# After Action Report
# Comm Outage Functional Exercise

Cupertino ARES
1 June 2020
Version: v1.2

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# Overview

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|---|---|
| **Description:** | Comm Outage Functional Exercise |
| **Event Type:** | Cupertino ARES Exercise |
| **Event Name** | Pandemic + PSPS |
| **Activation No:** | CUP-20-39T |
| **Managing Entity:** | Cupertino ARES |
| **Event Date:** | 16-May-2020 |
| **Report Date:** | 1-Jun-2020 |
| **Report Revision:** | 1.2, **REVIEW** |
| **Submitted by:** | Jim Oberhofer |

# Requirements for Reporting[1]

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)."

# Terms

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|---|---|
| AAR[2]: | 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. |
| CAL FIRE: | The California Department of Forestry and Fire Protection (CAL FIRE) is an emergency response and resource protection department.  CAL FIRE protects lives, property and natural resources from fire; responds to emergencies of all types, and protects and preserves timberlands, wildlands, and urban forests. |
| CAP: | Corrective Action Plan; FEMA; HSEEP[3]: 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. |

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[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/el361toolkit/glossary.htm
[3] https://www.fema.gov/media-library-data/20130726-1914-25045-8890/hseep_apr13_.pdf

| Comm 469: | City of Cupertino Public Safety Communications Vehicle #469. |
| DOC: | Department Operations Center; manages the overall field CCC deployment; aggregates data to be passed to the EOC.  Advices EOC Staff on CCC capabilities, readiness, and activities. |
| GIS: | Geographic Information System. |
| H&W: | Health & Welfare; used within the context of a Health & Welfare Check.  Usually check of field teams to sure they are OK. |
| MARPLOT: | **M**apping **A**pplication for **R**esponse, **P**lanning, and **L**ocal **O**perational **T**asks; a mapping program for the CAMEO software suite, developed by the U.S. Environmental Protection Agency (EPA). |
| NCO/NCS: | Net Control Operator / Net Control Station; the control function that ensures the efficient passing of messages between stations on the frequency. |
| NWS: | National Weather Service, an organization within the National Oceanic and Atmospheric Administration (NOAA). |
| OES: | Office of Emergency Services. |
| PSPS: | Public Safety Power Shutoff; see description in the Summary. |
| SCC: | Santa Clara County; used in reference to County RACES |
| WUI: | Wildland Urban Interface. |

# Background and Timeline

## Introduction

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

The focus of this AAR is on the Cupertino Amateur Radio Emergency Service (CARES) exercise to a simulated incident consisting of a PSPS event occurring during a pandemic.  This report is submitted to Cupertino OES by CARES as a record of our findings, planned follow-up actions, and recommendations to the City.

## Summary

After Cupertino's two PSPS events last October 2019, the localized communications outage that we experienced, and the likelihood of similar events in the future, it was clear that PSPS events can have a real community affect that includes the loss of residential telecommunications systems.

The 8-October-2019 PSPS event impacted more than 3,300 Cupertino homes and businesses, resulting in a relatively short power and communications outage.  While the City was fortunate that this event was short, it does not imply that future events would be similar in length and scope.  CARES acknowledges the risks associated with the loss of residential telephone service, in particular to request help from public safety agencies (Law, Fire, EMS).  Coupled with the lack of a local PSAP in the City, CARES has developed the procedures and tools as a contingency in the event such a comm outage ever occurs.  This approach is now in test to confirm its reliability and readiness for deployment.

This exercise was designed to test both the automated and manual tools for passing 9-1-1 assistance messages from the field.  A mix of packet and voice operators participated and provided a reasonable volume of traffic for analysis.

Complicating this exercise were the specific City and County restrictions requiring sheltering in place due to the on-going COVID-19 pandemic.  Accommodations in the form of exercise *artificialities* were required to allow the exercise to occur.  Because it is likely that the current COVID-19 constraints will be with us for a while, a longer-term plan is needed to deal with this situation in the event we are activated.

