

# **Saratoga CERT Radio Communications Plan**

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## **Introduction**

This document describes the plan for radio communications in the event of a disaster or other emergency that requires the activation of Saratoga CERT teams.

There is a list of abbreviations and acronyms in Appendix A.

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# SARATOGA CERT RADIO COMMUNICATIONS PLAN

## 1.0 CERT RADIO COMMUNICATIONS OVERVIEW

CERT personnel in the field use City-supplied PMRS radios to communicate with each other and with the Division Leader using PMRS frequencies. The Division Leader or designee is paired with a licensed amateur radio operator. The amateur radio operator provides the communications link from the CERT Division Leader to the Saratoga City EOC, or to other CERT teams, using amateur radio frequencies. Amateur radio frequencies are also used to communicate from the City EOC to the supply bases and any other entities. The generic Saratoga CERT radio communications connectivity is shown in Fig. 1.

The Saratoga EOC communicates with the Santa Clara County EOC on a Public Safety Pool frequency pair. Amateur radio equipment located at the Saratoga EOC provides backup communication to an amateur radio station located at the County EOC. This amateur radio link is capable of transmitting both voice and digital (packet) data.

There may eventually be a link between the Saratoga EOC and the Regional OES via amateur radio. This capability has not yet been defined or implemented.

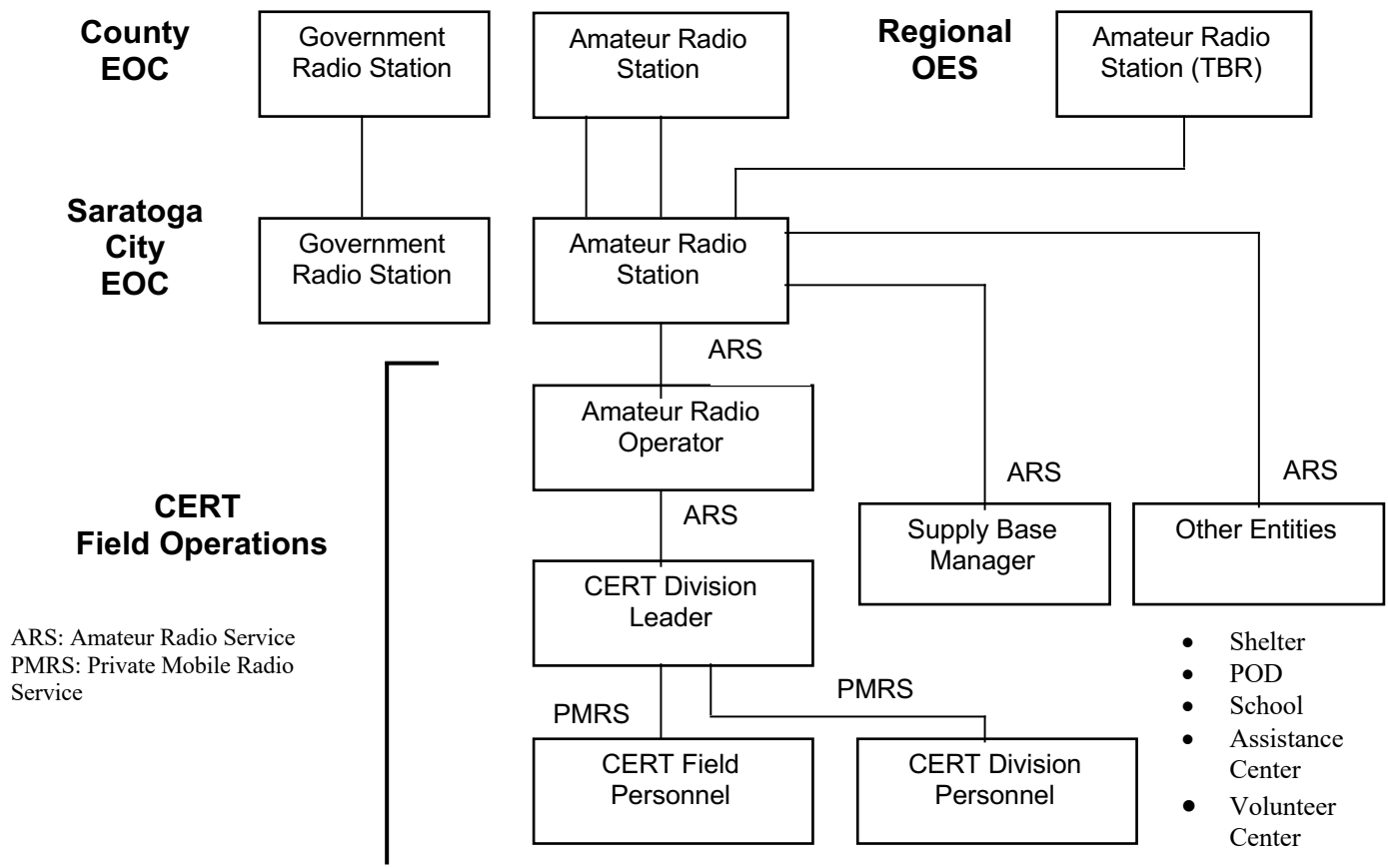


Fig. 1. Saratoga CERT radio communications links

Saratoga has two EOCs. The primary EOC is located at the City offices on Allendale avenue. The alternate EOC is at the fire station in downtown Saratoga. The two are fully equipped with amateur radio and EOC-to-EOC communications equipment.

## **2.0 IMPLEMENTATION**

The CERT communication concept described here utilizes CERT communicators using PMRS radios on UHF frequencies under FCC Part 90 rules, and amateur radio operators provided by Saratoga RACES using VHF or UHF radios under FCC Part 97 rules. No personal license is required to operate the PMRS radios. An Amateur Radio License, Technician Class or higher, is required to operate on the amateur radio frequencies.

FRS, GMRS, MURS and CB are not utilized in this plan.

The City of Saratoga has multiple handheld and mobile units licensed on a Public Safety frequency pair. None of those units are utilized in this plan.

This plan does not rely on telephone communications (cellular or wireline) or on the survival of the Saratoga Traveler Information Service radio station that transmits on 1610 kHz.

