

After Action Report

Field-to-EOC FRS/GMRS Radio Test

Overview

Description: Field-to-EOC FRS-GMRS Radio Test
Event Type: Cupertino Citizens Corp
Event Name: Field Communications Test
Activation No: CUP-22-10T
Managing Entity: Cupertino ARES
Event Date: 12 March 2022, 23 April 2022
Report Date: 5-May-2022
Report Revision: 2, Final
Submitted by: Jim Oberhofer

Requirements for Reporting¹

Completing an After-Action Report is part of the required California SEMS reporting process. The Emergency Services Act, Section 8607 (f) mandates that the Office of Emergency Services (OES) in cooperation with involved state and local agencies complete an After-Action Report within 120 days after each declared disaster. Section 2450 (a) of the SEMS Regulations states that, "Any city, city and county, or county declaring a local emergency for which the governor proclaims a state of emergency, and any state agency responding to that emergency shall complete and transmit an after-action report to OES within ninety (90) days of the close of the incident period as specified in the California Code of Regulations, Title 19, s2900(q)." Additionally, "Section 2450 (b) The after-action report shall, at a minimum, be a review of response actions taken, application of SEMS, suggested modifications to SEMS, necessary modifications to plans and procedures, identified training needs, and recovery activities to date."

i Introduction and Background

- AAR²: After Action Report, a document intended to capture observations of an exercise and make recommendations for post-exercise improvements. The final AAR and Improvement Plan (IP) are printed and distributed jointly as a single AAR/IP following an exercise.
- AAR/IP: Improvement Plan; identifies specific corrective actions, assigns them to responsible parties, and establishes targets for their completion.
- AEC Assistant Emergency Coordinator.
- ARK Repository of supplies used by Citizen Corps during emergency incidents and during training.
- ARS: Amateur Radio Service, a licensed service maintained by the FCC.

¹ <http://www.caloes.ca.gov/cal-oes-divisions/planning-preparedness/after-action-corrective-action-reporting;>
<http://temp.caloes.ca.gov/PlanningPreparednessSite/Documents/01%202450.pdf>

² <https://training.fema.gov/programs/emischool/el361/toolkit/glossary.htm>

- BL: Block Leader, a neighborhood engagement program; helps neighbors get to know their neighbors and organize activities so neighbors can more easily communicate.
- CAP: Corrective Action Plan; FEMA; HSEEP³: actions identified during activations or exercises that are tracked to completion, ensuring that exercises yield tangible preparedness improvements.
- CARES: Cupertino Amateur Radio Emergency Service is a volunteer organization of FCC-licensed amateur radio operators who will respond to requests from the city during times of emergencies. Their focus is on understanding risks facing the city and putting plans, communications processes, and tools in place to respond to these risks.
- CCC: Cupertino Citizen Corps; the City's umbrella organization for CARES, CERT, and MRC.
- CERT: Community Emergency Response Team, prepares residents for and respond to life-threatening events in their community.
- Comm 469: City of Cupertino Public Safety Communications Vehicle #469. See PSCV definition below.
- C469: Same as Comm 469 above.
- DOC: Department Operations Center; manages the overall field CCC deployment; aggregates data to be passed to the EOC. Advises EOC Staff on CCC capabilities, readiness, and activities.
- EC Emergency Communications Coordinator.
- EM Emergency Manager. City staff member with responsibility for Cupertino's Emergency Planning and Operations.
- FRS: Family Radio Service, an unlicensed service maintained by the FCC.
- GMRS: General Mobile Radio Service, a licensed service maintained by the FCC.
- IDR Plan Infectious Disease Response Plan.
- H&W: Health & Welfare; used within the context of a Health & Welfare Check. Usually check of field teams to sure they are OK.
- NCO/NCS: Net Control Operator / Net Control Station; the control function that ensures the efficient management of and exchange of messages between stations on the frequency.
- NW: Neighborhood Watch, a crime prevention program; involves neighbors getting to know each other and working together in a program of mutual assistance.
- OEM: Office of Emergency Management.
- PSC Public Safety Communications, used in context with Comm 469 vehicle.
- PSCV Public Safety Communications Vehicle, #469. Refer to Comm 469 definition above.

Introduction

The purpose of an After-Action Report (AAR) is to analyze the management and response to an incident, event, exercise, or test by identifying the strengths to be maintained and promoted, as well as the areas for improvement.

The focus of this AAR is on the Cupertino Citizen Corps (CCC) FRS-GMRS field radio test and our ability to exchange information from individual neighborhoods to the local ARKS and then to the EOC. This report is submitted to Cupertino OEM as a record of our findings, plans follow-up actions, and recommendations to the city.

³ <https://www.fema.gov/emergency-managers/national-preparedness/exercises/hseep>

Summary

In 2019, CARES proposed the use of GMRS to better communicate with local neighborhoods by radio because of its support for more transmit power and better antenna options. Several tests were performed between each ARK and the surrounding neighborhoods with positive results. In 2020, Cupertino OEM funded the purchase and deployment of GMRS radio systems to the 6 city ARKs, plus additional units for the CERT mobile ICP and Comm 469. Because of COVID-19, a broader roll-out was delayed until 2022. A program of training, hands-on radio familiarity, and field tests was proposed and approved to confirm the feasibility of FRS-GMRS-ARS communications.

