



Montgomery County (MD) ARES 2024 Simulated Emergency Test

Exercise Plan
October 5, 2024

The Exercise Plan gives senior leaders, observers, media personnel, and players from participating organizations information they need to observe or participate in the exercise. It includes an exercise overview, objectives and aligned capabilities, roles and responsibilities, logistics, schedule, and communications plan. All exercise participants should carefully read the Exercise Plan prior to the exercise.

EXERCISE OVERVIEW

Exercise Name	2024 Simulated Emergency Test
Exercise Dates	October 5, 2024
Scope	This exercise is a full-scale exercise, planned to take place from 1100 to 1400 hours local time at various locations throughout Montgomery County. Exercise play is limited to members of Montgomery County ARES and interested persons.
Focus Area(s)	Response
Capabilities	Provision of communications following a major disaster involving a loss of telecommunications infrastructure
Objectives	Explore the concept of Community Emergency Hubs and develop ARES members' skills in disaster communications
Threat/Hazard	Major failure of the electrical power grid
Scenario	A widespread power outage has occurred and restoration is expected to take weeks.
Sponsor	Montgomery County (Maryland) ARES
Participating Organizations	Montgomery County ARES
Point of Contact	Al Taylor, KN3U (ataylor@mcacs.net) Emergency Coordinator, Montgomery County ARES 202-875-0268

GENERAL INFORMATION

Introduction

The ARRL Simulated Emergency Test (SET) is a nationwide exercise in emergency communications, sponsored by the American Radio Relay League, that is organized and conducted at the local or regional level.

Traditionally, the SET takes place on the first weekend in October, although local organizations are free to choose any other date to conduct their own SET.

Within the Maryland-DC Section, the ARES organization in each jurisdiction has been asked to conduct its own local SET this year. This document lays out a rationale and plan for the 2024 SET in Montgomery County.

Acknowledgements

The following ARES members contributed to a discussion that led to the development of this plan: N3COB, N3DDS, KC3MJV, K3MRI, AC3N, KC3TCZ, W3TDH, and KN3U. The plan was drafted by KN3U and reviewed by the MCACS board at its September meeting.

Background

Imagine the following scenario:

A massive failure of the electrical grid in the mid-Atlantic and northeastern states has caused a widespread power outage. Full recovery is expected to take days or weeks. Montgomery County and neighboring counties are among those impacted.

The power outage, in turn, has crippled telecommunications networks. While much of the telecom infrastructure in our area is supported by battery and/or backup generators, the batteries only sustain operation for a short period. In some cases, backup generators supporting cell sites and backhaul facilities start to fail after a few days of operation, either because they have been poorly maintained or they simply were not designed to run continuously for long periods of time. Problems with fuel distribution cause other backup generators to drop offline. Longer term, additional generators might shut down because operators are unable to provide timely visits for oil changes and other routine maintenance.

Of course, the Amateur Radio “infrastructure” in our area is subject to the same sorts of vulnerabilities as commercial telecom equipment. It is likely that many if not most of our repeaters will be off the air due to a loss of mains power, and repeaters that rely on the internet for links to other sites can be expected to degrade to standalone operation.

In homes with landline telephone service provided by fiber and cable networks, the network interface device, optical network terminal, and/or cable modem shuts down when its battery backup is depleted unless the home has its own backup power source.

In such a scenario, how will citizens find out what is happening in their community? How will they call for emergency assistance when they have no telephone service? And how will

government agencies and other disaster response organizations assess the needs for services, let alone organize to provide those services?

It can be expected that broadcast stations, especially radio stations, will play a key roles in disseminating information to the community following such a disaster. Most broadcast stations have backup generators. Some stations that relay on commercial telecom infrastructure to link their studios to a remote transmitter may have difficulty remaining on the air, but others will survive. Smaller stations may be better prepared to remain on the air than larger and more complex stations that have multiple points of failure.

Many citizens have a battery-powered boom box in their basement that they can use to listen to AM/FM broadcasts, if they think of doing so and can find batteries. And almost everyone has access to a car radio, their own or a neighbor's.

If one can no longer pick up a phone and call 911, it may be necessary to go to the nearest police or fire station to request emergency assistance. It can be assumed that these most of facilities will have both backup power and telecom channels that remain operational.

