



CARES

Cupertino

Amateur Radio Emergency Service



Emergency Communications Station Drill Report July 17, 1999

Summary

On June 26, 1999, 18 members of Cupertino ARES (CARES) participated in a drill to establish and operate an Emergency Communications Station as part of national 1999 ARRL Field Day event. The site of the drill was located between the Cupertino City Hall and the Cupertino Library. Three amateur radio stations were set up to provide HF, VHF/UHF, and Packet operations. All drill objectives being achieved.

Overview

The intent of the CARES Emergency Communications Station (ECS) drill was to test CARES' ability to establish and operate a communications facility that could be used to support the city with backup field-based local and long distance communications during an emergency or disaster.

For the purpose of this drill, a field Emergency Communications Station is characterized as one that:

- operates from a location that is not a regular communications station location
- does not use any facilities installed for permanent communications station use
- does not rely on commercial power for its operation
- is capable of being set up, taken down, and moved as required

This drill also coincided with the 1999 ARRL Field Day event. The American Radio Relay League (ARRL), a national organization representing Amateur Radio in the U.S., sponsors Field Day. During this event, Amateurs from around the country set up similar communications stations, then participate in a contest to make 2-way contacts over a 27-hour period. The CARES ECS Drill ran for 9 hours.

The objectives of the CARES drill were:

1. establish a field emergency communications station for VHF/UHF, HF, and packet operation
2. originate radio traffic to and exchange reports with other Field Day stations
3. give CARES members an opportunity to observe and experience Packet and HF radio operations
4. figure out what works and doesn't work in support a field ECS

Event Specifics

The plan for the CARES Drill was as follows:

When: Saturday, June 26, 1999, at 8:00 am to 5:00 pm

Where: Torre Avenue Sidewalk and Common Area between City Hall and the Library, Cupertino City Hall, 10300 Torre Avenue, Cupertino

Planned	0800 - 1000	Station setup (radios, antennas, shelters, etc)
Agenda:	1000 - 15:00	Operations
	1500 - 1700	Station tear-down and cleanup

Drill Preparation

During the June 3rd CARES General Meeting, CARES members reviewed concepts on traffic handling and emergency field communications stations logistics and operations. The following list of material was identified as things required to support the drill:

Antenna	Table	Food
Antenna, 10-20-40M		Water
Antenna, VHF/UHF	Power	Ice Chest
Coax	Extension Cords	
Mast Fixture	Generator	Ops
Mast, 30 ft	Battery, Deep Cycle	Amateur Band Plan
	Power Supply 20A	Log in/out sheets
	Power Supply 35A	Paper
Radio		Pencils, Pens
Computer for Packet		
Radio, 2M	Public Relations	
Radio, HF	Camera, Digital	Miscellaneous
TNC for Packet	Camera, Video	First Aid Kit
	Direction Signs	Meter
Shelter/Structures	Station Signs	Tools
Chairs	Handouts	hats
Canopy	Public awareness material	Sun Tan Lotion

Beyond the meeting, additional preparation was limited to coordination by e-mail among CARES members and participating members performing individual assessments as to what they could contribute to support the drill and a field ECS.

Drill Execution

- **Participation.** Eighteen (18) CARES members participated to varying degrees during the drill and volunteered a total of 85 hours over the 9-hour drill period. Participation could be described in four categories of activities:
 1. Setup and Tear Down. Almost all participating CARES members helped establish the ECS site by assembling, installing, and checking out various pieces of equipment including antennas, radios, power, and shelters.
 2. Material Suppliers. Several members contributed communications equipment, various material, and supplies.
 3. Operations. 25% of the participants operated one or more stations for some period.
 4. Observation. Because CARES primarily operates with handheld VHF radios, the ECS drill offered members a chance to see other aspects of Amateur Radio that CARES members may encounter during an emergency.
- **Location.** The location of the drill was initially set for the vicinity of Cupertino's Memorial Park, but was moved to City Hall because of restrictions on the use of power generators at the park.

On inspection of the City Hall site, the sidewalk along Torre Avenue between the City Hall and the Library was selected as the site location for several reasons:

1. Benches and tables. The permanent benches and tables in the vicinity were used as operating positions for the VHF/UHF and HF stations. Each bench was large enough to support all material needed establish a functional communications station.
2. Tree coverage. The trees in the area provided excellent shade throughout the day and allowed for more uncovered operations.
3. Close proximity to tall structures. The flagpoles (unused during the weekend) provided excellent support structures for both the HF and Packet antennas.
4. Close proximity to the street. CARES members could easily unload and load material and supplies required for the drill from cars parked curbside at the drill site.
5. Access by the public. Some foot traffic to and from the Library occurred during the drill giving CARES an opportunity to introduce ourselves to the public.

