-

phone service and radio communications were disrupted.

Quake Communications

Initially, radio amateurs provided the only communications between the county Emergency Operations Center (EOC) and many field locations. These included hospitals, Red Cross shelters, adjacent county EOCs and the State Office of Emergency Services in Sacramento. Reports were received that Watsonville Community Hospital had been damaged. That hospital had recently installed a 2-meter base station. John Rider, N6TYH, came on the air from Watsonville, and we immediately sent him to the hospital. He had the hospital station on the air a few minutes later. The telephone system was out, as was their main emergency generator. Hospital personnel were already evacuating critical-care patients from the third and fourth floors of the building. We requested ambulances, including units from the Army at Fort Ord and from Monterey County, to the south. Movement of patients to the other two county hospitals and to Monterey County began. Medical helicopters were requested from as far away as Stanford Medical Center and from Fort Ord. Some of these choppers were



Bindy Beck, KC6AAN, is shown operating out of a parked car in front of the Moscone Convention Center shelter. (N6VAW photo)



Marilyn Bagshaw, N6VAW, crosses a police line to get to the Marina Middle School emergency shelter. (KC6AAN photo)

unable to establish radio communication with the hospitals for landing clearance. Amateur Radio was used to relay landing instructions via their home bases. Jamie Finch, W16F, was sent to pick up a portable generator for a nearby food-processing plant. That generator was set up on the lawn of the hospital to power lights for emergency surgery.

Many gas leaks and broken sewer and water lines were reported via ham radio. Ham "shadows" accompanied search teams as victims were sought in damaged buildings. Structural engineers and inspectors were airlifted by military aircraft from other parts of California. Amateur Radio was used extensively in coordinating these operations. Early on the morning following the quake, ham "shadows" accompanied these personnel as they began evaluating the damage in Santa Cruz and Watsonville. As in many disaster situations, a major part of the Amateur Radio operations involved support communications for establishing, staffing, and provisioning Red Cross emergency shelters. ARES support of Red Cross activities continued for eight days.

Personnel

At the peak of our operations, we were simultaneously manning 25 locations in Santa Cruz County—almost half were Red Cross shelters. Many locations required 24-hour coverage, and some needed two or more operators. From the very beginning we experienced great difficulty with staffing. More than 370 hams were utilized during our eight days of operations. Many worked multiple shifts—some worked all eight days. Although many local hams contributed their services, we were largely dependent upon volunteers from other areas. Some came from as far away as Los Angeles and San Diego. Others came from Nevada and Oregon. Most came from the adjacent counties of Monterey and Santa Clara, where 'quake damage was much less severe. If those counties had needed more hams for their own emergency operations, our situation could have become even worse. As it was, many people were forced to work very long shifts under extremely stressful conditions.—Wayne Thalls, KB6KN

Radio Amateurs Take Leading Role in Communications

After checking into the local repeater (147.33 MHz) in Marin County, I turned on my car radio and listened to reports of the horror, devastation, and tragedy that had occurred on Tuesday, October 17. The earthquake that rocked the Santa Cruz area had toppled a mile-long stretch of the Nimitz freeway and a section of the I-80 Bay Bridge, and caused an out-of-control fire in San Francisco's Marina District. I sat in disbelief.

How could this happen? I monitored our frequency, listening to the operators reporting in with emergency traffic concerning the collapse of a false ceiling in a major grocery store in Novato. I later heard on the repeater that, thankfully, no one was injured in the incident.

I reported to my designated operating station. Another Marin Amateur Radio Club



Jim Rich, N6SZQ, mans the radio at the American Red Cross headquarters in Sacramento. (WA6CFI photo)

operator beat me to the task of providing communications to Novato Community Hospital. Marin County is north of San Francisco. The county survived the 'quake with very little damage. About 100 members of our local Radio Amateur Civil Emergency Service (RACES) were stationed at strategic locations throughout the county, and operated for three hours on mostly simplex frequencies, with the three hospitals communicating through the repeater.

Knowing of the damage in San Francisco, we monitored Bay-area traffic to find a way to put our resources to the best use. Our resources consisted of operators who established health-and-welfare nets on all frequencies, and provided operators to come to the shelters and operate on the San Francisco emergency frequency of 145.15 MHz.

San Francisco had five operating stations, four at shelters for the homeless and one as net control. The four stations were the American Red Cross Building, Marina Middle School, Moscone Convention Center, and St Ignatius High School. The net control was in contact with the four other American Red Cross shelters: Alameda, Oakland, San Jose, and Santa Cruz/Watsonville areas. The San Francisco American Red Cross Building also housed the net control operator during quieter times. San Francisco stations used the 145.15-MHz repeater, occasionally passing simplex traffic on the same frequency. The repeater is located on the ridge above Daly City near the San Francisco airport.

At each station there were three to five hams: one or two operators monitored the repeater frequency and the remaining were used as runners on different simplex frequencies, obtaining and dispersing information to the proper officials. Many operators worked back-to-back eight-hour shifts during times of high traffic.

Approximately 50 radio operators volunteered at the shelter sites in San Francisco. They began showing up at their operating stations immediately after the 'quake. This procedure was practiced at an April 19 earthquake drill. Ironically, the RACES group had

practiced in the same buildings that were now functioning as real earthquake-relief centers.

Twelve to 15 operating sites were eventually established throughout the city of San Francisco. Each operator brought a 440-MHz or 2-meter rig with antenna and enough battery power to last 12-24 hours.

Preparing for an emergency of this scale sometimes can become overwhelming. I had never met the other operators who I was working with, but similar training taught each of us how to log our messages down to the very last detail and establish control in a chaotic environment. The emergency communication operations in San Francisco continued 24 hours a day for seven days. The telephone company restored service to each of the shelters by 2 PM PST on Tuesday, October 24, 1989.—Bindy Beck, KC6AAN

NTS and Packet Radio Put to Test

On that ill-fated day in October, I was browsing through the messages on the local packet system, when suddenly, shortly after 5 PM, my chair started to bounce up and down. At first, I thought it was just one of the many little earthquakes that any native Californian has grown accustomed to riding out with little concern.

Suddenly, the motion began to get violent

This building, like many others in downtown Santa Cruz, suffered severe damage during the earthquake. Many were later demolished because of structural inadequacies. (KB6KN photo)

