

Power Out!

After-Action Report & Improvement Plan

Alachua County ARES(R)
Gainesville, FL
30 March 2019



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DEDICATION

This text is dedicated to Amateur Radio Emergency Communicators



Voice actors on FRS at work. Photograph is from drone footage by James Carr, AC4MHH



Kevin Rulapaugh's State funded Mutual Assistance Radio Communications (MARC)- Unit's Tower set up at Northside Park to assist amateur radio operators – perfect example of interoperability training. This image was taken at a previous event, but the MARC unit was also deployed for “Power Out”

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We thank volunteer actors Stefanie Dowling, James Snyder, and Jessica Awad for help with the scenario. We also thank Francis “Joe” Kelman, KI4TRR, for sending the out of county message for our exercise.

PUBLICATION COMMENT

This text will appear about one year after the events described. Although it would have been preferable to publish sooner, there is still a benefit to publishing later. That is because the concepts of exercise planning and execution, the technical issues involved, and the lessons learned are not time-specific. Amateurs planning exercises can profit from what the participants in *Power Out!* did, and what they learned. As Bismarck is reputed to have said, the wise person learns from the mistakes of others.

1 “POWER OUT!” EXERCISE OVERVIEW

BACKGROUND AND OVERVIEW

EXERCISE DESIGN-- SUMMARY

Power Out! was designed as a full-scale exercise to test the ability of the local ARES team to establish emergency communications in the event of a widespread infrastructure failure. In our scenario, electrical power, GPS links, internet, cell phones all stopped working due to a foreign computer hacking event. In order to provide for interesting message traffic, the electromagnetic locks at a local zoo also failed, releasing an unknown number of animals, some of which were dangerous. Additionally, the traffic light timing devices in Gainesville were hacked and began blowing up spectacularly, starting fires in various places. ARES operators set up three main stations at the Incident Command (near the zoo), the Emergency Operation Center (EOC), and at a shelter. Additionally, Alachua County Fire Rescue set up their MARC unit for concurrent practice and friendly competition, and a local drone operation team assisted with capture of the animals.

Rationale for our exercise: Most ARES activity in Florida revolves around hurricanes, because they affect the state regularly. Hurricanes and other natural disasters generally produce local power outages as a result of physical destruction of wires, transformers, towers, and other critical infrastructure. We saw this in our (KG4VWI and AA3YB) deployment after Hurricane Michael. Many cell phones, grid power, and even public safety radios, did not work in the Florida Panhandle. However, AT&T was beginning to set up portable towers to access their satellites for limited cell phone coverage within a week after the storm. Utility poles and wires were being replaced. (Unfortunately for Verizon, which relies on underground fiber connections, the new power poles frequently severed the fiber cables, making for a more lengthy recovery period for Verizon cell phones.) In any case, communications infrastructure was being rebuilt quickly as we watched. Some people who depended on electricity to mitigate various medical conditions died, as did a few people who ignored orders to evacuate. However, most people survived to face extremely difficult adjustments to life after the storm. Those longer term difficult conditions mostly did not include failure of communications infrastructure, especially for anyone with a cell phone. The need for communications help was immediate but was mitigated quickly.

A potentially much more serious threat to the state's – and all of America's –communications infrastructure is a widespread catastrophic failure of the electric grid. The USA is completely dependent on the electric grid for

basic commerce, banking and financial transactions, transportation, food distribution, communication with the public, water delivery and sewage disposal, public safety communication, etc. Within a very short time, many people would run out of food and water without reliable electricity. Independent means of communication would be essential. In this country, failure of the electrical grid is the real communication emergency that amateur radio emergency communications volunteers need to train for. Weather and other natural disasters mostly are localized. This is not so with electrical grid failures.

There are several ways that the electric grid could fail. It could happen by a natural phenomenon known as a solar flare. A large solar flare and coronal mass ejection from the sun in 1859 (the “Carrington Event”) started fires in telegraph offices around the country. Modern electronics and communication networks might be more vulnerable than the telegraph system of close to two centuries past. Other likely scenarios for grid failure have human causes, either deliberate or accidental. The electric grid is controlled by complex computer programs. A toxic computer update could cause a failure, just as programs or entire computers sometimes crash after operating system updates. It also is possible that hackers in enemy nations (think Iran, North Korea, Russia, etc.) could destroy the grid (our scenario). Some military strategists think that cyber warfare is one of the most important threats facing the United States. Another possibility is an electromagnetic pulse (EMP) attack from a nuclear device set off in the ionosphere above North America. For that to happen, the enemy would need only the nuclear device and a rocket – they would not have to aim – only to set the device off somewhere above the continent. The country would be effectively unplugged for a long time to come.

Some recent books highlight American vulnerability to hacking of the electric grid, including *Lights out* by Ted Koppel, *The President is Missing*, a novel by President Bill Clinton and James Patterson and *The Perfect Weapon*, by David E. Sanger. *Lights Out* details the workings of our electric grid and discusses possible scenarios wherein it could be compromised. President Clinton’s book is an entertaining read that spells out American vulnerability starkly. It suggests that Clinton, who has been the President of the country and presumably has had the opportunity to think about many enemy strategies, believes that an international hacking event is a plausible existential threat to our civilization. Another recent book, *The Perfect Weapon*, further discusses cyber attacks of all kinds.

If the grid failed catastrophically, and especially if many specialized heavy duty transformers failed, power in the USA could be out for months to years. There is not an easy way to train for the sustained effort needed to provide communications over a long period of time, but the first step is to set up our independent communications equipment and begin passing message traffic.

Power Out! was designed to test the ability to deploy independent communications equipment, both analog and digital, and to pass messages effectively around the Gainesville. The fanciful Power Out! scenario provided the material for many entertaining messages. Rumors at an evacuee shelter, incomplete information from a local zoo experiencing escaped beasts, and an evolving narrative by actors on FRS radios simulated a “fog of war” so that all the pieces had to be integrated (and communicated) in order to solve the problems posed. Evacuees at the exercise's simulated shelter were offered bulletins that could be read on cell phones, via local impromptu WIFI. All these scenario-based twists replicated in miniature the effects of wide scale grid failure.

As an aside, the authors thought that the traffic light timing device hack built in to our in our scenario was just a fanciful addition (we are frequently annoyed waiting for long and poorly timed traffic lights in Gainesville); but in the Gainesville Sun, June 1 2019, an article stated that at around 5:00 PM on Friday, 31 May 2019, about 30 traffic lights around the city stopped working after a power surge. The outage involved several of the busiest

traffic corridors in town, right at Friday rush hour. A city spokeswoman said it was unclear what caused the problem, but Gainesville police said that the city's traffic engineering department had experienced a "network failure."

Further reading:

Clinton, W. and Patterson, J. 2018. The President is Missing. Grand Central Publishing, New York. 518 p.

Koppel, T. 2015. Lights Out. Crown, New York. 279 p.

Sanger, D.E. 2018. The Perfect Weapon. Crown, New York. 357 p.

HSEEP compliance, mechanics, house-keeping

HSEEP Compliance. Power out! was designed as a Department of Homeland Security Exercise Evaluation Program (HSEEP)-compliant full-scale exercise. The goal of Power Out! was to test the ability of amateur radio (and public service Alachua County Fire and Rescue) to prioritize and send messages by appropriate technology in a rapidly evolving disaster scenario. The authors' design for the exercise focused on our group's (Alachua County Amateur Radio Emergency Service – ARES) core capability objectives for the year 2019.¹ These had been decided at an earlier meeting of Alachua ARES. Alachua ARES uses the Incident Command System (ICS) documentation structure as part of HSEEP compliance; the reason is that ARES wishes to further interoperability with government and private organizations moving to FEMA's ICS structure. See Chapter 5, below, for a tabular view of how this exercise was categorized (i.e., as a full-scale HSEEP event).

ICS. All aspects of the exercise were documented in ICS format. We are committed to using this format, because it increasingly is the standard for Emergency Management operations nation-wide.

Messages and traffic. In particular, the Power Out! Exercise designers perceived a need for our ARES amateurs to practice sending a large number of messages by any and all modes at our disposal. We wanted to participants to practice determining the best way to send various kinds of messages (formal written and informal/tactical), deciding priorities in message flow, using all modes of communication – HF, VHF/UHF, voice and digital.

Real world interrupts. Stuff happens. Power Out! was intended as the Alachua amateur radio community's execution of the annual ARRL Simulated Emergency Exercise (SET). As our SET, Power Out! originally was scheduled for October, 2018, but Hurricane Michael made landfall in the Florida Panhandle as a CAT IV (later upgraded to CAT V) storm – almost literally on the date planned for Power Out! On the Wednesday before Power Out! day (a Saturday), two of the authors, with the third back home in support, deployed from Alachua County to Panama City to help with the aftermath of Hurricane Michael. This wasn't a simulated emergency exercise. Hurricane Michael was the real thing. So instead of doing Power Out! in October 2018, the authors postponed it until March 2019.

Pre-October 2018 planning. We held a tabletop drill in September 2018, a month prior to the original date for the exercise. Two of this book's authors live in the same Alachua County subdivision, so we used both homes to set up stations and practice various modes of communication.

1 As our understanding of HSEEP grew, we later adopted the Core Capabilities of the National Preparedness Goal. See: <https://www.fema.gov/emergency-managers/national-preparedness/mission-core-capabilities>

OBJECTIVES AND ASSESSMENTS METRICS OF "POWER OUT!"

Scenario-based objectives. These are general objectives not only of this but many ICS-structured exercises.

1. Deploy emergency communication equipment that works in a timely manner.
2. Maintain situational awareness.
3. Prioritize and pass numerous messages, using appropriate means of message transfer.
4. Coordinate communications and ICS functions with air operations.

Exercise objectives aligned with core capabilities. These are specific objectives of the exercise aligned with core capabilities. The objectives directly align to Alachua ARES' agreed-upon core capabilities. Please note that the core capabilities are not in exact numerical order, but are ordered (for example, a; c; f; g; i) as those core capabilities are listed in Alachua ARES' documentation.

1. Assess the ability of the ARES group to stand up an emergency ARES net, sending formal and informal traffic by voice and digital communications between the EOC, a shelter, and an evolving field situation

These specific objectives will address core capabilities:

- a: Mobile communications assets/skills
- c: Communications between the EOC and the rest of the community
- f: Short message communications
- g: FEMA forms (ICS) transfer
- i: Traffic sending ability (voice and digital)

2. Assess the ability to set up and populate the simulated shelter ("Shelter A") WIFI with vetted information such that untrained volunteers can receive up to date information on their smart phones.

This objective will address core capabilities:

- c: EOC communications with the community
- d: Becoming better known (making our capabilities more known to possible clients)
- h: Last mile communications

3. Assess the ability to deploy and care for personal and County equipment in a field exercise, with proper documentation.

This objective will address core capability g (FEMA and ICS forms), as well as the critically important ability to document time and equipment used so that our partners in the County EOC are able to respond to all questions and audits from FEMA after the event.

EXERCISE PLAN – IN DETAIL

Description of the scenario and intended responses

The Power Out! scenario, the narrative that propels the exercise, was a fanciful one (please see the ICS 201, Appendix I). There was a wide-spread infrastructure failure of unknown cause. Electrical power distribution, the Internet, GPS systems, public safety communications, etc., quit working. Various other systems had catastrophic failures. In the midst of these problems, a local zoo became insecure. The locks on the cages were electromagnetic and quit working when the power went out. A tiger with a bad personality and several other creatures either escaped or went missing. Local authorities set up a shelter for people in the neighborhood where the tiger was loose and for people who depend on power for medical devices.

Rumors start in the shelter about consequences of infrastructure failures. Some are true, but most are not. Various emergencies also develop in the shelter itself.

In the meantime three zoo employees are sent with FRS radios to try to catch the tiger and whatever else is missing. One, “VJ”, remains at the zoo with updated zoo information, and the other two, “Billy” and “Jake,” are roaming in pick-up trucks trying to find the tiger and other escapees. They report back to VJ on FRS radio about whatever they see. These people have the only reliable factual information about what is happening at the zoo and around town.

Eventually, it is determined that a drone is needed to find and help capture the tiger. The drone is deployed and the tiger is captured.

Venues

The exercise takes place in three venues.