Community Emergency Hubs – part of the solution

In areas that are prone to major natural disasters, Seattle being a prime example, emergency managers have implemented a concept called **community emergency hubs**. The term **community hub** has historically been used in several disparate contexts to mean different things. In the context of disaster response, community emergency hubs are pre-identified locations close to where people work and live where people can go to obtain information or request services following a disaster. They may be located at a school, community center, shopping center, or other facility, ideally, one that is a natural gathering place for citizens to seek assistance. At the designated site, a storage container is placed in the parking lot. It is filled with shelter (e.g., tents), supplies, and signage needed to establish the hub, including a portable generator and lighting, along with radios that provide direct communications to emergency services and/or the local emergency management organization. The hubs may be staffed by volunteers recruited from neighborhood associations as well as Amateur Radio operators, CERT members, and voluntary mass care providers like the Red Cross. The community hub's physical assets are kept in a storage container on site so that the volunteers can set up and operate independently of the host facility.

That is the basic concept, anyway. For more information about community hubs, see this link:

<https://seattle.gov/emergency-management/prepare/prepare-your-neighborhood/community-emergency-hubs>

The concept has been implemented in other jurisdictions, but as near as we have been able to determine, it originated in Seattle and has evolved into a sophisticated system for community support in disasters.

The concept of community support hubs has not yet gained traction in the DC/Baltimore area, perhaps because of the perception that nothing bad ever happens here! But we are not immune from disaster, as the preceding hypothetical scenario suggests. It is just one

possible scenario in which the community emergency hub concept could potentially be invaluable.

Operating on FM Simplex

Newer hams may not have much experience operating on FM simplex. It's not any more difficult than conversing over a repeater – just press PTT and talk.

But there are a few things to be mindful of. For many of us in our daily operating, if we are close enough to bring up the repeater, we generally don't have much trouble hearing the repeater, because it transmits with greater power than most of us have at our disposal. We often turn the squelch up on our radios so that we won't be bothered by interference on the channel.

When operating on simplex, the stations you are trying to reach may not have a strong signal at your location. So the first thing to remember is to turn the squelch down. If you make a call and hear no response, temporarily open the squelch all the way to see if you can hear someone calling you back. Even if they are too weak to copy, knowing that they are there gives you the option to try moving your antenna to improve reception. Remember that we are dealing with a wavelength of 2 meters, so moving your antenna just a few inches can have a dramatic effect on received signal strength.

Next, be sure to acknowledge all transmissions you hear. Since there is no courtesy beep from the repeater when operating on simplex, other stations have no way of knowing that they are being heard unless someone responds to them.

Finally, consider the FM capture effect. When two stations transmit at the same time, the station with the stronger signal at your location will completely mask the weaker station. You will never know the weaker station was there. The only exception is if both stations are closely matched in signal strength at your location. Then you'll hear garbled audio. Google "FM capture effect" for more information about this phenomenon.

So, when you are trying to find out who is on a given frequency (or who has traffic in a directed net), acknowledge stations that you hear and always follow up by asking for additional stations until you are sure that you have heard everyone. Then ask other stations to repeat the call, as they may reach stations that were unable to hear your call.

Incidentally, perhaps you have wondered why air traffic control uses AM modulation instead of FM. I used to think it was for backwards compatibility with AM radios in older aircraft, knowing that the aviation industry is very conservative, cost-conscious, and resistant to change.

It turns out that there is a good technical reason why AM is superior to FM in the air traffic control environment. It is because AM does not suffer from the FM capture effect. When two aircraft transmit at the same time, the air traffic controller hears both voices, with the volumes proportional to their signal strength. That reduces the probability that an important transmission will be masked.

EXERCISE DETAILS

Exercise Objectives and Capabilities

The ARRL defines the objectives of the SET as follows: ¹

- To find out the strengths and weaknesses of ARES, NTS, RACES and other groups in providing emergency communications.
- To provide a demonstration – to served and partner agencies such as the American Red Cross, the emergency management agency and through the news media – of the value to the public that Amateur Radio provides, particularly in time of need.
- To help radio amateurs gain experience in communications using standard procedures and a variety of modes under simulated-emergency conditions.

Our exercise objectives depart somewhat from ARRL doctrine. Rather than using this exercise as a test of our capabilities, we wish to take the opportunity to explore how we might support the Community Emergency Hub concept, while developing members' skills in providing critical communications in an environment where commercial power and telecom resources, including Amateur Radio repeaters, are unavailable. Specifically, we will emphasize the core capabilities of operating using voice modes on VHF/UHF frequencies using simplex communications.