Two training sessions were held with 28 neighborhood responders (CERT/BL/NW) and 17 CARES members participating. Additionally, 31 neighborhood responders participated in the one of the two hands-on radio familiarity sessions.

On 12 March 2022, an ARK-to-EOC GMRS Radio Test was successfully performed with all ARKs participating. On 23 April 2022, 14 neighborhood responders participated in the field test with 11 neighborhoods successfully checking in to their local ARK from throughout the city.

While the size of the neighborhood participation was low, the test did confirm the feasibility of this communications method and interest in the community in using two-way radio as a means to support the local neighborhoods.

ii. Type / Location

Event Type: City of Cupertino, Citizen Corps Training Activation

Event Identifier: CUP-22-10T

Event Name: FRS-GMRS Radio Test

Location: City of Cupertino

iii. Description

The objectives for this test were:

1. Confirm two-way communications between the city ARKs and the EOC using GMRS.
2. Confirm reliable two-way communications between neighborhood teams and the ARKs on FRS and GMRS.
3. Roll up information from neighborhood field reports to the EOC.
4. Disseminate information from the EOC to neighborhood field teams.

Overall Test Plan

This test was run under Cupertino activation CUP-22-10T. Two operational periods were planned (Tests #1 and #2), essentially breaking up the test activities so that the second test could build on the results of the first test. Additionally, training and hands-on workshops were planned and run as well.

Overall Test Summary:

Date	Activity	Description	Location
28-Feb-2022	Prep	Share plan with CCC Steering Committee	Zoom
2-March-2022	Prep	Confirm the Comm 469 Antenna arrangement	Service Center
12-March-2022	Test 1	Perform the ARK-to-EOC GMRS radio test.	EOC, ARKs
16-March-2022	Training	CERT/BL/NW Communications orientation	Zoom

Date	Activity	Description	Location
19-March-2022	Training	FRS radio hands-on session	MVA
30-March-2022	Training	CERT/BL/NW Communications orientation	Zoom
2-April-2022	Training	FRS radio hands-on session	City Hall
23-April-2022	Test 2	Perform field to EOC GMRS/FRS test	EOC, ARKs, Field

Key Findings

Following the test, feedback was solicited from neighborhood responders and ARK net control operators on the operational aspects of the test. The lessons learned from this review will drive specific actions within key areas of the CCC response. The three specific findings that emerged were:

1. **Re-engagement.** This was the first radio test held in several years and feedback from many of the participants indicated genuine enthusiasm to get back involved, and on the air. The approach taken to get to this point was:
 - a. Refresher training. A communications overview was presented on 2 separate occasions thereby allowing as many field volunteers to participate as possible.
 - b. Hands-on workshop. A follow-up session was held to give field volunteers a chance to re-familiarize themselves with the radio to help build familiarity with their equipment.
 - c. Field Test. The test offered a simple method to not only confirm the purpose of this test but also increase personal confidence with radio operations.
2. **Legacy radio equipment worked.** The Family Radio Service (FRS) was proposed in 1994 and finally introduced in 1996. Since then, a lot of FRS radios were developed and sold with refinements in features and power levels occurring throughout the years. For the most part, existing radios did work between the neighborhoods and the ARKs (with 2 exceptions). CCC is still doing additional testing to determine an optional radio choice for those wishing to purchase newer equipment.
3. **Participation is key.** The fact that the turnout was low (eleven ARK check-ins) was not lost on those who did participate. However, given that this was the first real test after years of inactivity, and that 28 CERT/BL/NW members participated in the training or workshop, we ended up with 50% participation of training attendees in the field test at some level with 39% actually making contact with the ARK. While the focus of this test was to confirm the feasibility of the FRS-to-ARK-to EOC communications, it is clear that the CCC leadership has work to do to build community involvement. This is not an over-night activity but will take a few years to build trust, confidence, and participation in the neighborhood response.

Responding Resources

Event resources came from the following organizations

1. Cupertino ARES/RACES: Five CARES members were assigned to operate as a GMRS Net Control Operators at specific ARKs.
2. Cupertino CERT: (i) One CERT member was assigned to operate as a GMRS Net Control Operators at a specific ARK. (ii) Additionally, CERT participated from their homes and neighborhoods as field responders.
3. Block Leaders and Neighborhood Watch Teams: participated from their homes and neighborhoods as field responders.

iv Performance against Objectives

Objective #1

Confirm two-way communications between the city ARKs and the EOC using GMRS.

Results: Satisfactory

During the Test Operational Period #1 (12-March), we confirmed that all ARKS can communicate with Comm 469 without problem. Low power, high power, and repeater channels were all confirmed. The use of higher power GMRS radios along with antennas mounted on the ARK roof plus the GMRS antenna up on the Comm 469 mast provided a more than adequate signal to communicate with the ARKS.