1. *Incident Command/Santa Fe College*. Incident Command (IC) is at Santa Fe College in northwest Gainesville, where the fictitious zoo is located. [Note: there really is a high quality teaching zoo at Santa Fe College, but the Power Out! zoo is totally a fabrication for use in this exercise.] Besides the Incident Command tent, the three actors who play the zoo employees and the air operation (to locate the tiger) are based at Santa Fe College. Finally, a unit of the Division of Alachua County Fire-Rescue also is set up at Santa Fe College. They are practicing setting up alternative public safety communications. They also are in competition with the HAM operators for relaying messages about what is happening in and around the college and zoo.

2. *Gainesville Senior Center*. The Gainesville Senior Citizen Center is the second location. The Power Out! evacuation shelter is located there, populated with the HAM-operated WIFI unit, and a regular radio station whose job it is to relay messages from and about residents in the shelter to IC and to the EOC (the third exercise venue). Shelterees are salted with various rumor-mongers and other difficult residents. The secret goal of some of these recruited actors is to get “fake news” posted on the shelter WIFI. The Gainesville Senior center is located approximately five miles from the IC at Santa Fe College

3. *Alachua County Emergency Operations Center*. Operators at the EOC receive messages from IC and from the shelter, trying to make sense of which rumors are true. They vet information and provide the bulletins for posting on the WIFI. The EOC is located about 8 miles from locations 1 and 2. The EOC has in-place amateur radio equipment and antennas for both HF and VHF/UHF.

Exercise assumptions and artificialities

An exercise is not reality; this one is particularly fanciful. Participants should make reasonable responses to events as they see fit, with the goal being learning as much as possible.

Assumptions:

1. Mistakes will be made
2. If a real world emergency occurs, it takes precedence (hence the postponement of the exercise when Hurricane Michael showed up in the Florida Panhandle).

Artificialities:

This exercise assumes that cell phones don't work. Participants were asked not to use them unless there was a real world emergency.

Rules of Conduct

1. Observe traffic rules.
2. Do not do any damage to the venues where we are allowed to operate; be courteous to any employees of these institutions that happen to be around.
3. Use "this is a drill" or other such disclaimers, as parts of all transmissions, so as not to alarm the public or casual listeners to amateur, public safety, or FRS communications.

Safety

1. Observe traffic rules.
2. Use sun screen if outdoors (those at Santa Fe).
3. Use proper operating procedures for generators. Do not re-fuel a hot generator.
4. Be careful about electrical equipment; do not get shocked or burned.
5. Antenna placement: DO NOT put an antenna near a power line. Be careful about aiming projectiles needed to put antennas in trees or on high objects. Do not hit people, break windows, or damage vehicles. This was a particular concern at the Senior Center (location 2), which had a tree well-suited to hanging an HF wire very close to electrical power lines.

Liability Insurance and Permissions

Liability considerations and authorization to use any private or publicly owned spaces are of great importance in planning any full-scale exercise. As the North Florida Amateur Radio Club (NFARC) is one of the sponsoring clubs for Power Out!, NFARC was able to secure a certificate of liability insurance for the event from an ARRL corresponding underwriter.

The Santa Fe College is a State of Florida funded and chartered institution of higher education. In order to obtain permission from Santa Fe to use its grounds and facilities (at no cost to Power Out!'s organizers), Santa Fe

required the above-mentioned certificate of liability insurance. Moreover, NFARC had to submit a request for waiver of fees and permission to the College through its Facilities and Engineering services branch. The College required proof of insurance before granting permission. Because the timeline for obtaining insurance and negotiating the permission process was extensive, NFARC began the process several months before Power Out's initial date of October 2018. Moreover, since the College has a police department with criminal jurisdiction and public safety responsibility for the College grounds, NFARC coordinated the event in advance with the College's Chief of Police, whom we thank and who enthusiastically supports the goals of NFARC/GARS, and amateur radio in emergency communications preparedness.

The Gainesville Senior Center is a public-access service facility operated by the University of Florida's Shands medical services operations. NFARC coordinated the date(s) for Power Out!, the concept of the operations, and use of the facilities months in advance, and frequently touched base with the Senior Center's supervisor as the initial date approached – and again after the October version was cancelled and rescheduled for March 2019. NFARC kept email records of all such correspondence, either with the Senior Center, or indeed with Santa Fe's authorities.

Finally, through the good offices of the Alachua County Emergency Coordinator and one of NFARC's members (an ranking official in the Alachua County Sheriff's Department), permission was granted to NFARC/ARES to activate the EOC's amateur radio room and all equipment for the exercise. Hurricane Michael's approach to Florida in October 2018 made permission to use the radio room -- if Power Out! had not be postponed – highly problematic. The rescheduled exercise did not have to deal with this complication.

Planners of any full-scale HSEEP exercise are well-advised to examine very thoroughly the question of liability and site permissions, and to do so months in advance of the exercise date! Remember this: ARES is a program, not a club. ARES is not a legal entity that can be insured; that is why exercise planners should think about sponsorship by an ARRL-affiliated club. This makes obtaining insurance much easier.

Without permission from the right people for the right places, and without insurance, the exercise can get off on a very bad legal foot: bad for the participants and a total distracter from what you're there to do.



Incident Command tent at Santa Fe College. Photograph by Leland Gallup, AA3YB.

2 INITIAL TASKS

ASSESSABLE TASKS BASED ON THE SCENARIO

The tasks prescribed by the scenario for various locations (not in numerical order) are linked below with the core capabilities to be assessed in the “play.”

1. Stand up the net. Net control is at the EOC (location 3).

Core capability assessed:

Communications between the EOC and the community

Short message communications

FEMA forms transfer

Traffic sending (appropriate modes)

2. Incident Command, based at Santa Fe College (location 1), maintain awareness of the evolving situation (via actors on FRS channels), transmit appropriate information to the EOC using appropriate modes of communication.

Core capabilities assessed:

Short message communications

FEMA forms transfer

Traffic sending

3. Incident Command, based at Santa Fe College. Account for escaped beasts; relay status to EOC; coordinate with air ops to catch the tiger and mobile unit to rescue insect display

Core capabilities addressed:

Traffic sending ability

FEMA forms transfer

Short message communications

Mobile communications (providing directions for person fetching a stolen insect display)

4. Shelter location, based at the Senior Center (location 2). Set up the shelter HAM station to report shelter situation to the EOC and IC

Core capabilities assessed:

Short message communications

FEMA forms transfer

Traffic sending ability

Communication between the EOC and the rest of the community

5. Shelter, based at the Senior Center. Set up shelter WIFI so that non-HAMs in the shelter can access bulletins with their phones

Core capabilities assessed:

EOC communications with the community

Becoming better known

Last mile communications

6. Senior Center (briefing at the beginning of the exercise) (location 2). Sign in equipment and people

Core capability assessed:

FEMA and ICS forms

Documenting time and equipment.

7. Receive and respond to formal WINLINK message from outside of the county

Core capability assessed:

Traffic sending (non-local)

8. Incident Command based at Santa Fe College. Work with air operations to catch the tiger

Core capability assessed:

ICS forms for air operations

Integration of air ops with the rest of the team

Mobile communications, in this case aircraft

3 EXERCISE TIMELINE AND INJECTS

TIMELINE, INCLUDING INJECTS

0600 on. Those who want meet for breakfast at Country Foodly on 5240 NW 34th Blvd, Gainesville. We recommend the spicy Korean noodle breakfast. This is a good social event to get the participants to bond over some necessary coffee injects (and food).

0800 arrive at Location Two Senior Center (centrally located) for check in and in-briefing. The briefing is conducted by two of the authors (who designed the exercise): KG4VWI and AA3YB.

Both participants and equipment are accounted for in ICS sign-in forms

There are 2 parallel briefings – one for the HAMs and one for the actors.

HAMs and the Alachua County Fire-Rescue (MARC) rep are told:

Briefing for all amateur operators/MARC for all locations. There is a wide-spread infrastructure failure. The electrical power, the Internet, and the satellites do not work. It does not seem to be an EMP, because all participants' radio and computer equipment works, so long as there is power for it.

For the purpose of this exercise scenario, a local zoo has had an escape. The zoo's electromagnetic cage locks released when the power went down. An unknown number of wild animals, some potentially dangerous, have gotten loose. A team of search and capture officers is on scene near Santa Fe. They are not HAMs. Moreover, the local MARC unit has deployed to the site to provide Alachua County communications infrastructure (friendly competition).

The search and capture team has taken some local residents (actors and others) to a shelter to stay out of harm's way. People who have medical conditions that make them dependent on electrical power also are in the shelter.

At various times, information will be provided to participants at each location, by means of "injects." These are

sealed envelopes with time markings as to when and by whom the envelopes will be opened. The injects drive the exercise because they contain the developing situation and message traffic that must be considered and passed. Contents of the various inject envelopes is detailed below and given in full in noted Appendices.

The “injects” for Incident Command at location 1, Santa Fe College, mostly come via the actors on FRS radio. It is that team’s job to figure out what is happening and provide valid, current info to the net. IC needs a station that can contact the EOC and contact Location 2 (the shelter). He will need enough digital capability to be able to send/receive a picture. He is free to contact the zoo employees if he has a working FRS radio.

HAMs in the shelter at the Senior Center, location 2, must set up two stations. One will be a WIFI station to provide current valid news to the residents. The other will be a regular HAM station to participate in an emergency net and relay information about the rapidly changing situation on the ground to the EOC. He also must have digital capability sufficient to send a picture.

HAMs at the EOC, location 3, must stand up an emergency net and be prepared to send and receive messages from the shelter and from the IC. HAMs at the EOC need to validate the information and authorize the bulletins that go on the shelter WIFI. The EOC station must be able to transmit the bulletins to the shelter so that they can be put on the WIFI station.



Initial briefing at the Senior Center (Location 2). Photograph by Gordon Gibby, KX4Z.

Actors are told:

While HAMs are setting up their stations, KG4VWI briefs the actors in the shelter, and those playing zoo employees. The shelter actors will be annoyingly busy. They report sightings of loose creatures, mishaps due to the infrastructure problems, medical issues in the shelter, etc. A small amount of the information will be true, but much will be rumors. Their objective as actors will be to get “fake news” on the WIFI server. Only they will know if the messages they pass are “true” or fake. During the time the HAMs are deploying to the EOC and Santa Fe, KG4VWI will provide lots of messages to the actors to be delivered at opportune times.

Actors at Santa Fe have an entertaining script (Appendix VI). The three voice actors speak over FRS radios. All

probably are zoo employees, with VJ at the zoo, and Billy and Jake roaming the neighborhood in pick-up trucks looking for the tiger, but also encountering the effects of the widespread infrastructure failures. At the beginning of each short section of their script, they are told to say in a normal voice that this conversation is part of an exercise and does not represent real events. After this brief announcement, they begin in character with the script.

Location One will also be the location of the MARC unit.

Both IC and MARC participants have access to FRS radios.

USB flash drives will be provided in envelopes to be opened by specified Locations at specified times. These flash drives provided pre-prepared spreadsheets for populating with information. Other printed information also distributed (see Appendices below).

All participants are briefed on the importance of frequently stating “this is an exercise” or something similar in all communications, in whatever mode and on whatever frequency. Avoiding panic because of a “War of the Worlds”-like misunderstanding is important.

0900. Release of participants to deploy to the EOC and Santa Fe. HAMs at the shelter obviously do not need to deploy, since they are already in place. Teams are to travel and set up communications.

0930.

Envelope 1 to be opened at Location One, by the IC.

Status report from the zoo (printed spreadsheet) flash drive with electronic spreadsheet that can be updated as new information becomes available (Beast lists in Appendix II), printed map of the local area (for use in the later mobile operation).

Envelope 1 to be opened at Location Two, by shelter manager

Messages 1-2 (Appendix IV) to shelter manager

First batch of rumors (Appendix III) to shelterees

At Location Three, the EOC sets up a formal net on the local repeater, which has battery power.

Information contained in the 0930 injects include an initial zoo situation report. A nasty tiger, a cage of giant African assassin bugs, an unknown number of snakes, and possibly a capybara, have gone missing. The lock on a cage of gibbons had to be improvised with duct tape.

The MARC unit is able to hear all traffic on the amateur net, and should be able to communicate on amateur as well as public safety frequencies, as the MARC unit leader is also a licensed amateur. Moreover, the MARC unit also has FRS radios and can listen to the actors' description of events as they unfold. Throughout the exercise, the MARC unit is engaged in a friendly contest with respect to the amateurs – who can transmit what information accurately, efficiently, and most quickly?