Exercise Play

- The exercise will be conducted within approximately a three-hour period starting at 11 AM on Saturday, October 5, 2024.
- For this exercise, participants will have pre-registered and chosen whether they will be participating from home or in the field. At the start of the exercise period, participants who have chosen to deploy will establish a VHF/UHF mobile or portable station at a site of their choice, simulating operation at a community emergency hub. Participants can choose to set up their community emergency hub station singly or working with a partner. If you want to work with a partner, please make a suitable arrangement prior to the event.
- You may operate using your mobile rig at your chosen hub location. However, depending on terrain and distance from the EOC in Gaithersburg, setting up an external antenna with as much height as you can safely manage will increase your chances of success. Keep in mind that the EOC is located in a relatively low-lying area and has limited simplex coverage of the county.
- You can arrive at your chosen hub location prior to 11 AM if you wish, but that is not required. As soon after 11 AM as practical, the simulated community emergency hub stations will attempt to establish contact with WA3Y00, our station at the county EOC, via FM simplex on 2 m and/or 70 cm and demonstrate the ability to exchange messages with the EOC station. You should be prepared to send a short message to the EOC

¹ <https://www.arrl.org/simulated-emergency-test>

describing your location, setup, and communications path to the EOC. While you can convey this information informally, we prefer that you format and send it using the ICS-213 message format. Be prepared to answer any questions that the EOC station might have for you.

- It is possible that some simulated community emergency hub stations will not be able to establish communications with the EOC. If that occurs, don't think of it as a failure, but rather as useful information about your station capability, VHF/UFH propagation, local terrain, etc. Feel free to move to a different location to report in, or simply report your findings after you return home (or during the hot wash).
- For this exercise, coordination using cellphones, internet email, or repeaters is not permitted. Please limit yourself to simplex communications before and during the exercise.
- We will not have a designated net control station for this exercise. Our hope is that one or more well-positioned home stations will serve as relay stations and a home station will establish a directed net if warranted by the volume of traffic.
- We are considering the option of siting the MAIPN van (with its 50-foot mast) at a high elevation in the county so that we have at least one station with broad simplex coverage of the county. That would be consistent with the exploratory nature of this exercise. However, whether we do so depends on how many participants there are. And we might not introduce that element until the latter part of the exercise. In any case, there is no one location in the county that will provide full coverage.
- Similarly, we are not designating specific simplex frequencies for this exercise. We need to be able to find one another on the air in an emergent incident. The MCACS website lists preferred simplex frequencies at <https://mcacs.net/training-resources/operations/>. Let that be your guide. Transmitting on the output frequency of a popular repeater while listening on the input frequency is another useful technique to reach other hams when the repeater is off the air.

Winlink Option

- Several Winlink RMS gateway stations in the area have standalone post office capability that enables messages to be exchanged in the local area even if the gateway loses its internet connection to the Winlink Central Message Server. Our own WA3Y00-9 gateway is one station that has this capability. For this exercise, the WA3Y00-9 RMS gateway station will be operating under a simulated loss of internet. Despite that, exercise participants can exchange Winlink messages with one another by connecting to the WA3Y00-9 gateway station and posting or checking for messages as usual.
- **Winlink tactical addresses may be used. During the exercise, the radio station at the EOC will be using its Winlink tactical address, *MDMONTEOC*. Additional tactical addresses and other useful Winlink information may be found on the MCACS website at <https://mcacs.net/training-resources/operations/winlink/>.**
- Messages addressed to users outside the area will be held at the post office until internet access is restored at the end of the exercise, but messages to local users will be

delivered when those users connect to the gateway. The EOC station will be up and running on Winlink for the duration of the exercise.

- Of course, another strategy is to use HF radio to access the Winlink Central Message Server via gateway stations outside of the disaster area. Montgomery County ARES conducts frequent exercises using that approach, so we are de-emphasizing the use of HF Winlink in the present exercise.

Participant Roles and Responsibilities

For this exercise, we will not distinguish roles for players, controllers, and evaluators. All participants will be players in the exercise, using the scenario laid out in this exercise plan as their guide. Depending on how the exercise plays out, some participants may assume responsibility as communications leaders and/or net control operators, as might happen organically in an actual event. Following the exercise, all participants will be invited to participate in an after-action review on our regular Tuesday night net. Participants will be invited to evaluate their own performance and the performance of other participants in a constructive way, and offer suggestions for ways to improve our capability to support a similar event in the future.

Exercise Assumptions and Artificialities

In any exercise, assumptions and artificialities may be necessary to complete play in the time allotted and/or account for logistical limitations. Exercise participants should accept that assumptions and artificialities are inherent in any exercise, and should not allow these considerations to negatively impact their participation.

The preceding paragraph is included in the FEMA-developed template that was used to prepare this exercise plan. It expresses an important concept, albeit one that has been abstracted to such a degree that its meaning may be hard to decipher.

In plain language, while we can predict some kinds of scenarios that we might face in a real-world disaster and make contingency plans to address those situations, there are myriad details affecting our potential actions that are difficult to accurately simulate in an exercise.