## **3.0 ORIENTATION AND TRAINING**

**3.1 CERT.** Every Division will receive PMRS radio familiarization/orientation training by a member of the CERT Communications Committee. Training content will be determined by the CERT Communications Committee and will include topics such as the setup and operation of the radio, how to change frequencies, and communications protocol. The intent is to provide a common operational baseline for all users.

**3.2 RACES.** The Saratoga Amateur Radio Association is responsible for creating and maintaining a core group of trained amateur radio operators capable of providing EOC and CERT communications support. Training content will be determined by the SARA RACES organization.

## **4.0 NOTIFICATION AND ACTIVATION**

Official notification and activation of Saratoga CERT will be in accordance with the “Saratoga Community Emergency Response Team (CERT) Operational Plan” (TBR) for the City of Saratoga. Official activation is required in order for individual communicators to be covered by workers’ compensation insurance while performing their assigned duties as Disaster Service Workers.

SARA ARES/RACES members will likely convene on the K6SA amateur radio repeater frequency (146.655 MHz) within minutes after the onset of an event, well before any official activation takes place. City-wide damage assessment polling will take place on the K6SA amateur radio repeater. County-wide damage assessment polling will likely take place on the AA6BT (146.115 MHz) amateur radio repeater, again well in advance of any official activation. See section 8.2 for additional information.

## **5.0 COMMUNICATIONS EQUIPMENT**

**5.1 PMRS radios (supplied).** Saratoga CERT will issue a city-owned PMRS radios to each active CERT member. The recipient is responsible for maintaining the PMRS radio. The radios are preprogrammed with 15 channel possibilities on five frequencies assigned to WRJK887 licensed to the Saratoga Community Response Team effective 9/17/2020 and valid for 10 years.

**5.2 PMRS radios (individually owned).** CERT members are not allowed to use any personally-owned PMRS radios while engaged in CERT activities.

**5.3 Amateur radios.** Amateur radio operators are responsible for providing and maintaining their own communications equipment. Amateurs operating with CERT teams in the field should have a handheld programmable VHF or VHF/UHF two-way radio, with a spare battery pack, and capable of operating on the 2-meter amateur band. There is no plan for the City to supply any of these radios.

**5.4 EOC radios.** The SARA provides operational support to the City-owned radios at the EOCs during emergencies and will perform the monthly EOC-to-EOC radio checks sponsored by County Communications. Technical support for the City-owned radio is provided by County Communications. This equipment consists of a Motorola CDM1250 (or equivalent) radio and a colocated power supply. SARA owns the amateur radio equipment at the alternate EOC. The City of Saratoga owns the amateur radio equipment at the primary EOC. SARA assumes responsibility for the maintenance and operation of the amateur radio equipment at both facilities.

## **6.0 EXPENDABLES AND MAINTENANCE**

**6.1 PMRS Radio.** CERT members are expected to maintain the PMRS radios assigned to them. This includes keeping the batteries charged and the radio in known good condition ready for immediate use.

**6.2 Amateur Radio.** Amateur radio operators will provide their own batteries and power packs and maintain their equipment in accordance with normal RACES emergency preparedness recommendations.