Recommendations:

1. Monta Vista ARK antenna is not hitting the repeater with sufficient clarity when compared to other stations. Recommend changing out this antenna and increase the height to completely clear the Fire Station roof.
2. Upgrade the DeAnza ARK with an extension ladder that allows safer access the roof. Check all other ARKS for sufficient roof access ladders.

Objective #2

Confirm reliable two-way comms between neighborhood teams and the ARKS on FRS and GMRS

Results: Satisfactory

During the Test Operational Period #2 (23-April), where neighborhood responders operated with properly configured radios, all field stations were able to make radio contact with their respective ARK. A simple message was passed, and the data was logged. The following is a summary of neighborhood participants and their reports:

Location	Resident	Street	Reported #Houses	Reported #Volunteers
Zone 1, Monta Vista ARK	Jack	Voss	25	2
	Gloria	Standing Oak	22	2
	Viji	DeAnza Oaks	221	6
	Roland	Stevens Creek	8	1
	Bro Jack	Marianist Center	20	2
Zone 2, Regnart ARK	Sue	Linda Lane	40	1
	Ven	Pinebrook	30	3
	Fang	Donegal Dr	21	5
Zone 3, Garden Gate ARK	Betsy	Celeste Cir	92	1
	Lin	Stelling Rd	60	2
Zone 4, Lawsen ARK			0	0
Zone 5, DeAnza ARK	Barbara	Bollinger	25	1
Zone 6, Creekside ARK			0	0
			564	26

Three additional neighborhood responders either attempted to check or walked up to the ARK looking for radio support.

Location	Resident	Street – Problem
Zone 1, Monta Vista ARK	John	Rancho Deep Cliff – Old radio without tones
Zone 4, Lawsen ARK	Dee	Virginia Swann – walk-up, programmed radios
Zone 6, Creekside ARK	Dean	San Jose – either Creekside or field radio problem

Recommendations:

3. Creekside ARK GMRS Radio has a faulty microphone. This microphone should be replaced.

Objective #3

Roll up information from neighborhood field reports to the EOC

Results: Satisfactory (Conditional)

Due to resource conflicts, staffing all ARK net control stations turned out to be a problem. As a result, the assigned Comm 469 staff was re-assigned to cover other ARK positions and Comm 469 was not deployed. As a result, all ARK Net Control positions were operational. However, a roll-up was successfully performed from all ARK sites to Lawson ARK (EOC proxy).

Recommendations:

4. We used the GMRS Repeater 20R for the roll-up. For future exercises, move the roll-up to the EOC GMRS channel 15/35.

Objective #4

Disseminate information from the EOC to neighborhood field teams.

Results: Satisfactory (Conditional)

The intent was to roll up the neighborhood results to the EOC, and then pass a message from the EOC back to the neighborhoods via the ARKs. Due to the above staffing issue, this did not happen exactly as planned. However, (i) the Operational Period #1 Test did confirm solid information exchanges between the EOC and the ARKs, and (ii) the ARK Net Control Operators did provide instructions to the participating neighborhood teams confirming the information exchange at that level as well.

Recommendations:

5. Look for an exercise to practice the information roll up and down.

v Response at SEMS Levels (as appropriate):

Participating CARES members responded from home to their assigned locations per the event's staffing requirements.

CERT/BL/NW responders operated from their neighborhoods. No other organization, jurisdiction, or agency was involved with this text.

vi. Interacting Systems, Agencies, and Programs

Not applicable.

vii. Improvements, Conclusions, Recommendations:

The following is a summary of the Corrective Actions identified above:

1. Monta Vista ARK antenna is not hitting the repeater with sufficient clarity when compared to other GMRS ARK stations. Recommend changing out this antenna and increase the height to completely clear the Fire Station roof.
2. Upgrade the DeAnza ARK with an extension ladder that allows safer access the roof. Check all other ARKs for sufficient roof access ladders.
3. Creekside ARK GMRS Radio has a faulty microphone. This microphone should be replaced.
4. We used the GMRS Repeater 20R for the roll-up. For future exercises, move the roll-up to the EOC channel 15/35.
5. Look for exercises to practice Field-to-EOC information roll up and EOC-to-Field information dissemination.

Additionally, the following actions are recommended to further enhance the

6. Develop CERT/BL/NW training and exercise recommendations for the balance of 2022 and 2023.

Conclusion

This test confirmed the capability of a layered communications strategy, that is, FRS radios in the Field, GMRS radios at the ARKs, and amateur radio at the EOC. Between the field testing leading up to this exercise and this test itself, we have proved that this concept works and are confident in its performance.

General feedback from the field responders on the entire experience – training, workshop, field test – was enthusiastic. Many expressed their opinion that more exercises should be planned not only to build familiarity but also participation. We agree with this opinion.

The opportunity presented to CCC is to focus on refining the activities we expect from our neighborhood teams as well as growing the neighborhood organization. This needs to be put in context with the expectations for how volunteers and the city will use the ARKs, as well as how the different field organizations (CERT, BL, NW) will operate. There is undoubtedly a place for both. The combination of these volunteer resources and response capabilities will help the city to deal with any problem that may arise.