1000

Envelope 2 to be opened at Location Two by the shelter manager

Formal messages 3-4 (Appendix IV) (formal meaning written and purporting to be from a third party authority)

Another batch of rumors to shelterees (Appendix III)

At Location One, actors at Santa Fe begin their routine (only source of reliable information for IC and Public Safety) (Appendix VI).

1. Tiger seen in the vicinity of Santa Fe by officials; kills a stray dog; eludes capture
2. The traffic light timing system in Gainesville has a catastrophic failure such that all the timing devices explode, one after another, down each main road, some starting fires. This problem is noticed both by the Santa Fe actors and by a few shelterees.
3. Gainesville is out of gas, and I-75 is a parking lot
4. A Florida black racer (common native snake) is among the missing zoo creatures
5. GPS service went out with the power
6. Tiger loose in a retirement village south of the college; not everyone was able to be evacuated by 1015. Woman at shelter says that her son had some strange bugs in his bedroom; non-committal about where he got them. She has a photo on her cell phone.



Actors set up at Santa Fe College. Drone footage by James Carr, KC4MHH.

Many shelterees (location 2) report having seen snakes, lions, tigers, even a rhino charging a car. There is a rumor that some enormous blood-sucking bugs that transmit Ebola are on the loose. Maybe they are part of someone's science experiment. Maybe they are genetically engineered! (Appendix III).

Others report failed lift stations, traffic crashes due to malfunctioning and exploding traffic light timers, nursing homes in distress, etc.

This is the kind of hysterical information emergency communicators might deal with, and the problem is clearly one of judgment. Since amateurs are told only to pass messages, and not exercise judgment as to the content of information, what is the amateur to do? Edit? Refuse to pass as traffic on the Net, etc.? Our intent was that all the traffic would be passed to the EOC, and the EOC operators would check on the validity of the information by comparing notes with the observers near Santa Fe College (FRS actors).

Again at Location 2, the shelter, there are emerging medical emergencies. The envelope for the shelter includes several formal messages about these conditions, meant to be sent by WINLINK. (Appendix IV)

1030

At Location Two, the shelter manager is instructed to open Envelope 3

Message 5-6 to shelter manager (Appendix IV)

Another batch of rumors to shelter actors (Appendix III)

Out of County formal message arrives explaining the cause of the infrastructure problems; requires response from EOC (Appendix V). Everyone learns that the outages are caused by an international deliberate computer hack that has taken out the power grid. Other infrastructure also has been targeted (as apparently has Gainesville's traffic light timing system, causing spectacular explosions and resulting fires all over town).

At Location 1, the IC is asked to request a status report from the zoo He has to ask VJ, a volunteer actor, to bring the updated spreadsheet and fact sheet on *Platymeris* (missing bugs). The bug information includes the following juicy detail:

Platymeris biguttatus, known as two-spot assassin bugs, are spectacular large bugs of African origin that are predators on other insects. Like other insects in the order Hemiptera, they have sucking mouthparts. (They cannot chew.) They inject liquefying venom into their prey that allows them to drink their food. These bugs have a painful bite. In spite of this, they are in the pet trade, and they also are kept as exhibits in zoos. It is not legal to keep *P. biguttatus* in Florida without a permit because of potential for naturalization in the state.



Platymeris biguttatus. This photo, taken from Wikipedia: Photo by Greg Hume (Greg5030) - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=12503756>, was used on the fact sheet to identify the stolen insects in the scenario. A matching photo was captured on a cell phone belonging to one of the shelterees.

At Location 3, the EOC is tasked to produce an updated bulletin for posting on the shelter WIFI.

The IC (Location 1) should receive a photo from the shelter (Location 1) from the lady's phone to confirm the bugs based on the fact sheet. Since the address is known, someone can be sent to retrieve the bugs. There is a sign in the yard at the location about 2 miles from Santa Fe College (installed by the exercise coordinators before the exercise). Since GPS is not working, IC uses map provided in Envelope I to give directions to the driver. This task involves mobile communications operations.

New information from the zoo team (Appendix VI):

- Gibbons were able to escape (duct tape failed, as expected)
- Two of three pythons found
- Capybara is OK
- Tiger is terrorizing the retirement village
- An altercation with shots fired over a Pepsi occurred at a gas station on 39th avenue

1100

At Location Two, the shelter, the manager is directed to open Envelope 4

Formal messages 7-8 to shelter manager (Appendix IV)

More rumors (Appendix III)

For Location One, the IC receives new information from the zoo team (Appendix VI):

- Tiger continues to terrorize the retirement community
- A large lady is stranded on her porch roof in a wheelchair. A front-end loader is requested for her rescue (address is available if someone asks)
- A semi-trailer catches fire on I-75
- Tiger bounds out of a dumpster frightening the garbage collector

The IC decides that the tiger issue can be resolved by use of aerial reconnaissance. IC directs deployment of the air operations team. The air ops team involves amateur radio operators who also are licensed drone operators. It is time for the air operations to help catch the tiger. The drone goes up, and “Billy and Jake” use FRS radios to talk to each other to catch the tiger, using video footage from the drone. Air ops must communicate what is happening to the IC. Air ops is basically co-located on the Santa Fe grounds with Location 1, so simplex will work.

1130

Updated info from the zoo that only the Florida black racer and the gibbons are still loose. The decision is to let the racer go and find another one someday. Animal control will be needed for the gibbons, because they are swinging in the trees, and maybe also from some cell phone towers.

Envelope 5 is opened by the shelter manager

Formal message 9 (shelter count) to shelter manager (Appendix IV). The shelter count information is a formal message intended for digital transmission.

1145

The tiger is captured.

1200

End of exercise. Teams redeploy to the central “hot wash” location for lunch and an after action review. The details of the time line, information flow, and who should be doing what, are in Table 1, as follows.



Drone footage of the chasing the tiger. Drone footage by James Carr, KC4MHH



Susan Halbert PhD KG4VWI speaking at the hotwash post-exercise discussion.

TABLE 1. SCENARIO TIMELINE AND EVENTS²

Event #	Event Time	Event Description	Responsible Controller	Recipient Player(s)	Expected Outcome of Player Action
	900	Start of Exercise (StartEx)			
01	0900	Set up equipment	Hams plus Fire-Rescue	All	Equipment up and running
02	0930	EOC begins net	EOC	Shelter & IC	Directed net begins
03	0930ff	Messages from shelterees	Actors in shelter	Net/EOC	Operators in shelter pass messages to EOC and IC
04	0930ff	Messages from shelter manager	Actors in shelter	Net/EOC	Operators in shelter pass messages to EOC and IC
05	930	First bulletin sent to shelter WIFI	EOC	Shelter WIFI	Shelter WIFI operator receives bulletin
06	930ff	Respond to messages from shelter and IC	EOC	Shelter and IC	Shelter and IC receive responses to rapidly developing events
07	0930ff	Transmission of zoo updates as available	IC	EOC and shelter	IC keeps others aware of the situation at the zoo
08	1000	Shelter WIFI posts first bulletin	Shelter WIFI	Actors in shelter	Bulletin is available on cell phones and does not contain fake news
09	1000	IC finds actors on FRS radio	Zoo employee actors	IC, Fire-Rescue	IC and Fire-Rescue are expected to find voice actors on FRS radio and listen for developing problems. They are allowed to ask questions on FRS.
10	1000	Traffic light timers are exploding and causing fires	IC	EOC/net	Information should be reported to the net and Public Safety
11	1000	Tiger has found its way to the Village retirement community; not everyone has been evacuated	IC	EOC/net	Information should be reported to the net and Public Safety
12	1015	Whereabouts of missing bugs becomes known	Shelter station	EOC, IC	Shelter station transmits photo from actor's cell phone to EOC and IC

² This serves as the Master Scenario Event List

Event #	Event Time	Event Description	Responsible Controller	Recipient Player(s)	Expected Outcome of Player Action
13	1030	Missing bugs can be collected	IC, mobile unit		IC dispatches someone with mobile radio to address for the bugs
14	1030	Gibbons escaped from the zoo	IC	EOC, net	Report problem
15	1030	Altercation occurs at a gas station with shots fired	IC, Fire-Rescue	EOC, net	Problem reported to net and Public Safety
16	1030	WIFI bulletin transmitted, posted	EOC, Shelter WIFI	Actors in shelter	Bulletin can be accessed on cell phones; information up to date, but no fake news
17	1030	WINLINK message from out of the county sent to IC about the cause of the power outage	Volunteer out of the county	IC	Respond to and forward the message to EOC and shelter
18	1100	Large elderly lady stranded on the roof in a wheelchair; eating dried squid	IC, Fire-Rescue	EOC	Ask actors for the address; relay information to EOC, public safety; request front-end loader to rescue lady
19	1100	Semi trailer catches fire on I-75	IC, Fire-Rescue	EOC	Inform EOC and Public Safety about the fire
20	1130	Request Animal Control to rescue gibbons	IC, Fire-Rescue	EOC	IC and Fire-Rescue send request for Animal Control to rescue escaped gibbons
21	1130	Air ops begin	Drone team		Drones begin to fly to help find and catch the tiger
22	1130	Final bulletin sent from EOC to shelter WIFI station	EOC	Shelter WIFI	Bulletin sent to shelter WIFI operator to be posted
23	1130	Final bulletin posted in the shelter	Shelter WIFI	Actors in shelter	Bulletin with updated information but no fake news, accessible on cell phones
24	1130	Final shelter count sent to EOC by WINLINK	EOC	Shelter station	Shelter count sent
25	1145	Capture tiger	Drone team, actors	Tiger (actor)	Tiger located and captured
26	1200	Lunch	All		

4 RESULTS

SAFETY

There were no safety issues. There were no personal injuries or property damage. There was no panic or misunderstanding caused by team failures to use proper “this is a drill” communication disclaimers.

HOTWASH EVALUATION

The hotwash evaluation occurred over lunch at a local restaurant. Everyone seemed to have had a good time, and lots of learning occurred. At the same time, people found the rapidly evolving situation at the zoo and in town to be a challenge to keep up with. All teams had struggles with deploying and troubleshooting equipment.³ The overall evaluation is explored in greater depth below; but it bears saying here that the consensus was that too much was attempted in too little time; that pre-deployment equipment familiarization and team leader briefings are an excellent idea; and that greater understanding of the difference between formal and informal messaging would have alleviated record keeping logjams. Teams were what they could be based literally on who could participate and what skills and equipment they brought to the table. This was reflected in technical difficulties with equipment and establishing both voice and digital communications, and with ICS form familiarization.

WRITTEN PARTICIPANT EVALUATIONS

We did not utilize this evaluation method.

3 GLG: Our team became preoccupied with a difficulty getting transmitter and antenna to cooperate and make desired communications and became hopelessly disconnected from the rapidly evolving situation being communicated over FRS radio. A significant lesson in situational-awareness failure, in retrospect.

TABLE 2. MESSAGE TRANSFER

TRAFFIC COUNTS	INFORMAL	FORMAL	
VOICE	7	30	Total Voice 37*
DIGITAL	0	13	Total Digital 13
Total	7 Informal	43 Formal	50 Grand Total

TABLE 3. ANALYSIS OF MESSAGE TRAFFIC BY MODE AND TYPE

Total Message Count	50
Percent by Voice	74%
Percent by Digital	26%
Percent transacted as formal	86%
Percent Formal accomplished digitally	30%
Percent Formal accomplished by voice	70%

Note: These figures in the previous two tables do not include Public Safety messages.