In an exercise, when presented with an overall scenario and asked what you would do to address a communications shortfall, a prudent person would likely say, "It depends," and ask a series of questions to try to clarify the situation before choosing a course of action. In some ways, responding to a real-world disaster is easier than responding to an exercise, because in the real-world situation, between what you have been told and what you have directly observed, you have a much more complete fact set on which to base your response. The following sections provide guidance on how participants should deal with the incomplete fact set that is inevitable in any exercise.

Assumptions

Assumptions constitute the implied factual foundation for the exercise and, as such, are assumed to be present before the exercise starts. The following assumptions apply to the exercise:

- The exercise is conducted in a no-fault learning environment wherein capabilities, plans, systems, and processes will be explored.
- Participants are expected to operate within the environment described by the scenario. In plain language, that means that cellphones and the internet are off-limits, and that networks will need to be established on the fly, based on who can hear whom in the simplex radio environment. This will require participants to take the initiative to step into roles as net control operators or relay stations when they are in a position to do so, and conversely, defer to others whose equipment and location are better suited for those roles.
- In the unlikely event of a real-world emergency, exercise play will be suspended. In no case should anyone declare a real-world emergency unless one actually exists.
- If warranted, a participant can invoke a simulated emergency for the sake of exercise play. Should that happen, it is incumbent on the participant to make clear that the “emergency” is being simulated, and others should respond accordingly. Whenever referring to a simulated emergency, and especially when introducing a simulated emergency situation, use words like “This is an exercise message” when communicating over the air.
- When the fact-set implied by the scenario is incomplete, participants may make reasonable assumptions about missing details and respond accordingly. Recognizing when such assumptions are being made gives rise to much of the learning value of these exercises, because each time you do so, you are highlighting a relevant factor or circumstance that needs to be considered in deciding on a course of action.

Artificialities

During this exercise, the following artificiality applies:

The scenario requires participants to simulate the kinds of messages that we might be asked to convey in an event of this sort. Recall that under the ICS structure, we are often providing communications services to responders in operations, and less commonly, the other ICS sections (planning, finance/administration, and logistics). The nature of those communications is often highly technical and outside our area of expertise. In many situations, our role will be to provide the communications infrastructure and let our “customers” do the talking (or typing).²

When participating in a large-scale exercise involving other disaster response organizations, message content is likely to be generated by participants who are well-versed in their roles and responsibilities. Even in such exercises, the messages are sometimes unrealistic due to the limitations of exercise play.

In this exercise, we are focusing exclusively on communications aspects. Therefore, feel free to use your imagination and improvise scenario-based content if appropriate, without worrying about how realistic those messages might be. Keep the focus on the techniques

² There will be exceptions when the telecom responder is cross-trained in another function and performing in dual roles. One example might be damage assessment, a planning function. As a ham, you might accompany a damage assessor and convey their findings to a data aggregation point. If you are cross-trained in damage assessment, you could be assigned to conduct the assessment and communicate your own findings.

that would be useful in supporting community emergency hubs and quality of communications.

EXERCISE LOGISTICS

Safety

Exercise participant safety takes priority over exercise events. The following general requirements apply to the exercise:

- For participants who choose to deploy to a simulated community emergency hub, choose your location with an eye toward keeping yourself and others out of harm's way. You may choose to deploy with a partner if you feel more comfortable doing so.
- For an emergency that requires assistance, use the phrase **“real-world emergency.”**
- Please wear clothing that projects a professional appearance as is appropriate to the weather. Fifty degrees is hypothermia weather, particularly if it is raining!
- If you have an ARES safety vest or similar high-visibility vest, consider wearing it. In general, ham radio paraphernalia such as call sign hats and badges are meaningless to members of the public and incidental to this exercise, and should be worn judiciously or avoided.

Site Access

Security

Exercise participants who deploy to a simulated emergency hub should choose a site at which your activity will not interfere with others' use of the site nor attract unwanted attention. In these uncertain times, any unusual activity could arouse concern in others. If someone looks at you suspiciously, consider being proactive by greeting them and offering to explain what you are doing. If you can, take the opportunity to promote Amateur Radio.

Under no circumstances should you argue with a police officer, security guard, or other person responsible for a given site. If asked to leave, please do so graciously.