Regardless, CARES members were activated and deployed at our respective homes.  Over the course of the exercise, all objectives planned were tested:

1. pass 9-1-1 packet messages from the field to County Comm
2. pass 9-1-1 voice messages from the field to the EOC
3. pass general voice message from the field to the EOC
4. receive and print city announcements and notices in the field for the community, and
5. pass ALT911 information to the EOC as SitStat input for MARPLOT processing.

A general summary of exercise results are:

1. Total voice messages passed:    60, of which 9-1-1 were 28
2. Total packet messages passed:  74, of which 9-1-1 were 40
3. CARES volunteer hours            69
4. City Staff hours                  6
5. Field Stations established:      19
6. Number of active radio nets:     4

## Key Findings

Following the exercise, CARES performed an after-action review of our existing operating procedures and new aspects under test.  The lessons learned from this review will drive specific activities within key areas of the CARES response.  Two specific findings from this exercise are:

1. ***Accounting for a pandemic during a response.***  A pandemic occurrence needs to be factored into the Citizen Corps field response, given the constraints will be with us for an extended period of time.  Even though CARES successfully operated from our respective homes and were able to remotely coordinate our activities, it is unclear if this is how we would respond if an actual cascading problem occurred that included a pandemic with any of the known city risks.

2. ***Alternate 9-1-1 message passing***.  This was the 2nd field test of Alt911cts, the amateur radio packet program that formats a digital 9-1-1 request in the format expected by County Comm.  Forty Alt911 packet messages were created and sent.  It was also the first field test of the manual Alt911 message process.  With very little user training and plenty of on-air coaching, 28  9-1-1 messages were created and passed on the voice net.

   Additional solution adjustments are planned for all Alt911 tools and procedures.  The exercise also demonstrated that a structured paper-based message process and form could work in conjunction with or as a backup to the packet radio solution.

## Responding Resources

CARES deployed under activation number CUP-20-39T.  Event resources came from the following organizations:

1. ***Cupertino ARES/RACES.***  CARES staffed both command and field operational positions.  Twenty-three (23) CARES members participated during the 3-hour exercise.  Total CARES volunteer hours were 69.

2. ***Cupertino City Staff***.  The CCC DOC was staffed with the intent of capturing and rolling up a situation status for the EOC.  Additionally, the CCC coordinator supported the exercise with EOC injects and logistical support.  Total city staff hours 6.

Neighborhood outreach stations were established at each responders' home.  No actual neighborhood contact was included.

## Timeline

The following timeline is a compilation from ICS-214s submitted as part of this event.

| Time | Description, Notes, Comments |
|---|---|
| **Wednesday** 13-May | ***Drill Traffic:***  NWS reports off-shore winds continue to build. PG&E has issued notices to North Bay communities that a PSPS event will likely start within 24 hours. |
| **Thursday** 14-May | ***Drill Traffic:***  NWS issues a Red Flag warning. PG&E issues 48-hour notice of a PSPS event Cupertino OES meets and develops the response plan |
| **Friday** 15-May | ***Drill Traffic:***  City requests CCC activation to support community information sharing beginning Saturday AM. Develop IAP, OP period #1, 16-May 6:00am thru 12:00pm 2320: Power is simulated out throughout the South Bay Area. |
| **Saturday** 16-May | 04:00    Exercise Begins. 08:00    Activate the CARES Resource Net; start taking check-ins and home assignment availability. 08:20:   Briefing over the air 08:40:   Home Assignments are logged (who is operating packet vs voice only).  Identify Message NCS; Begin Field Ops 10:30:   Secure Field Ops.  Demob. 11:00:   End the exercise. |

# Observations and Recommendations

### Observation #1

> Passing digital 9-1-1 messages occurred well, but not without technical issues.