TABLE 4. ANALYSIS OF MESSAGES MOVED

WINLINK TIME	SENT BY	CONTENT OF MESSAGE
1008	KI4TRR (out of County)	Power out! test message Suwanee County
1043	KM4JTE (shelter)	Power out! test message 1
1053	KX4Z (IC)	Acknowledge message from Suwanee Co.
1050	KX4Z (IC)	Zoo situation
1056	KX4Z (IC)	Reply to Suwanee Co
1103	KX4Z (IC)	Forward message from Suwanee Co.
1112	KX4Z (IC)	Forward from Suwanee County
1125	KM4JTE (shelter)	Medical situation
1125	NF4AC (EOC telnet)	Alachua Bulletin 1
1125	KM4JTE (shelter)	Power out! test message 2
1130	NF4AC (EOC telnet)	Alachua County Bulletin #1
1141	KX4Z (IC)	Acknowledge medical situation
1145	KX4Z (IC)	Acknowledge Power out! message 2

TABLE 5. ANTENNAS AND SITUATIONS

TEAM	ANTENNA	COMMENTS
Incident Command	Wire antenna	Worked well
Shelter	Wire antenna	Worked well
EOC	Existing antenna for the station	This proved challenging
Public Safety	Deployed tower	Worked well

TABLE 6. COMPILATION OF MESSAGES TRANSACTED (BASED ON ICS-309)

Unit	Sent		Received	
	Voice	Winlink	Voice	Winlink
Incident Command	3	7		7
Shelter	21	3		3
EOC	5	3	30	2
Public Safety	2		11	2

Note: All ICS 309 forms and communication logs are in Appendix 1. These numbers are best estimates.



Incident command station. Photograph by Leland Gallup, AA3YB.

5 EXERCISE CATEGORIZATION

Exercise Name	Power Out!
Exercise Dates	30 March 2019
Scope	This exercise is a full-radio deployment exercise, planned for 3.5 hours at 3 different locations in Alachua County, Florida. Exercise play includes radio communications, drone operation, short mobile operation in a car.
Mission Area(s)	Response
Core Capabilities	Function in an ICS framework; Create antennas; Provide electrical power for radios independent of public infrastructure; Determine the best way to transmit various kinds of information by radio; Maintain situational awareness
Objectives	<ol style="list-style-type: none"> 1. Assess the ability of the ARES group to stand up an emergency ARES net, sending formal and informal traffic by voice and digital communications between the EOC, a shelter, and an evolving field situation 2. Assess the ability to set up and populate "Shelter A" WIFI with vetted information such that untrained volunteers can receive up to date information on their smart phones. 3. Assess the ability to deploy and care for personal and County equipment in a field exercise, with proper documentation
Threat or Hazard	Widespread infrastructure failure, compounded by a zoo escape.
Scenario	Catastrophic infrastructure failure due to international computer hacking, compounded by dangerous animals escaping from a local zoo.
Sponsor	Santa Fe Amateur Radio Society and North Florida Amateur Radio Club
Participating Organizations	59 participants primarily from Florida, involved at their own expense; some involvement by County and Florida State assets (MARC Unit).

**Exercise
Name**

Power Out!

**Point of
Contact**

6 ANALYSIS: HOW THINGS WENT, CORE CAPABILITIES, IMPROVEMENTS

Each of the scenario objectives was intended to assess one or more of the year's core capabilities. While what follows is a detailed unpacking of the key elements of the exercise analysis, there are some things that can briefly be touched on to set up the discussion.

The major challenges faced both by the Amateur Radio team and the Fire-Rescue team had to do with equipment failures and familiarity shortfalls. For example, as to equipment, the antenna at the EOC failed for the exercise. It worked the week before the exercise when the event planners thoroughly inspected the EOC facilities. Yet, as often is the case when reality meets a plan, something happened in the interim to the EOC's antennas. The EOC team spent most of their exercise time on the roof of the building fixing the antenna. In the intervening year, the antenna situation at the EOC has been given the attention and funding required. We now have a solidly working antenna and a back-up.

Similarly, the IC team and the shelter team had equipment issues. Digital communications were not established at the shelter until the very end of the exercise (VHF packet), and full digital capability was not achieved at the EOC. The IC team also were able to set up digital capabilities for both HF and VHF near the end of the time period. Another major issue was that the IC team did not realize that most of their valid information would come via the FRS actors. Although they were able to communicate with the FRS actors early in the exercise, they failed to pay attention thereafter, thereby missing much important information that the EOC needed to know. Redressing these shortcomings involves pre-exercise team leader briefings, constant equipment and software familiarization, and increased awareness of differing message requirements (formal versus informal).

The Fire-Rescue team also had some surprise equipment issues early in the exercise. After those issues were fixed, they learned to listen to the FRS team and informed the IC about LEO and fire issues when heard. They did not ask any of the actors for clarifications, but they did listen. **Fire-Rescue, overall, did quite well and it is a tribute to that community's professionalism.**

Tables 6-8 below, show Power Out! tasks and the skills to be assessed for each location/team. The teams' success or failure is matched with each skill to be assessed. The table includes a "grade," a performance metric, and an explanation of the metric assessment.

An assessment of each of the Alachua ARES Core Capabilities that the authors wanted this exercise to address follows the tables. Not only are the core capabilities spelled out as they were contained in the exercise plan, but also this section lays out improvements that need to be made. We regard the improvement plan as the most useful part of the after-action review and this document.

Saying went wrong matters little if there is no recognition of what can be done to make things go right in the future. Every exercise should be a challenge that stretches everyone involved, who then have the opportunity to reflect carefully on mission successes and failures and who have give thought to how things can change for the better. Much improvement has been made in the intervening year since this exercise. Some of these changes are noted in the improvement plan.

TABLE 7. EOC TASKS

Task	Skill assessed	Performance	Comments
Net begins at 9:30	standing up an emergency directed net	P	VHF net worked well, but the large amount of message traffic was passed on the prime net frequency: traffic could have been delegated to a different frequency, keeping the principal net frequency open.
9:30 bulletin sent to shelter	Digital transmission capabilities; communication between the EOC and the public	U	Digital and HF capabilities at the EOC were a challenge. The antenna on the EOC roof had worked the previous week, as had WINLINK, but on the day of the exercise, nothing worked. The EOC crew spent most of the morning on the roof of the EOC building fixing the antenna – critical time lost in a short exercise.
Respond to messages (39 from shelter plus some from IC and one email from State officials)	Assessing the best way to send messages; digital and voice capabilities; sending ICS forms over the air	S	All messages went (verbatim, including rumors) by voice transmission, via the main emergency net. Few if any digital messages were sent except for a few by the internet late in the exercise. Message from outside the county worked well.
10:30 bulletin to shelter	Digital transmission capabilities; communication between the EOC and the general public	U	Still no digital capabilities at the time set for this task
11:30 bulletin to shelter	Digital transmission capabilities; communication between the EOC and the general public	S	Digital capabilities finally established to some extent.

TABLE 8. IC/FIRE-RESCUE TASKS

Task	Skill assessed	Performance Amateur	Performance Fire-Rescue	Comments
Find actors on FRS	Situational awareness	Intermittent	Learned by the second half of the exercise	Amateur attention to FRS dialogue was intermittent; Fire-Rescue team learned to listen by the second half of the exercise. They responded in particular to fires and LEO problems
Transmit info on bug fact sheet	digital message capabilities	U	U	Fire-Rescue group had no digital capability; IC digital capability was slow to set up, but they had both HF and VHF WINLINK working by the end of the exercise.
Transmit zoo updates	message capabilities	S	U	Zoo updates were not transmitted digitally, which would have been the best way. Printed information in the first envelope was transmitted for the most part by IC, but updates from FRS team were missed.
Respond to multiple fires from burning traffic light timers	short message communications/interactions with EOC and community	U	U	Neither group had found the FRS actors by the time they were talking about this problem.
Advise EOC of need to warn The Village	short message communications/interactions with EOC and community	U	P	This problem involved public safety, so the Fire-Rescue team picked up on it.
Find and fetch the bugs	mobile communications	U	U	Mobile communications were not tested, because nobody attempted to find the bugs. They were able to figure out the address, based on coordinated information from the shelter.
Escaping gibbons	short message communications/interactions with EOC and community	U	U	Information about this problem came only from the FRS team, and neither Fire-Rescue nor the IC team noticed this issue.
Advise EOC about traffic crash and ensuing altercation	short message communications/interactions with EOC and community	U	P	Public safety picked up on this one and warned the IC. The only source of this information was the FRS team.
Advise EOC about burning semi-trailer on I-75	short message communications/interactions with EOC and community	U	P	Public safety picked up on this one and warned the IC. The only source of this information was the FRS team. The public safety team response to this emergency was swift and thorough.
Need for rescue for the old lady in a wheelchair eating squid on the roof	short message communications/interactions with EOC and community	U	S	Public safety picked up on this one and warned the IC. The only source of this information was the FRS team. Fire-Rescue reported this problem but did not ask FRS actors for the address of the lady in distress.

POWER OUT! AFTER-ACTION REPORT AND IMPROVEMENT PLAN

Task	Skill assessed	Performance Amateur	Performance Fire-Rescue	Comments
Keep EOC apprised about whereabouts of beasts, especially the tiger	short message communications (especially digital)/interactions with EOC and community	U	S	Group was provided with an electronic version of the spreadsheet that had the first zoo report. It could be modified easily based on printed updates in subsequent envelopes. Neither team used digital communication to transmit this information. IC team did not follow updates from FRS team.
respond to State EOC message (with EOC)	digital message capabilities/communication by WINLINK from outside the area	P	P	This aspect worked pretty flawlessly. The IC received the WINLINK message and informed the EOC, and the information later was transmitted in the only bulletin in the shelter. Public safety received the email (one member has an Amateur license).
Call for Animal Control for the loose gibbons	short message communications/interactions with EOC and community	U	P	IC team did not pick up on this information, because the only source was the FRS team. Fire-Rescue responded by informing the IC.
Monitor info from EOC; respond to rumors	short message communications/interactions with EOC and community	U	S	Fire-Rescue team responded to reports of fires and law enforcement incidents if heard. EOC mostly didn't receive this information, because the source of most of it was the FRS team.
supervise air ops	interactions with air operations/learning air ops ICS forms	P	n/a	Air ops worked well.
Find the tiger	interactions with air operations/learning air ops ICS forms	P	n/a	Air ops worked well.

TABLE 9. SHELTER TASKS

Task	Skill assessed	Performance	Comments
Regular station sends 26 messages from shelterees, 8 from shelter manager, 5 messages from the nurse	Rumors from shelterees were intended as informal tactical information; messages from the shelter manager and nurse were intended as formal messages to be sent as ICS forms or radiograms. The messages were intended to test message handling, decisions about the best way to send messages, and digital communications, especially using ICS/Radiogram forms with WINLINK.	P	All messages were sent by voice, using a formal message format. Digital communications were not established until late in the exercise.
WIFI station posts bulletins without any "fake news" at 10:00, 10:30, 11:30	EOC communication with the community; becoming better known; last mile communications	P	WIFI operational at 0930. First bulletin received from the EOC at 11:40. The bulletin consisted of the statement from outside of the county. No other bulletins were posted, but that was not the fault of the WIFI station.

Ratings Definitions:

Performed without Challenges (P): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws.

Performed with Some Challenges (S): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws. However, opportunities to enhance effectiveness and/or efficiency were identified.

Performed with Major Challenges (M): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s), but some or all of the following were observed: demonstrated performance had a negative impact on the performance of other activities; contributed to additional health and/or safety risks for the public or for emergency workers; and/or was not conducted in accordance with applicable plans, policies, procedures, regulations, and laws.

Unable to be Performed (U): The targets and critical tasks associated with the core capability were not performed in a manner that achieved the objective(s).

Objective 1: Ability of the ARES group to stand up an emergency ARES net, sending formal and informal traffic by voice and digital communications between the EOC, a shelter, and an evolving field situation

The strengths and areas for improvement for each core capability aligned to this objective are described in this section.

Core Capability: Mobile communications

This capability was never assessed. It was supposed to happen when IC sent a vehicle to fetch the missing bugs (actually a sign at a residence about 2 miles away). Nobody did this.

Core Capabilities: Communications between the EOC and the rest of the community

The EOC team successfully established an emergency net on the local VHF repeater almost immediately. All the teams checked in right away, and message traffic began on schedule. Although the Shelter WIFI station was running, there were no bulletins posted until just prior to the end of the exercise, because the EOC did not have digital capability until late in the allotted time and could not timely transmit information for posting on the shelter WIFI server.

Strengths

The partial capability level can be attributed to the following strengths:

- **Strength 1:** Previous experience of many of the participants with exercises.
- **Strength 2:** Participants generally succeeded well in finding frequencies, setting up command net, and related tasks that are similar to common experiences in hurricane deployments other group activities.
- **Strength 3:** Participants have had a lot of experience setting up ARES nets for many years because of multiple hurricane deployments and frequent public service events such as helping with logistics for the March of Dimes and the local marathon.
- **Strength 4:** The team that provided the WIFI station for the shelterees has had prior practice in setting up that station.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

- **Area for Improvement 1:** Checking the EOC radio room and equipment the day before the exercise could have helped alleviate the severe equipment issue that prevented the EOC from effectively communicating on HF. VHF voice communications worked fine, but not packet WINLINK .
- **Area for Improvement 2:** The EOC was not kept informed of the rapidly developing problems with the zoo and with infrastructure failures around town.
- **Area for Improvement 3:** Bulletins did not get to the WIFI station, because digital capability at the EOC did not get established until late in the exercise. Once that happened, however, the WIFI bulletin was posted.