POST-EXERCISE ACTIVITIES

Reporting

Following the exercise, all participants are requested to report their results. You can do this while you are onsite or after you return home. We are requested the following information from each location that you operate from:

Call sign used on the air during the exercise	
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Call signs of additional operators at your location	You can also list the names of any participants who are not hams.
Location number	Please enter -1, -2, etc. if you operated from more than one location. Enter "n/a" if you only operated from one location.
Description of location	E.g., host facility name, "home," "office."
Lat/long	Please use decimal degrees (DDD.DDDDD). Remember that west longitude is negative.
Ground elevation	Please report in feet above mean sea level
Grid square (6-character)	If you are not familiar with grid squares, google the term.
Path to EOC	List the intermediate stations that enabled you to exchange message traffic with the EOC. If you were able to communicate directly with the EOC from your location, enter "direct." If you were unable to find a path to the EOC, enter "none."
Other stations heard	List all stations that you heard from your chosen location.
Station description	Please report your TX power, antenna height, and a brief description of your antenna (e.g., J-pole, 1/4-wave mag mount, Diamond X50A). You can report your antenna gain if you have that information.

We have created a Excel form you can use to report your results. It can be downloaded at <https://mcacs.net/wp-content/uploads/2024/10/SET-Report-Template.xlsx>. You don't need to use this form, but it's there if you would like to use it. You can send it to KN3U as a Winlink attachment, or use regular email (ataylor@mcacs.net). I can also accept the spreadsheet in .ods format. Alternatively, just put the requested information into the body of a Winlink message or email.

Hotwash

On the regular Tuesday night net following exercise play, we will conduct a Hot Wash to allow players to discuss strengths, lessons learned, and areas for improvement. A **Hot Wash** is a meeting to gather feedback from all of exercise participants regarding what worked, what didn't work, lessons learned, and suggestions for improvements.

Participants who are unable to attend the Hot Wash can submit comments in writing or convey them through an intermediary.

Evaluation

No evaluation guide has been prepared for this exercise. We hope that someone will volunteer to write up an after-action report summarizing the findings from the exercise. The report will be posted on the MCACS website and shared by email with the MCACS members.

PARTICIPANT INFORMATION AND GUIDANCE

Exercise Rules

The following general rules govern exercise play:

- Real-world emergency actions take priority over exercise actions.
- Exercise players will comply with real-world emergency procedures.
- All radio communications (including written, radio, telephone, and e-mail) during the exercise will begin and end with the statement **“This is an exercise.”** All written communications transmitted by radio or email will begin and end with the statement **“This is an exercise message.”**

Players Instructions

Players should follow certain guidelines before, during, and after the exercise to ensure a safe and effective exercise.

Before the Exercise

- Review this exercise plan decide what role you would like to play in the exercise (e.g., provide support from your home station or deploy to as simulated Community Emergency Hub of your choosing).

During the Exercise

- Respond to exercise events and information as if the emergency were real, unless otherwise directed.
- Given that this is a learning exercise, if you do not understand the scope of the exercise, or if you are uncertain about what you should do in a given situation, it is appropriate to step out of your role and ask the net control operator or other person in a leadership role how you should proceed. Say something like, “I am unsure what I should be doing about this situation.”

After the Exercise

- **Send your report to KN3U as described on page 10.**
- Participate in the Hot Wash and/or submit comments.

Simulation Guidelines

Because of the nature of this exercise and its limited duration and scope, there is no need for a SimCell.

APPENDIX A: COMMUNICATIONS PLAN

Controller Directory

Name	Agency	Location	Phone	Email
n/a				

Simulation Cell Directory

Name	Simulating Agency	Phone	Email
n/a			

Evaluator Directory

Name	Agency	Location	Phone	Email
n/a				

APPENDIX C: EXERCISE SCHEDULE

Day 1: 10/5/24	Personnel	Activity	Location
11 AM ET*	All participants	Begin exercise play	As assigned
2 PM ET (approx.)	All participants	Exercise terminates	n/a

* Note: Participants may choose to pre-deploy in order to scout their selected site and set up their equipment prior to 11 AM.

APPENDIX D: EXERCISE SITE MAPS

n/a

APPENDIX E: EXERCISE SCENARIO

See the description of the exercise scenario in the introductory section of this document.

APPENDIX F: ACRONYMS

Acronym	Term
ARRL	American Radio Relay League
ARES	Amateur Radio Emergency Service
HSEEP	Homeland Security Exercise and Evaluation Program
ESF 2	Emergency Support Function 2 (Communications)
SET	Simulated Emergency Test (see page 1)

APPENDIX G: ABOUT THIS DOCUMENT

This document is based on template HSEEP-DD06, 2020 revision, distributed by the FEMA Homeland Security Exercise Evaluation Program (HSEEP) as a part of the HSEEP Preparedness Toolkit. The toolkit is available at:

<https://preptoolkit.fema.gov/web/hseep-resources/design-and-development>