- **Structures and shade.** HF and VHF/UHF stations were established at each of the two park benches in the drill area. Cupertino Parks and Recreation loaned CARES one “Easy-Up” canopy. This structure lived up to its name and was deployed over the HF station. Another CARES member brought a portable shade structure that was set up over the VHF/UHF Station. The Packet Station was positioned under tree shade on a folding table. Both shade structures performed well at protecting CARES members from the sun during the drill.
- **Antennas and Radios.** For the HF station, one flag pole was used to hoist an inverted V configured fanned dipole antenna into the air. A second flag pole was used to support the Packet Station antenna. The VHF/UHF antenna was assembled on a freestanding support near the street. In all cases, safety was paramount and continuously monitored throughout the event.
- **Power.** Using non-commercial power sources was critical to the success of the drill. Power was provided from two sources: (i) 72Ah deep cycle marine battery and (ii) gasoline-powered generators. A problem with the first generator resulted in one radio power supply failure. Two other generators were made available by CARES members over the course of the day and independently put to use for the VHF/UHF station. The deep cycle battery was put into service at the HF station and supplied that station for the balance of the drill. Beyond the initial generator problem, all power systems operated correctly.
- **Operations.** Radio Operations began at 1130 local time. HF and VHF/UHF stations were staffed for the next 4-1/2 hours resulting in about 112 contacts with other Field Day sites. HF operations resulted in 50 contacts throughout the U.S. with good reports from the East Coast (i.e.: Maryland, Vermont, Florida) on 20 meters and almost anywhere in CA (i.e.: San Joaquin Valley, San Diego, Santa Barbara, LA) on 40 meters. VHF/UHF operations netted 62 contacts in the Greater Bay Area (i.e.: Santa Clara County, East Bay, and Sacramento). One NTS (National Traffic System) message was sent.
- **Public Relations.** Press releases were sent to the Cupertino Courier and the San Jose Mercury News. However, no stories appeared in either paper before the event. Additionally, CARES set up a public information area with (i) pictures of CARES in action, (ii) handouts on CARES and Amateur Radio, and (iii) CARES members available to explain who we are and what this drill was all about. CARES made direct contact with about 10 members of the community.
- **Shut Down.** Radio operations ceased at 1600 local time. All equipment, structures, and other material were packed up by 1640 local time. The site was cleaned and secured.

Results of the Critique

Feedback on how the drill went was solicited from participating members by phone and e-mail. Each participant was polled for (i) what went right, (ii) what went wrong, and (iii) what needs to be improved. The following is a summary of key areas with recommendations.

1. **Material planning.** The problem with the generator and our ability to bring in a replacement points to the need for better understanding of CARES material support and contingency planning.
RECOMMENDATION: Develop an inventory of material, supplies, and logistics capabilities that members can support. Identify primary and secondary sources (Look into how logistics and material are more formally managed).
2. **Membership participation.** CARES continues to have a core group of members that participate in the bulk of its activities. The size of an operation that CARES can support will depend on the number of members that CARES can muster.
RECOMMENDATION: Determine the true response capability of CARES for different scenarios and operations (Preliminary Damage Assessment, Field Response, etc). Set clear expectations with the city. Continue to encourage broader CARES member participation.
3. **Shelters.** Because of preplanning, CARES was able to have access to City supplies for shelter. However, it is not clear where temporary shelters or canopies are usually stored or how they will be allocated for during emergency.
RECOMMENDATION: Work with the City on understanding their plans or process for deploying city assets (power generators, canopies, etc) during an emergency.

4. Power. CARES must strive to be self-sufficient in providing its own power. However, whenever possible, we should try to tap into existing operational power infrastructures as a means for personal equipment energy conservation.
RECOMMENDATION: Propose to the city to investigate and install a secure power receptacle outside City Hall that is tied to the generator.
5. Publicity. For this drill, planned publicity was intended to help build awareness of CARES. Because the CARES Drill was not confirmed until the June 3 meeting, we did not have enough time to get material into the local Cupertino monthly newspapers.
RECOMMENDATION: Whenever possible, start PR activities early (obvious).

The following is the general feedback received from the drill's participants.

What Worked?

- The bottom line is we got the stations we planned to have on the air and made contacts.
- Many people with lots of equipment; we had the right selection of radios and other equipment.
- Enough people to put the stations together; everyone seemed to find something to do.
- Several people had an opportunity to operate and log.
- We had enough people but more would have been better from an experience point of view.
- The location was great.
- The antenna rigging using the flag pole.
- Able to mount antennas that worked.
- The metal antenna base with using the car as a weight for the VHF/UHF antenna.
- Using a fiber, high jump pole for extra antenna height.
- Able to work off emergency power, the trailer generator, battery.
- Good cooperation among all; everyone was very helpful.

What didn't Work?

- Didn't have many adapters and cables.
- Hard to see the screen on the packet station due to the sun.
- It was never quite clear if lunch would be supplied.
- Didn't have many members other than CARES regulars show up and participate.
- Getting the 10-meter antenna over trees and in the air.
- Generator problems; it didn't work, but the situation was finally resolved.
- Voltage check of generators before use.

What would we do differently next time?

- Get more people involved in packet and send more messages.
- Better shading for packet computer screen.
- White board to communicate info, for field day could show number of contacts.
- Calling in to 147.570 before leaving home to field day site, to check for shortages or needs.
- Write article of event for local paper.
- Next time try a different site with new requirements.
- Log sheets with columns for info.
- Try to get more people to participate - both in event and operating.
- Head phones (dual) for HF position.
- Run a phone-tree drill to get the membership out for the event.
- We may want to improve out antenna rigging, but actually it went pretty well.
- Sling shot to get the antenna over high places.
- Pre check the generators.
- Better pre-planning.