Analysis: The group needs practice rapidly deploying HF capable digital stations, and trouble shooting these modes when problems arise. We also need practice setting up remote, independent stations, especially those with digital capabilities. In a recent exercise, we were able to deploy HF and VHF digital stations within 30 to 40 minutes after arrival at the site. Much improvement has been made since this exercise.

Core Capabilities: Short message communications, traffic sending ability by all teams

These capabilities are combined, because they are both about sending message traffic.

Strengths

The partial capability level can be attributed to the following strengths:

- **Strength 1:** Previous experience of many of the participants with exercises.
- **Strength 2:** Participants generally succeeded well in finding frequencies, setting up command net, and related tasks that are similar to common experiences in hurricane deployments other group activities.
- **Strength 3:** Voice radiograms were transmitted very well, and all the messages were transferred during the allotted time. The people who did this have had a lot of practice sending Radiograms for many years.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

- **Area for Improvement 1:** All the messages were transmitted (well) as voice ARRL radiograms. However, many of the messages (rumors) were intended as short communications to inform the EOC about the evolving field situation. Practice is needed in determining the correct format for message sending. Time was needlessly spent sending content as a formal written message (Radiogram) that should have gone as a quick tactical message.
- **Area for Improvement 2:** One location sent no digital messages by the radio, and digital capability was achieved only late in the exercise at the other two venues. This was due primarily to equipment challenges. Several of the messages were intended to be sent digitally, especially the ones from the “nurse.” This did not happen, because digital communication was not established at Location Two, the shelter until they got VHF packet working late in the exercise (see Table 4).

Analysis: Teams got a huge amount RIGHT, especially voice message handling! There were numerous complex messages to be sent, especially from the shelter. This was done professionally and efficiently. Equipment challenges were the main problem. Practice is needed in setting up independent stations, especially stations with digital capability. This capability was largely achieved in a recent exercise in March 2020. Practice also is needed in determining when a formal Radiogram format is needed, versus a short communication.

Core Capabilities: FEMA forms (ICS) transfer

Strengths

The partial capability level can be attributed to the following strengths:

- **Strength 1:** Previous experience of many of the participants with exercises and with working in an ICS environment.
- **Strength 2:** Many of the forms were filled properly, owing to previous experience with the forms. Air Ops did a superb job filling the proper forms, owing to a lot of previous experience doing this.

for Improvement

The following areas require improvement to achieve the full capability level:

- **Area for Improvement 1:** All the messages were transmitted (well) as voice ARRL radiograms. However, many of the messages (rumors) were intended as short communications to inform the EOC about the evolving field situation. Practice is needed in determining the correct format for message sending.
- **Area for Improvement 2:** There were no digital radio messages sent from one of the venues, and digital capability was achieved only late in the exercise at the other two venues. This was due primarily to equipment challenges. Several of the messages were intended to be sent digitally, especially the ones from the “nurse.” This did not happen, because digital communication was not established at the shelter. Thus, there was very little practice sending ICS forms over the radio. We had more success in sending forms in our recent exercise in March 2020.

Analysis: Given equipment and digital mode challenges, teams got a huge amount RIGHT, especially as to voice message handling! While equipment challenges were the main problem. practice also is needed in setting up independent stations, especially stations with digital capability. Practice also is recommended for determining when a formal Radiogram format is needed, versus a short

communication. ICS forms are best transmitted by WINLINK, but no working digital communications were available anywhere until late in the exercise.

Additionally, especially at the IC station, practice was needed in working in an ICS format. There was a lack of delegation of responsibility. The IC himself is not responsible to do all the tasks, only to make sure the tasks get done. The team would have functioned better by assigning tasks to the people best qualified to do them, i.e., someone to listen to the FRS actors and report to another person who monitored the emergency ARES net, and someone else to figure out the equipment problems and get the digital station up and running. (They had a team of four people.) Many of these problems would have been obviated by briefings the day/night before, so that designated team leaders could have had a firmer grip on their teams and their missions. This can allow team leaders to better task and organize their operators – with the result that time can be spent sending and receiving communication as opposed to resolving equipment and familiarity concerns.

Core Capabilities: Traffic sending; selecting appropriate modes

Strengths

The partial capability level can be attributed to the following strengths:

- **Strength 1:** Previous experience of participants in shelters and public events
- **Strength 2:** Several people at Location Two, the “shelter” location were highly capable at moving voice traffic.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

- **Area for Improvement 1:** All the messages were transmitted (well) as voice ARRL radiograms. However, many of the messages (rumors) were intended as short communications to inform the EOC about the evolving field situation. Practice is needed in determining the correct format for message sending.
- **Area for Improvement 2:** There were no digital radio messages sent from one of the venues, and digital capability was achieved only late in the exercise at the other two venues. This was due primarily to equipment challenges. Several of the messages were intended to be sent digitally, especially the ones from the “nurse.” This did not happen, because digital communication was not established until late in the exercise at the shelter.

Analysis: Same analysis applies here as with the above two capabilities. Many of the problems were being fixed successfully by the end of the exercise, a mere three hours. Equipment issues were temporary and probably would have been resolved in a timely manner in a real world event of uncertain length.

Objective 2. Assess the ability to set up and populate "Shelter A" WIFI with vetted information such that untrained volunteers can receive up to date information on their smart phones.

The strengths and areas for improvement for each core capability aligned to this objective are described in this section.

Core Capability: EOC communications with the rest of the community

The EOC team successfully established contact on the local VHF repeater almost immediately. The team struggled to establish digital communications, but other teams did not have this capability either until late in the exercise.

The shelter WIFI station was running by 9:30 AM, and people could receive it on their cell phones.

Strengths

The partial capability level can be attributed to the following strengths:

- **Strength 1:** Previous experience of the participants with exercises.
- **Strength 2:** Participants have had a lot of experience setting up ARES nets for many years because of multiple hurricane deployments and frequent public service events such as helping with logistics for the March of Dimes and the local marathon.

Areas for Improvement

The following areas require improvement to achieve the full capability level:

- **Area for Improvement 1:** The EOC was not kept informed of the rapidly developing problems with the zoo and with infrastructure failures around town, so updated information was not provided to the shelter. The EOC did not have any independent source of information to vet the large number of alarming rumors emanating from the shelter. The lack of digital capability at the EOC (only towards the end of the exercise) limited our ability to support this objective.
- **Area for Improvement 2:** Equipment was a major problem. It took most of the exercise time to set up the equipment, especially for digital communications.

Analysis: Operators need practice trouble-shooting digital stations. Emergency communicators should also practice setting up remote, independent stations, especially those with digital capabilities. Situational awareness also is an area for practice.

Core Capability: Becoming better known

The team involved people who are not regulars in the Alachua County ARES group, along with several non-HAMs who participated as actors. They enjoyed themselves and were exposed to the capabilities and excitement of Amateur Radio. They had a lot of fun and wanted to do it again.

Strengths

The partial capability level can be attributed to the following strengths:

Strength: Many people participated, including some people who do not normally participate in ARES drills. Most had an enjoyable time. Several people who were not amateur radio operators also participated, including actors at the “shelter” and the “zoo employee” actors. All of them got a taste of Amateur Radio capabilities and had a good time. Before the exercise there had also been press release outreach to local media and an article in the Santa Fe College newsletter.

Area for improvement: There was a hope to call on students from Santa Fe College to participate in the exercise, either as actors or as HAM participants (Santa Fe College Amateur Radio Club). This did not occur. Follow up with media might have improved media coverage of the event.

Analysis: We largely succeeded in our goals for this Core Capability. Once again, equipment deployment and the short overall exercise period presented the biggest challenge.

Objective 3. Assess the ability to deploy and care for personal and County equipment in a field exercise, with proper documentation

Strength: No County equipment, other than that already in place at the EOC or used by the Alachua Fire-Rescue, was used and accounted for. No personal equipment was lost, damaged, or destroyed. ICS 211 was indeed used at the exercise pre-brief before deployment to record participants.

Area for improvement: Use County-provided VHF “go boxes” for tactical voice net operations with local repeaters. This will give practice with the county equipment (that we are likely to use in a real deployment) and also give practice in the paperwork necessary to account for all the equipment. Additionally, the locations may have been capable of simplex or relay operations without a repeater, but this was not tested.

Analysis. The major purpose of this objective was to become familiar with the ICS forms that document and trace physical assets. The reason for this is that when we are deployed for hurricanes or other emergencies, we will be assigned equipment belonging to Alachua County, as well as personal equipment. The County needs to be able to track all its equipment. Moreover, in order to get reimbursed for emergency expenses, the County needs documentation about what equipment (including detailed descriptions of make, model serial number, etc.) was used to respond to the incident. This level of documentation is much more detailed than our previous practices. We filled some, but not all, of the forms required. Maintaining inventories of all County and personal equipment used in emergency deployment is a challenge.

7 IMPROVEMENT PLAN

While it is good to think about what happened in an exercise and reflect on how things might go better next time around, without a plan on how to get better there is no sustainable pathway to improving a group over time. The following is an improvement plan in tabular form – what the authors believe that the Alachua ARES group might do to put in to effect the improvements we believe we can and must make. Other amateur emergency communications groups may profit from what we learned in Power Out!

TABLE 10. IMPROVEMENT PLAN

Item	Core Capability	Area For Improvement	Corrective Action	Suggested Primary Organization	Outcome (FILL IN AS REPORTED)
1	Mobile communications	The task to assess this capability did not occur	Try again in another exercise	Plan a mobile communications exercise in the next SET	
2	Communications between the EOC and the rest of the community	Antenna at the EOC needs improvement. It's cumbersome to deploy and has a poor signal to noise ratio	Provide a better antenna; fix the deployment challenges and improve signal to noise ratio	Work with EOC staff to take corrective action.	Completely new, far lower noise antenna installed and previous antenna is now the "backup."

Item	Core Capability	Area For Improvement	Corrective Action	Suggested Primary Organization	Outcome (FILL IN AS REPORTED)
3		There was no digital capability at the EOC.	Operators at the EOC need training on using the equipment there. We need to practice sending and receiving more messages to and from the EOC.	Next SET should have a big role for the EOC to test all the equipment there and train its operators.	AA3YB has activated the EOC radio room every week for six months – now very digital capable.
4	Short message communications by digital modes	There was little digital communication.	Practice setting up digital stations in the field. 1. Sending VHF packet messages across town. 2. Sending HF WINLINK messages using field equipment	Next SET should have a digital practice component. We also could practice on a Saturday without a full-scale SET.	There has been one SET since Power Out! which has practiced this somewhat. The exercise in March 2020 confirmed vast improvement in setting up digital stations.
5	FEMA form transfer; working in an ICS environment	Sending FEMA forms by and WINLINK	Short tutorial about how to find the forms and attach them to messages.	This skill can be practiced anywhere with a WIFI connection, because the forms can be sent by Telnet. If we can do them by Telnet, and we can send any WINLINK, we can send the forms by WINLINK.	A minority of our group is now facile at this ability.

Item	Core Capability	Area For Improvement	Corrective Action	Suggested Primary Organization	Outcome (FILL IN AS REPORTED)
6	Working in an ICS format	We are learning to fill the forms, but there is still more understanding needed of the ICS roles.	Practice many small scale table-top scenarios where everyone gets to be IC, logistics chief, ops chief, etc.	Every SET and other exercise should have a chance to practice the ICS framework.	This was practiced at the 2020 Alachua EMCOMM Conference. Moreover more of us have taken AUXCOMM, an intensive course on functioning as an amateur radio operator in a public safety context Furthermore, our group did a fully ICS-based Field Day which helped teach the roles.
7	Selecting appropriate modes of sending traffic	This core skill was not really practiced, because only voice communication operated for much of the exercise.	Practice setting up digital communication equipment in remote settings; practice choosing how to send messages.	The next SET should repeat this opportunity to practice.	
8	Set up "Shelter A" WIFI for the public	As far as we can tell, there was no problem with this, except that the information to post was lacking. More people need this capability, however.	Have a lab session to build and test more units. The two or three people who know how to do this can teach the ones who are building new units.	Can be accomplished in one or more "lab and lunch" activities.	Somewhat stalled locally by upgrades to raspberry pi operating systems.