## **7.0 SARATOGA CERT AMATEUR RADIO DEPLOYMENT**

Amateur radio operators supporting CERT will be assigned to the following locations in the order shown, subject to availability of personnel. These assignments can be changed at the discretion of the City Operations and/or Logistics Section Chief or his/her designee.

- Emergency Operations Center
  - Three persons (Two licensed amateurs and one support/EOC communicator)
- Divisions (Neighborhoods)
  - One per division. May be the same person as the CERT Communicator.
- Supply Bases
  - One person
- Emergency Volunteer Center
  - One person if EVC is remote from the EOC

- Rovers
  - Spontaneous Volunteers as assigned by the Emergency Volunteer Center
- Point of Distribution, Shelter, etc.
  - One person (TBR)
- Local Assistance Center
  - One person
- Bulk Distribution Site
  - One person (TBR)
- Local Schools
  - One per school (TBR)
- Saratoga Retirement Community
  - None
- West Valley College
  - None

## 8.0 RADIO COMMUNICATIONS EQUIPMENT INITIALIZATION

CERT hand-held radios are supplied by the City. EOC-to-EOC radios in the EOCs are supplied by the City/County. Amateur radio (ham) operators provide their own equipment.

**8.1 PMRS Radios.** The City made an initial purchase of 85 Baofeng UV-5R radios for CERT. The radios are serialized for tracking purposes and are pre-programmed with five different frequencies and three different PL tones for a combination of 15 channels. The channel selections are 1, 1B, 1C, 2, 2B, 2C, etc., through 5C. The five frequencies are those authorized by the FCC license. The radios are programmed and are supplied to the user with the menu function and VHF mode disabled and the commercial UHF mode enabled. No attempt should be made to modify or reprogram the radios. Individual users are not required to have a license. They are covered under callsign WRJK887. When on the air, announce this call every 15 minutes or so.

**8.2 Amateur Radios.** Amateur radio frequency assignments are determined by the SARA ARES/RACES organization in conjunction with the Santa Clara County ARES/RACES organization. Typically, communications will be conducted via the K6SA repeater on a frequency of 146.655 MHz, negative offset, 114.8 Hz PL tone.

Yaesu equipment users should disable WIRES.

In the event of a repeater failure, communication will continue on 146.655 MHz simplex/114.8 Hz PL. The alternate simplex frequency will be 146.505 MHz, no PL tone. The second alternate simplex frequency will be 146.595 MHz, no PL tone. The 70cm repeater output frequency (443.150 MHz, no PL tone) can also be used, but with degraded capability since not everyone has UHF communications equipment.

An amateur radio license, Technician Class or above is required.

**8.3 EOC Radio.** The EOC radio is a Motorola transceiver supplied by the City/County to communicate with the County EOC or other cities. Anyone can operate the radio. The callsign for Saratoga is WNGY477. Turn on the Astec power supply and the Motorola CDM1250 (or equivalent) radio. Assure channel 1 (duplex) is selected. Channel 2 is simplex. Instructions are posted near the radio.

## 9.0 COMMUNICATION PROCEDURES

All communicators should follow generally accepted communication procedures, some of which are listed below:

- Use predetermined tactical call signs. Amateur radio operators must also use their FCC assigned call sign.
- Listen on the frequency before transmitting in order to avoid interfering with a communication already taking place. Only one person can use the frequency at any given time.
- Use the basic procedural words “THIS IS,” “OVER,” “GO AHEAD” and “OUT.”
- Direct all communications to a specific person or unit.
  - Say the tactical call of the unit you are calling, then say “THIS IS” then say your tactical call, then say “OVER.” At the end of your final transmission, say “OUT” meaning that you are done and expect no further reply. Using “OVER and OUT” together is unnecessary.
- Respond only to known persons.
  - Say “THIS IS” then say your tactical call, then say “GO AHEAD.”
- Speak in plain language and use common terminology.
  - Do not use any “10 codes” or TV cop lingo.
- Speak in a normal tone of voice. Shouting only distorts your voice, it does nothing to increase the range.
- If someone seems to be in charge (a net control station, for example) listen to them and do what they say.
- When transmitting a formal (i.e., written) message, say five words at a time and ask for an acknowledgement after each five-word group.
- Do not speak immediately upon pressing the push-to-talk switch, because the first syllable will probably get “clipped.” Hesitate for a fraction of a second before speaking.
- Test your radio before separating from your group or partner. Loss of communication makes you part of the problem and diverts resources.
- Use universally accepted phonetics. See Appendix B.