One of the critical success factors for this exercise was to originate and pass digital message traffic from simulated community reporting stations to the Santa Clara County Communications dispatch center (County Comm).  Seven packet radio (digital messaging) stations were established, each with 26 injects to customize and transmit.  In preparation for this exercise, CARES held 3 remote hands-on packet sessions to (i) ensure the correct software was installed, (ii) practice message passing, ask questions, and understand recent system changes, and (iii) troubleshoot user technical problems.  Seventy-four (74) hours were spent across all 3 sessions.  As a result, the team was ready and operational for the exercise.

Forty Alt911 messages were created and sent.  However, only 37 reached the simulated County Comm.  A message success rate of 92% against a goal of 100% is unacceptable.  The problem was with the digital messaging infrastructure where 3 messages failed to decode at the receiving station.  The cause is understood, can be replicated, and a correction has been identified and planned.

Reliable message transmission is a requirement before any Alt911 technical solution can be put into service.

### Recommendations:

**Cupertino ARES**
1. Correct the problem with Alt911cts.  Perform a system test and full retest to confirm it is resolved.
2. Investigate delivering Cupertino ALT911 reports to Sunnyvale DPS for forwarding;
    - They have a Dispatch CAD-to-CAD link with County Comm,
    - With the plan to relocate County Comm to a new site further east, this may be a more reasonable option if local staffing is required.

### Observation #2

> Field responders assigned to pass voice messages delivered almost an equal number of 9-1-1 request as general messages.  Several participants expressed their appreciation on receiving coaching and constructive feedback while passing messages on the net.

Because CARES does not activate and deploy every day, our radio operating skills tend to degrade over time.  Fortunately, past experience has shown that once an exercise or event gets underway and voice messages start to flow, field responders tend to "get back in the [message passing] groove" fairly quickly.

CARES looks for opportunities to maintain message passing proficiency through annual field communications exercises, local public service events, and message passing practice to name a few.  While these do help, they do not always reach everyone.  The on-line coaching option has been used successfully, but inconsistently, over the years.  It had a positive impact with this exercise.  It is likely that during real emergencies or exercises, providing on-air/real-time coaching to correct message passing procedural problems is critical to maintain the integrity of the net.

### Recommendations:

**CARES**

3.  Determine the best way to incorporate real-time coaching into our operating procedures. This should be deployed during exercises as well as emergency activations.
4.  Create on-line video/audio samples of message passing.
5.  Refine the 9-1-1 voice message passing procedures.

### Observation #3

The COVID-19 Shelter-in-Place directive required CARES to adjust its scenario to allow for at-home operations. While this may be fine for an exercise, it may not be realistic if this was actually the situation and we were asked to respond.

Message passing was the main objective for this exercise. Nineteen voice and packet field responders set up and operated from their homes, giving everyone a chance to participate in one capacity or another.

The most likely risks to the City that would require a CARES response include earthquakes, wildland fire threats, and power outages to name a few. How we would support these during a pandemic is currently undefined.

### Recommendations:

**Citizen Corps, OES**

6.  Develop the policies, protocols, and procedures to protect both Citizen Corps field responders and residents while meeting the mission objectives for a field deployment during a pandemic; include ARKs, Fire Stations, general field, and C469 deployments.

### Observation #4

The power and communication outage described in this scenario is probable to some degree given the likelihood of future PSPS events impacting the city. This scenario, or one like this, will continue to be in use for training. What has not been defined is the size of the deployment needed throughout the city to ensure adequate alternate communications coverage for our community.

The original scenario was exclusively a PSPS event where there was a total communications outage with no infrastructure damage. The exercise intended to have members deploy to more public areas that are familiar with the community such as fire stations, schools, parks, shelter, and/or city facilities. These locations would be well known, easy to find, and offer plenty of space to set up and spread out an emergency assistance station. They do not replace the ARKs but rely on them for logistical support.

It is anticipated that PSPS will be with us for years to come, as will be earthquakes, so the risk of an impacting communication outage continues to be real.

### Recommendations:

**Cupertino ARES**

7.  Develop the plan for establishing community outreach and emergency request stations. Identify estimated call volume for types of risk; include locations, coverage, and staffing as a minimum.
8.  Develop the appropriate signage to direct residents who are looking for help to a comm station.