Item	Core Capability	Area For Improvement	Corrective Action	Suggested Primary Organization	Outcome (FILL IN AS REPORTED)
9	Becoming better known	We need more opportunities to involve members of the public, colleagues (officials at the EOC, for example).	Make sure that our scenarios involve members of the public as actors, shelterees, etc. Involve officials at the EOC and elsewhere in planning and executing our training.	Can be accomplished by being intentional about these matters at each SET.	Our Field Day effort garnered significant local TV coverage.
10	Deploying, caring for, logging County equipment	Make sure all forms are filled that include all relevant information about the equipment we use, especially anything that belongs to Alachua County.	<ol style="list-style-type: none"> 1. Make sure inventories of all go-kits, batteries, EOC equipment are up to date. This can be done ahead of time. 2. Make pre-printed forms with all the details (serial numbers, etc.) that can be used to log items at time of deployment. 3. Each HAM needs to make similar forms for items they expect to take with them on deployment. 	Make sure we use these forms at each SET to get used to them.	

8 “POWER OUT!” EXERCISE: CONCLUSION

Power Out!, in the view of the exercise's developers and “players,” was a qualified success. While much during the exercise could have been done differently, that so much came together within the three hours allotted was a tribute to the skill, enthusiasm, and resourcefulness of the many amateur and public safety operators who participated.

Hurricane Michael was, of course, a severe “distraction” from the conduct of Power Out! Yet the authors and our colleagues did not want to let all the planning and preparation that had gone in to Power Out! go to waste. So six months after Michael we were back at it.

In the months since Power Out!, although not specifically cataloged in Section 7, Alachua County's amateur radio emergency communications group has made significant strides in improving our skills, ability, and professionalism. We are training vigorously as individuals, and we come together as a group to work on specific communication projects.

Our profound hope is that when the next significant disaster strikes Alachua County – only a question of time as we are in a dangerous hurricane neighborhood – we will be better operators because of what we learned in Power Out!

9 APPENDICES

APPENDIX I: ICS FORMS

Note: Forms that had personal information (e.g. check-in forms, etc.) are not included for reason of privacy.

APPENDIX II: ZOO STATUS SHEETS

APPENDIX III: RUMORS FOR THE SHELTER

APPENDIX IV: FORMAL MESSAGES FOR THE SHELTER

APPENDIX V: OUT OF COUNTY MESSAGE

APPENDIX VI: SCRIPT FOR ZOO EMPLOYEES

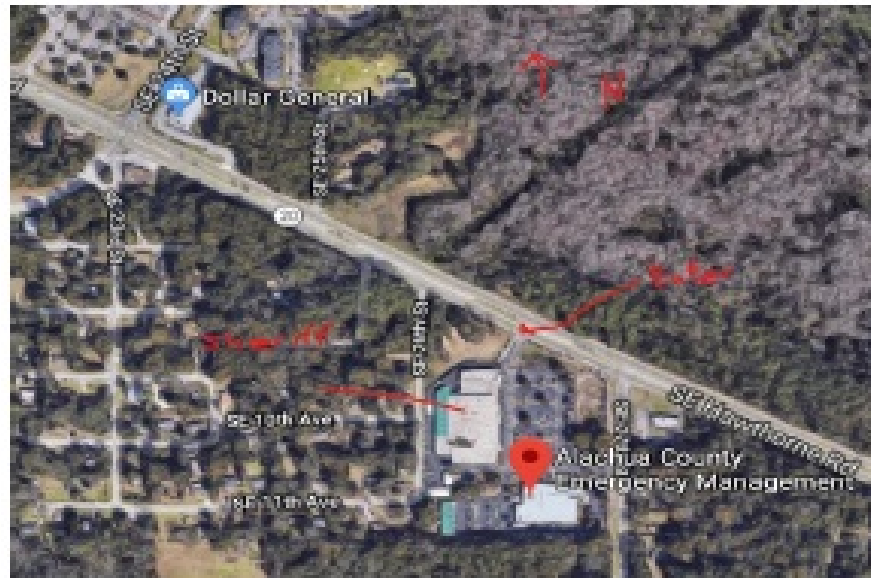
APPENDIX I: ICS FORMS

INCIDENT BRIEFING (ICS 201)

1. Incident Name: Simulated Emergency Test 2019	2. Incident Number: 4	3. Date/Time Initiated: Date: 03/30/2019 Time: 0815 local
4. Map/Sketch (include sketch, showing the total area of operations, the incident site/area, impacted and threatened areas, overflight results, trajectories, impacted shorelines, or other graphics depicting situational status and resource assignment):		
Santa Fe College/Perry Construction Institute. IC and Comms 1 Location		
NW 91 st St, Gainesville, FL; 1 st left southbound (from 39 th Ave NW), Perry Inst on right; IC and Comms 1 on left in open field with tree line on east side		
Gainesville Senior Recreation Center. Comms 2 Location. 5701 NW 34 th Blvd, Gainesville, FL 32653 (352) 265-9040; across from walmart on 121; northbound right turn in to parking lot of Senior Center.		

1. Incident Name: Simulated Emergency Test 2019	2. Incident Number: 4	3. Date/Time Initiated: Date: 03/30/2019 Time: 0815 local
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Alachua County Emergency Operations Center. Comms 3 Location.
 1100 SE 27th St, Gainesville, FL (352) 264-6500. SE Hawthorne Rd, on right hand side while southbound. EOC is in the back of the parking lot beyond the Sheriff's Department offices.



5. Situation Summary and Health and Safety Briefing (for briefings or transfer of command): Recognize potential Incident Health and Safety Hazards and develop necessary measures (remove hazard, provide personal protective equipment, warn people of the hazard) to protect responders from those hazards.

Situation Summary:

There is a wide-spread infrastructure failure. Grid electrical power, the Internet, and satellites do not work. It does not seem to be an EMP, because batteries, solar, and generators work, and can be used for field and EOC comms.

For the purpose of this exercise scenario, Santa Fe College zoo has had an escape. The zoo's electromagnetic cage locks released when the power went down. An unknown number of wild animals, some potentially dangerous, have gotten loose. A team of search and capture employees (and other individuals) is on the scene near Santa Fe. They are not HAMs, but they maintain lively communication over their own FRS radios. Moreover, the local MARC unit has deployed to the site to provide Alachua County local government communications infrastructure. Alachua ARES will deploy air operations drone to assist in search.

Officials have taken some local residents (student actors and others) to a shelter to stay out of harm's way. Among these are persons with medical conditions requiring electricity for care.

!!DO NOT FORGET TO ANNOUNCE THAT YOUR TRANSMISSIONS ARE PART OF AN EXERCISE!!

1. Incident Name: Simulated Emergency Test 2019	2. Incident Number: 4	3. Date/Time Initiated: Date: 30-Mar-2019 Time: 0900 local
Health and safety: Nearest local hospital to Incident Command is UF Emergency Shands at 8475 NW 39 th Ave. Nearest local medical care to the Senior Center is CareSpot at 3925 NW 43 rd St. Nearest local medical care to the EOC is UF Shands at 1515 SW Archer Rd. The weather is variable in late March. If outdoors, wear sunscreen, suitable clothes and sturdy footwear, and drink plenty of water. Gainesville has insects that can carry human pathogens. If in areas that are prone to mosquitoes and ticks, wear repellent.		
6. Prepared by: Name: S. Halbert/L. Gallup Position/Title: NFARC/ARES Signature:		
ICS-201, Page 1	Date/Time: 09/04/2018	

INCIDENT BRIEFING (ICS-201)

1. Incident Name: Simulated Emergency Test 2018		2. Incident Number: 4	3. Date/Time Initiated: Date: 30 Mar 2019 Time: 0900 local
<p>7. Current and Planned Objectives:</p> <p>For SET training:</p> <p>1. Assess the ability of the ARES group to stand up an emergency ARES net, sending formal and informal traffic by voice and digital communications between the EOC, a shelter, and an evolving field situation</p> <p>This objective will address core capabilities:</p> <ul style="list-style-type: none"> a: Mobile communications assets/skills c: Communications between the EOC and the rest of the community f: Short message communications g: FEMA forms (ICS) transfer j: traffic sending ability (voice and digital) <p>2. Assess the ability to set up and populate "Shelter A" WiFi with vetted information such that untrained volunteers can receive up to date information on their smart phones.</p> <p>This objective will address core capabilities:</p> <ul style="list-style-type: none"> c: EOC communications with the community d: Becoming better known (making our capabilities more known to possible clients) h: Last mile communications <p>3. Assess the ability to deploy and care for personal and County equipment in a field exercise, with proper documentation</p> <p>This objective will address core capability g (FEMA and ICS forms), as well as the critically important ability to document time and equipment used so that our partners in the County EOC are able to respond to all questions and audits from FEMA after the event.</p> <p>FOR Scenario:</p> <ol style="list-style-type: none"> 1. Health and safety of all involved 2. Find and capture zoo animals, especially any that pose a danger to the public or to the Florida environment 3. Determine the extent and cause of the massive power and infrastructure outage and discuss possible mitigation strategies 			
8. Current and Planned Actions, Strategies, and Tactics:			
Time (local)	Actions		
08:30	Receive briefing at Senior Center (centrally located) (scenario envelopes distributed)		
09:00	Deploy antennas, radios etc. stand up Emergency Net; first envelopes at IC, EOC, and shelter		
09:30	IC requests status report from the zoo; contact with net control established for both remote locations		
10:00	Shelter WiFi active and enabled; first public bulletin posted; second envelopes at IC and shelter		
10:00	Shelter location comm network established		

1. Incident Name: Simulated Emergency Test 2018		2. Incident Number: 4		3. Date/Time Initiated: Date: 30-Mar-2019 Time: 0900 local	
11:00	Third envelopes at IC and shelter				
12:00	End of SET; breakdown of equipment and logistical wrap up				
12:30	Lunch (site TBD) and hot wash				
6. Prepared by: Name: S. Halbert/L. Gallup → Position/Title: NFARC/ARES → Signature: →					
ICS-201, Page 2			Date/Time: 09/04/2018 update 2-Mar-2019 →		

INCIDENT BRIEFING (ICS-201)

1. Incident Name: Simulated Emergency Test 2018		2. Incident Number: 4		3. Date/Time Initiated: Date: 30-Mar-2019 Time: 0900 local	
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1. Incident Name: Simulated Emergency Test 2018	2. Incident Number: 4	3. Date/Time Initiated: Date: 30-Mar-2019 Time: 0900 local
9. Current Organization (fill in additional organization as appropriate): <div style="text-align: center; margin-top: 20px;"> <p>Incident commander Gordon G(bby)</p> <pre> graph TD IC[Incident commander Gordon G(bby)] --> PIO[PIO team (EOC) (Kevin, ?+HAM)] IC --> SO[Safety officer Rosemary Jones] IC --> OC[Ops Chief] IC --> LC[Logistics Chief] OC --> SCB[Search & Capture Branch (student actors)] OC --> PAB[Possible airops Branch (Jim Carr)] LC --> FRC[Fire-Rescue-communications Branch (Leader=Kevin)] LC --> RB[Radio Branch (leader=Jeff Capehart-net control)] RB --> SR[Sheter-radio John Troupe] RB --> SW[Sheter-WIFI Vann Chesney] </pre> </div>		
6. Prepared by: Name: S Halbert/L Gallup → Position/Title: NFARC/ARES → Signature: →		
(Empty space for signature)		