## 10.0 PRACTICE DRILLS

Communications practice drills will normally be part of a larger CERT exercise or county-wide quarterly drill. The objective of the drills are to practice and demonstrate communications capability from the Saratoga EOC to the Divisions and back (and vice versa), communications within the Divisions, and communications between the Divisions. Drills also provide the opportunity to practice response to communications anomalies.

Amateur radio support to these practice drills will be performed under ACS authority, rather than RACES, to avoid conflict with FCC limitations imposed on the use of amateur radio repeaters for RACES training.

SARA conducts weekly nets for the purpose of ensuring personnel and equipment readiness. Net control responsibility rotates among the participants on a volunteer basis.



## 11.0 INTERFERENCE MITIGATION

All radio communication is susceptible to interference from various sources, natural or man made. Interference may be accidental or intentional. Saratoga CERT can be the recipient or the interferor. The Bay Area is a hotbed of RF signals and no individual has an exclusive right to any radio frequency or channel. It's illegal to interfere with 'real' emergency communication such as a life or death situation.

The Saratoga CERT PMRS initialization frequency is intentionally chosen to be Channel 1 Each CERT group can move to another channel if desired and by mutual agreement. The EOC should be informed of the intent to change frequencies, via amateur radio, and informed again with the final frequency information in order to maintain frequency coordination.

It might be possible to reduce or eliminate interference by simply moving to a slightly different location. Sometimes, moving only a few inches will make a difference. It may also be possible to avoid an interferor by switching to another channel. Again, inform the EOC via amateur radio, of your intent.

Another method is to simply wait for the interferor to "go away." Listening to the conversation may give a clue as to how long the contact will last.

Contacting the interferor to ask to use the frequency for a moment might work, but most likely they are using PL and possibly can't hear your audio.

Using PL tones does not eliminate interference between units on the same frequency. It simply masks it and creates the illusion of non-interference.

## 12.0 SPONTANEOUS VOLUNTEERS

Radio-communications-capable volunteers will likely surface in event of an emergency. Some will appear in person and others will show up on the amateur radio frequencies, particularly on the K6SA repeater.

Those that appear in person should be referred to the Emergency Volunteer Center so that they can be registered as Disaster Service Workers and deployed to local areas needing their expertise.

Those that show up on one of the radio frequencies should be utilized as casual informants only, and *not* assigned to any task until they have been registered as a Disaster Service Worker. This is important because the State of California Disaster Service Worker Volunteer Program provides workers' compensation insurance coverage in the event a Disaster Service Worker volunteer is injured while performing assigned disaster duties.

## APPENDIX A

### Abbreviations and Acronyms

#### Abbreviations

ACS	Auxiliary Communications Services
ARS	Amateur Radio Service
CB	Citizen Band (Citizens Radio Service)
CERT	Community Emergency Response Team
CTCSS	Continuous Tone-Coded Squelch System
DCS	Digital-Coded Squelch
EOC	Emergency Operations Center
FCC	Federal Communications Commission
FRS	Family Radio Service
GMRS	General Mobile Radio Service
kHz	Kilohertz (1,000 Hertz)
MHz	Megahertz (1,000,000 Hertz)
MURS	Multi-Use Radio Service
OES	Office of Emergency Services
PL	Private Line
PMRS	Private Mobile Radio Service
RACES	Radio Amateur Civil Emergency Service
SARA	Saratoga Amateur Radio Association
TBD	To be determined
TBR	To be revised
UHF	Ultra High Frequency (300-3000 MHz)
VHF	Very High Frequency (30-300 MHz)
VOX	Voice Operated switch
WIRES	Wide-coverage Internet Repeater Enhancement System. Found only on radios manufactured by Yaesu/Vertex.

#### Definitions

**Tactical Call Sign:** An arbitrary call sign used to identify an individual or group for operational convenience. This is not the same as the call signs issued by the FCC to amateur radio operators.

## APPENDIX B

### Phonetic Alphabet

The NATO phonetic alphabet assigns code words to the letters of the English alphabet so that critical combinations of letters can be pronounced and understood by those who transmit and receive voice messages by radio or telephone regardless of their native language.

A	Alpha		N	November
B	Bravo		O	Oscar
C	Charlie		P	Papa
D	Delta		Q	Quebec
E	Echo		R	Romeo
F	Foxtrot		S	Sierra
G	Golf		T	Tango
H	Hotel		U	Uniform
I	India		V	Victor
J	Juliet		W	Whiskey
K	Kilo		X	Xray
L	Lima		Y	Yankee
M	Mike		Z	Zulu

Although these words are preferred, the CERT communicator is free to use any that convey the message and that come to mind. For example, A might be Adam, Apple, Airplane, etc.