**City OES**

9.  Need the community outreach on where residents can find help during any resident-impacting events: Cupertino 1670? Direct mail? Etc.

## Observation #5

City-wide communications among field teams using UHF simplex was problematic.

The requirement to respond from home imposed a unique coordination requirement on CARES that warranted more operational channels.  All VHF and repeater channels were allocated to voice message nets with only one CARES UHF frequency remaining.

This frequency, CARES TAC4 (441.000 MHz simplex) was assigned to the packet responders.  However, not all participants could be heard by Net Control, or by each other.  While we recognize that our regular use of the assigned frequencies is reasonable, extraordinary circumstances, as presented during this exercise, did uncover a deficiency in our plan.

### Recommendations:

**Cupertino ARES**

10.  Revisit the current frequency and channel lineup for sufficient capacity.  Look at different deployment scenarios and testing them against the listed channels.
11.  Revisit the state of user equipment to determine the type of hardware constraints that exist.
12.  Review, modify, and adopt an enhanced frequency plan as proposed in the 171005-Frequency-Plan review.
13.  Establish an MOU with HPRC for access to WW6HP 442 repeater during an activation.

## Observation #6

It is anticipated that the City EOC may need to push information out to the community during emergencies.  A prototype of a tool that enables this capability was tested.  What is missing is input from the City on its usefulness, form, and function.

Most of CARES' information flow is from the field to the city.  However, we anticipate that notices, announcements, and general information needed by the community will be inevitable.  Cupertino operates *Radio Cupertino 1670*; this outlet continues to be the best method for broad information sharing.  The other outlet can be Citizen Corps at the ARKs.  The ARKs have message boards that can be set up for posting messages from the city by CARES.

Understanding this as an opportunity, CARES tested a Public Notice message form that can produce field-ready announcements and notices.  Public notices produced by the PIO or other approved officials can be entered at the EOC, transmitted to the field, printed, and posted.

### Recommendations:

**Cupertino ARES**

14.  Review the Public Notice approach with Cupertino OES, confirm its usefulness to the city.
15.  Review the Public Notice approach with Cupertino PIO, identify changes and enhancements to enhance the output's official status.

## Observation #7

Information collected by Citizen Corps will become important to the City's Situation Status.  While methods are in place to move data from the radio room to the DOC, this has never been formalized and captured in an approved plan.

Messages from the field addressed to the DOC will be received at Comm 469 and forwarded to the DOC.  During a normal activation, a Wi-Fi network link is established to move the data from Comm 469 to wherever the DOC is located.  For 9-1-1 messages addressed County Comm, a copy is also sent to the

EOC as a process validation check.  These messages will also be forwarded to the DOC to provide insight to the types of problems that may exist within the City.  What is not defined is the exact procedure for moving any received report to the DOC.

*Recommendations:*

**CARES, DOC**

16. Develop and adopt the methods, tools, and/or procedures to support this information exchange between Comm 469 and the DOC.  Include the case where CARES and the DOC are separated.

**DOC**

17. City to review the results of the SitStat from the exercise.

## Conclusion

This exercise provided CARES with a good understanding of what worked, didn't work, and pointed out areas for improvement.  The list of action items from the exercise will be compiled, reviewed, and prioritized in the event's Corrective Active Plan.

CARES deployments rely heavily on an approach based on trust and teamwork.  Admiral Michael Gilday/Chief of Naval Operations, and General David Berger/Commandant of the Marine Corps, have both said they think the pandemic threat will be a long-term problem[4].  With the prospect of the current COVID-19 operational constraints being in place for another 12 to 18 months (hopefully worst case), the risk of not incorporating them into the CARES deployment methodologies is too great to ignore.  This has to be the first item to get addressed.

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[4] https://www.cnn.com/2020/05/21/politics/us-military-leaders-coronavirus-warning/index.html