INCIDENT BRIEFING (ICS-201), Adapted for FDA

1. Incident Name: <input type="text"/> Simulated Emergency Test 2018		2. Incident Number: <input type="text"/> 4		3. Date/Time Initiated: <input type="text"/> Date: 10/13/2018 Time: 0900 local	
10. Resource Summary					
Resource	Resource Identifier	Date/Time Ordered	ETA	Arrived	Notes (location/assignment/status)
HF radio with working antenna				<input type="checkbox"/>	EOC
VHF radio with working antenna				<input type="checkbox"/>	EOC
VHF packet and WINLINK				<input type="checkbox"/>	EOC
WINMOR				<input type="checkbox"/>	EOC
Shelter A WiFi setup				<input type="checkbox"/>	Senior Center
HF radio with working antenna and digital capabilities				<input type="checkbox"/>	Senior Center
Independent power source capable of operating for 3 hours that will run HF, VHF, and WiFi				<input type="checkbox"/>	Senior Center
VHF radio with working antenna and digital capabilities				<input type="checkbox"/>	Senior Center
HF radio with working antenna and digital capabilities				<input type="checkbox"/>	Incident Command (Santa Fe)
VHF radio with working antenna and digital capabilities				<input type="checkbox"/>	Incident Command (Santa Fe)
Independent power source capable of operating for 3 hours that will run HF, VHF				<input type="checkbox"/>	Incident Command (Santa Fe)
8 FRS radios, each with an extra set of fresh batteries				<input type="checkbox"/>	Operations (Santa Fe)
2+ HAM VHF hand-talkies				<input type="checkbox"/>	Ops Chief and Logistics Chief
				<input type="checkbox"/>	
				<input type="checkbox"/>	
				<input type="checkbox"/>	
				<input type="checkbox"/>	

POWER OUT! AFTER-ACTION REPORT AND IMPROVEMENT PLAN

1. Incident Name: <input type="text"/> Simulated Emergency Test 2018	2. Incident Number: <input type="text"/> 4	3. Date/Time Initiated: <input type="text"/> Date: 10/13/2018 Time: 0900 local
10. Resource Summary:		
6. Prepared by: Name: <u>S. Halbert L. Gallup</u> Position/Title: <u>NFARC/ARES</u> Signature: _____		
ICS-201, Page 4	Date/Time: <u>2 Mar 2019</u>	

General ICS 205

INCIDENT RADIO COMMUNICATIONS PLAN ICS-205				Incident Name POWER OUT! (Mar 2019 SET)		Date/Time Prepared 03/27/19		Operational Period Date/Time 03/30/2019 0800-1300 Local			
Line	Ch #	Zone	Function	Channel Name/TG Name	Assignment	RX FREQ IN / W / SSB	RX Tone/NAC	TX FREQ N or W	Tx Tone/NAC	Mode A, D or M	Remarks
1			Tactical	K4GNV82	Amateur	146.8200 W	123	146.2200 W	123	A	Primary / Command net
2			Tactical	K4GNV98	Amateur	146.9850 W	123	146.3850 W	123	A	Secondary Repeater
3			Tactical	2M 146.4	Amateur	146.4900 W	None	146.4900 W	None	A	Simplex Local Comms-1
4			Logistics	GNV-PAC	Amateur	145.0700 W	CSQ	145.0700 W	CSQ	D	VHF Digital - EasyTerm / WINLINK
5			EMAIL	KX4Z-WIN	Amateur	Dial: 3594.0, 7102.0, 10140.0, 14096.5	None	Center: 3595.5, 7103.5, 10141.5, 14098.0	None	D	HF WINLINK - Local
6			EMAIL	WINLINK	Amateur	TBD	None	TBD	None	D	HF WINLINK - National
7			HF VOICE	80M LOCA	Amateur	3910 LSB	None	3.910 LSB	None	A	LOCAL (when NFAN is up)
8			HF VOICE	40M LOCA	Amateur	7185 LSB	None	7.185 LSB	None	A	LOCAL (when NFAN is up)
9			HF VOICE	20M LOCA	Amateur	14280 USB	None	14.280 USB	None	A	LOCAL
10			HF VOICE	10M LOCA	Amateur	28400 USB	None	28.400 USB	None	A	LOCAL (SSB)
11			HF VOICE	80M LOCA	Amateur	3950 LSB	None	3.950 USB	None	A	LOCAL (when NFAN is DOWN)
12			HF VOICE	NFAN	Amateur	3.950 7.242 7.247 LSB	None	3.950 7.242 7.247 LSB	None	A	NFAN North Florida ARES
13			Tactical	FRS11	Anyone	462.61250	None	462.61250	None	A	Non-Ham tactical
14			NEIGHBOR	FRS2GMR	Anyone	462.58750	None	462.58750	None	A	HAM NEIGHBOR WATCH
15			Logistics	OCALA-GI	Amateur	145.0300 W	CSQ	145.0300 W	None	D	Digit to KX4Z-10 via W4DFU-8
16			Tactical	W4DFU-9	Amateur	146.910 W	123	146.310 W	None	A	Tertiary Repeater

POWER OUT! AFTER-ACTION REPORT AND IMPROVEMENT PLAN

17	Tactical	NAT 2M C	Amateur	146.5200 W	None	146.5200 W	None	A	2 meter nat'l calling freq
18	Tactical	2M simpl	Amateur	146.55000	None	146.55000	None	A	2 meter simplex frequency
19		Select Channel		Mobile Rx	Rx Tone	Mobile Tx	Tx Tone	A/D	
20		Select Channel		Mobile Rx	Rx Tone	Mobile Tx	Tx Tone	A/D	
21		Select Channel		Mobile Rx	Rx Tone	Mobile Tx	Tx Tone	A/D	
22		Select Channel		Mobile Rx	Rx Tone	Mobile Tx	Tx Tone	A/D	
23		Select Channel		Mobile Rx	Rx Tone	Mobile Tx	Tx Tone	A/D	
24		Select Channel		Mobile Rx	Rx Tone	Mobile Tx	Tx Tone	A/D	
25		Select Channel		Mobile Rx	Rx Tone	Mobile Tx	Tx Tone	A/D	

Prepared By: (Communications Unit)
Alachua County ARES

Gainesville, FL
County ALACHUA
W

State FL
Latitude

N Longitude

The convention calls for frequency lists to show five digits after the decimal place, followed by either an "N" or a "W", depending on whether the frequency is narrow or wide bank Mode refers to either "A" or "D" indicating analog or digital (e.g. Project 25) or "M" indicating mixed mode. Use Remarks for any clarifications, to show gateway channels or other All channels are shown as if programmed into a hand held, mobile or control station radio. A Repeater must be programmed with the Rx and Tx reversed. A Base Station is simpl ICS 205 Excel RED channels require AUTHORIZATION YELLOW Requires Certificated Equipment and/or AUTHORIZATION

2/2015

ICS 205 Air operations

INCIDENT RADIO COMMUNICATIONS PLAN (ICS 205)

1. Incident Name: Simulated Emergency Test 2018		2. Date/Time Prepared: Date: Mar 24, 2019 Time:			3. Operational Period: Date From: Mar 30 Date To: Mar 30 Time From: 0800 Time To: 1300					
4. Basic Radio Channel Use:										
Zone Grp.	Ch #	Function	Channel Name/Trunked Radio System Talkgroup	Assignment	RX Freq N or W	RX Tone/NAC	TX Freq N or W	TX Tone/NAC	Mode (A, D, or M)	Remarks
		Aviation	Helicopter Unicom	Aviation Grp	123.025		123.025		AM	Ground to Air
		Amateur Primary	GARS	Aviation Grp	146.820	123.0	146.220	123.0	FM	Primary GARS Repeater
		Amateur Second.	GARS	Aviation Grp	146.985	123.0	146.385	123.0	FM	Secondary GARS Repeater
		FRS	"Targets"	Aviation Grp					FM	Actual channel to be used will be determined.
	L9	DMR Link	GARC DMR Rptr	Aviation Grp	444.8125		449.8125		FM/DMR	Link between KC4MHH and KK4GNJ at shelter.
5. Special Instructions:										
6. Prepared by (Communications Unit Leader): Name: <u>James Carr</u> Signature: _____										
ICS 205		IAP Page _____		Date/Time: <u>Mar 24, 2019 23:07</u>						

INCIDENT RADIO COMMUNICATIONS PLAN ICS-205 Pg 2 AVIATION				Incident Name POWER OUT! (Mar 2019 SET)			Date/Time Prepared 03/27/19		Operational Period Date/Time 03/30/2019 0800-1300 Local		
Line	Ch #	Zone	Function	Channel Name/TG Name	Assignment	RX FREQ N / W / SSB	RX Tone/ NAC	TX Freq N or W	Tx Tone/ NAC	Mode A, D or M	Remarks
26			Aviation	Helicopter Unicom	Aviation Group	123.02500		123.025		AM	Ground to Air
27	L9		DMR Link	GARC DMR Rptr	Aviation Group	444.8125		449.8125		FM/DMR	Link KC4MHH KK4GNJ at Shelter
Prepared By (Aviation Unit) Alachua County ARES						Gainesville, FL County ALACHUA W State FL Latitude N Longitude					

The convention calls for frequency lists to show five digits after the decimal place, followed by either an "N" or a "W", depending on whether the frequency is narrow or wide band. Mode refers to either "A" or "D" indicating analog or digital (e.g. Project 25) or "M" indicating mixed mode. Use Remarks for any clarifications, to show gateway channels or other information. All channels are shown as if programmed into a hand held, mobile or control station radio. A Repeater must be programmed with the Rx and Tx reversed. A Base Station is simplex typically. ICS 205 Excel: RED channels require AUTHORIZATION YELLOW Requires Certificated Equipment and/or AUTHORIZATION 2/2015

POWER OUT! AFTER-ACTION REPORT AND IMPROVEMENT PLAN

Air operations ICS 220

AIR OPERATIONS SUMMARY (ICS 220)						
1. Incident Name: Simulated Emergency Test 2018		2. Operational Period: Date From: Mar 30, 2019 Date To: Mar 30, 2019 Time From: 0800 Time To: 1300			3. Sunrise: Sunset:	
4. Remarks (safety notes, hazards, air operations special equipment, etc.): Air operations will consist of a single aircraft - N415UF - described as a DJI Inspire 1. Dual controls allowing separate pilot and visual observer/video operator. Aircraft able to provide high res still photography and 4k video. No production facility in the field to provide to other agencies. No flight restrictions			5. Ready Alert Aircraft: Medivac: New Incident:		6. Temporary Flight Restriction Number: Altitude: Center Point:	
			8. Frequencies:		AM	FM
7. Personnel:			Air/Air Fixed-Wing		Air Tactical Group Supervisor Aircraft:	
Name: Phone Number:			Air/Air Rotary-Wing – Flight Following		Other Fixed-Wing Aircraft:	
Air Operations Branch Director James Carr FAA 3906375			Air/Ground			
Air Support Group Supervisor			Command		146.820 146.985	
Air Tactical Group Supervisor			Deck Coordinator		147.520	
Helicopter Coordinator			Take-Off & Landing Coordinator		147.520	
Helibase Manager			Air Guard		123.025	
10. Helicopters (use additional sheets as necessary):						
FAA N#	Category/Kind/Type	Make/Model	Base	Available	Start	Remarks
N415UF	UAV	DJI Inspire 1				
11. Prepared by: Name: James Carr			Position/Title: Air Ops		Signature: _____	
ICS 220, Page 1			Date/Time: Mar 30, 2019 23:18			

AIR OPERATIONS SUMMARY (ICS 220)

1. Incident Name: Simulated Emergency Test 2018		2. Operational Period: Date From: Mar 30, 2019 Date To: Mar 30, 2019 Time From: 0800 Time To: 1300		3. Sunrise:	Sunset:
12. Task/Mission/Assignment (category/kind/type and function includes: air tactical, reconnaissance, personnel transport, search and rescue, etc.):					
Category/Kind/Type and Function	Name of Personnel or Cargo (if applicable) or Instructions for Tactical Aircraft	Mission Start	Fly From	Fly To	
UAV	Unmanned Aerial Vehicle with expressed purpose to place a high resolution camera above the scene to locate escaped animals (simulated) and/or locate hazards. Results will be communicated to command for dissemination to capture teams. Video and/or still photography from this aircraft will be used to record event.				
11. Prepared by: Name: James Carr Position/Title: Air Ops Signature: _____					
ICS 220, Page 2			Date/Time: _____		

ICS 309 PUBLIC SAFETY

COMM Log ICS 309		1. Incident Name and Activation Number			2. Operational Period (Date/Time)		
					From: To:		
3. Radio Net Name (for NCOs) or Position/Tactical Call				4. Radio Operator (Name, Call Sign)			
Public SAFETY NET				R. LAPAN, KEVIN EOC			
5. COMMUNICATIONS LOG							
Time (24:00)	FROM		TO		Message		
	Call Sign/ID	Msg #	Call Sign/ID	Msg #			
1151	SFL	1	EOC	1	SCENARIO BRIEFING MSG 1		
1153	SFL	2	EOC	2	UPDATE MSG 2		
1155	SFL	3	EOC	3	POSSIBLE TILT SITE MSG 3		
1158	SFL	4	EOC	4	RESUME		
1106	SFL	5	EOC	5	AFRICAN BUGS INFO		
1108	EOC	Reply	SFL	REPLY	update on Resources		
1121	SFL	6	EOC	6	Request of ENTRENCH		
1126	SFL	7	EOC	7	Winklink MSG SENT		
1142	SFL	8	EOC	8	Animal Update		
1143	EOC		SFL		Additional needs? - NO		
1153	SFL	9	EOC	9	SFL Lockdown / 275		
1203	EOC	10	SFL	10	Fully ENVELOPED sent		
1203	EOC		IC		Winklink message received/reply		
1206	EOC		IL		Winklink update to EOC UC/IC		
1211	SFL		EOC		TILER LOCATED		
6. Prepared By (Name, Call Sign)		7. Date & Time Prepared			8. Page ____ of ____		

COMM LOG SHELTER

9:30 - report of Phina changing VWon 39th serious human injury / death

9:32 - report of Wards WIKV - Elephant - can be used for hunting + jets FTA ~~30"~~ 30" (Bungalow Bed)

9:35 - ready

9:44 - Activity

2 msg - attempted send via ^{RHF} 9:39 - switch to wimlink 9:41 to pass msg are 1em. fuel used, + 30 miles

9:41 - Gen eng ins. - ebola tx - Shelter @ clients

9:46 - Son has weird bug - Pic - took pic w/ my phone to get onto comp via cable when wimlink is

9:52 - VC will download pic from "witness" to our Wifi Server

9:56 - CC Database contact EOC - SB - report base of it in SCR

Comm 2 ~~to EOC~~ to EOC - perm. to call Council direct

Comm 1: Em. Mgr msg - gen almost out of gas. - 0930 msg

NC-EOC - 10:04 1st contact ^{10:23} ~~msg~~ -

10:00 km eye witness

Chris becomes: 10:13 traf. lights exploding 29th Ave - No camera

Sh. mgr 10:15 - 2B - "Food Needed" (10am msg) - Comm 2 to EOC - 10:23 of ~~msg~~ - TEST #2

10:18 - 34th Lion under overpass by Hightown Cr. - Tam, hand to

10:20 - heard a big snake hiding by ice machine - lady of structure

TEST #2^o completed

10:26 - Test #5 - Power out 10 E.M. for Sh. mgr - Comm. of son - Em Specs notified 10:27

10:28 - Comm 1 to Comm 2 0 Em. mgr EOC ^{capd} ~~msg~~ = Comm 2 in ready to copy

10:29 - rumor of tiger loose 10:23 1st Em mgr (Comm 2) Subj Gasline 30 March 2019

0930 Theo Guralak is about out ~~to~~ to run out of gasline. We need some A.S.A.P. because some people are medically dependent on electric devices. Signature: Chris Carr - Sh. mgr. 10:39

10:45 compl. 10:46 Test #6 Comm 1 to EOC - "glue" - adm 1st Afd - drink 1/4 milk ^{gal} ~~msg~~ "cup"

10:49 10:46 Test 3 - substance head of bugs - ^{script} he is ~~unfamiliar~~ - delusional - paranoid - LEO/EWS disp.

formal msg -

(2)

10:52 - ^{no} msg - TEST #4 to EOC, in CC Sh mgr, Poso Acres - 3/30k present -
we have had at least 1 fairly critical report of exploding
traffic light / control boxes. Some fires might have started
around the explosion - complete 10?

11:12 Test 1 & 2 sent via Winlink

NE to Com1 11:19 - rumour - 2521 NW 63rd York

11:25 CI to NE - ACFR msg - 1123 emergency ^{cont.} Buille 11:20 72 by
- corrected password - 11:27 winlink omg

Com1 - 10m comm - 10m winl. con. established

11:33 - CI to NC: msg ^{from} ACFR - 11:31 LED notif. res. to shelter in place

^{due to} local media notified for press release

CI to ~~NE~~ NC to C2 get gasoline - yes per EOC

11:40 Winlink - msg received from EOC - info re breaking ^{sr ctr} ^{pub. info} ^{website}

11:35 " msg sent confirmed to EOC.

CI to NE to C2 feed meals?

~~11:40~~ ^{11:40} NE to update ^{Python - no att. to capture} ^{Edaph - been secured} ^{donkey - secured} ^{padpgra - sec.} ^{who} ^{graben} 2 - missing ^{info for Ab. Conf.} ^{fundraising comm}

Kang - secured, deer - 3 missing ^{1 secured by tiger} ^{2 sec.} giant af. dog missing - where known

python(3) - sec. badge - sec bear/ferret - sec 11:55 compl.

msg to NE - ACFR - 11:44 - EOC msg. - any further LED needs - no further, may clear ^{compl} ^{11:51}

msg to @ 11:53 ACFR - Airtel assist to Lee Tiger (Rich) pt2 - SFPD notified to BOL

pt3 ACFR resp on I75 re: Smoking Truck

(KDJIDH? com1)

? - NC - Com1 msg (12:00) ACFR notified re: I75 Semi pt2 Airtel resp

^{12:00} ^{NB} I75 ~~st~~ st shut down due to tanker fire ^{min 30} Eg 2 on scene ^{compl} ^{12:01}

pg 3

12:17 Tiger captured - tracked from Air no prompts

Concluded 12:17

COMM LOG EOC

3/30/17

Comin 2 Reporting — many

10:58

"WE HAVE Rumors to Report!"

0930 Report of Rhino charging vet. on 39th St.
severe ^{HARM} injury ^{OR} death.

0932 Walk wild animals ~~elephant and to hunt~~
elephant await for hunting tigers.
wrangler name Bungalow Bill

0941 Lady reported weird ^{INSECT} insect in her home
you ^{HAVE} a picture provided. ^{ADDRESS} 2521 NW 03 TR
G'VILLE

1013 Eye witness relayed
34th St. light exploding on 34th St

1018 Eye witness — Lyon under the ^{OVERPASS} ~~origin~~ of
log town creek on 34th St.

Com. 1 msg from Swamer Radio
Dr. Gibby Power out through SE US.
Internet and hacking events
msg forward ^{sent} via wireless

RCVD ICS 213 2-copies.

11:00 Huge traffic jam at 34th St and Archer Rd.
Hardware truck rolled over. Nails all over road,
puncturing tires.

11:05 Septic truck crashed on University Ave. It stinks!

11:07 Somebody saw a big monkey in the trees near
Santa Fe.

11:10 Place is full of lost delivery trucks due to broken
GPS. One truck drove into Hogtown Creek
thinking GPS was still working.

11:15 A Nile crocodile got loose and is in a drainage
ditch near a day care center. complete. 11:16

11:18 Somebody broke into USDA lab near Archer Rd
and let infected mosquitos out. They are
infected with malaria and ebola. complete 11:24

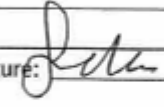
11:20 City bus ran out of gas on 39th Ave and
43rd St, near a fire started by a traffic
light. I don't know if the people got out
in time.

11:11 Winlink bulletins - winlink address KIMJTE
11:30 -

ICS 214 FORMS

ICS 214 EOC -1

ACTIVITY LOG (ICS 214)

1. Incident Name: SET 2019 EXERCISE		2. Operational Period: Date From: 3/30/19 Date To: 3/30/19 Time From: 9:30 Time To: 12:5	
7. Activity Log (continuation):			
Date/Time	Notable Activities		
3/30/19	<p>SETUP HF STATION AT EOC TO ESTABLISH BOTH VOICE + WINDK COMMUNICATIONS</p> <p>ALSO SETUP REMOTE HF STATION VIA LAPTOP TO JONESVILLE WB2SVB STATION TO ESTABLISH VOICE COMMUNICATION AND VERIFY EOC OPERATION.</p> <p>FOUND EOC HF RADIO WOULD NOT TRANSMIT ON ANY FREQ. THAT I ESTABLISHED AND COMMUNICATED WITH MY REMOTE STATION IN JONESVILLE.</p> <p>I WAS ABLE TO RECEIVE KX4Z ON 28.400 AT A 58 SIGNAL STRENGTH BUT AGAIN WE WERE ONLY ABLE TO RECEIVE.</p> <p>BOTH MYSELF WB2SVB + JEFF W40PL DOUBLE CHECKED STATION HERE AT EOC TO MAKE SURE IT WAS COMPLETELY WIRED.</p> <p>I RAN A TUNE ON 10 METERS & IT SUCCESSFULLY MATCHED AT 28.400? IN THEORY.</p> <p>AT 11:50 AM WE ABANDONED ALL ATTEMPTS OF HF COMMUNICATIONS.</p>		
	<p>* PRIOR TO SETUP WE WENT OUT TO REAR OF EOC AND UNTANGLED BUCKMASTER ANTENNA FROM GUY WIRE. SIGNATURES FOR REDEPLOYMENT WILL BE FOLLOWING. PICTURES TAKEN.</p>		
8. Prepared by: Name: Larry Rowak		Position/Title: WB2SVB	
ICS 214, Page 1		Signature: 	
		Date/Time: 3/30/2019	

ICS 214 PUBLIC SAFETY

ACTIVITY LOG (ICS 214)

1. Incident Name:		2. Operational Period: Date From:		Date To:
		Time From:		Time To:
3. Name: RULHAWICH, KEVIN		4. ICS Position: EOC		5. Home Agency (and Unit): ACFR
6. Resources Assigned:				
Name		ICS Position		Home Agency (and Unit)
7. Activity Log:				
Date/Time		Notable Activities		
1051		EOC ACTIVATED B TAC 91 Operational		
1143 1218		DRILL COMPLETE		
8. Prepared by: Name:		Position/Title:		Signature:
ICS 214, Page 1		Date/Time:		

APPENDIX II: ZOO STATUS SHEETS

0930

Beast	common name	status	notes
<i>Coluber constrictor</i>	Florida black racer	missing	
<i>Elephas maximus</i>	elephant	secure	
<i>Equus africanus</i>	donkey	secure	
<i>Hydrochaeris hydrochaeris</i>	Capybera	unknown	keeper could not see him in the enclosure
<i>Hylobates lar</i>	white-handed gibbon (2)	secure	lock had to be improvised with duct tape
<i>Macropus rufus</i>	kangaroo	secure	
<i>Odocoileus virginianus</i>	deer (3)	secure	one killed by tiger
<i>Panthera tigris</i>	tiger	missing	fierce and unpleasant
<i>Platyeris biguttatus</i>	giant African assassin bugs	missing	entire cage has gone missing
<i>Python molurus</i>	python (3)	unknown	keeper could not see them in the enclosure
<i>Taxidea taxus</i>	badger	secure	
<i>Ursus americanus</i>	bear with cubs	secure	

1030

Beast	common name	status	notes
<i>Coluber constrictor</i>	Florida black racer	missing	
<i>Elephas maximus</i>	elephant	secure	
<i>Equus africanus</i>	donkey	secure	
<i>Hydrochaeris hydrochaeris</i>	Capybera	secure	updated
<i>Hylobates lar</i>	white-handed gibbon (2)	missing	improvised lock failed
<i>Macropus rufus</i>	kangaroo	secure	

<i>Odocoileus virginianus</i>	deer (3)	secure	one killed by tiger
<i>Panthera tigris</i>	tiger	missing	fierce and unpleasant
<i>Platymeris biguttatus</i>	giant African assassin bugs	missing	entire cage has gone missing
<i>Python molurus</i>	python (3)	unknown	updated: 2 of 3 seen
<i>Taxidea taxus</i>	badger	secure	
<i>Ursus americanus</i>	bear with cubs	secure	

1130

Beast	common name	status	notes
<i>Coluber constrictor</i>	Florida black racer	missing	updated: no attempt will be made to capture
<i>Elephas maximus</i>	elephant	secure	
<i>Equus africanus</i>	donkey	secure	
<i>Hydrochaeris hydrochaeris</i>	Capybera	secure	
<i>Hylobates lar</i>	white-handed gibbon (2)	missing	sightings, but waiting for animal control to avoid injuring endangered animals
<i>Macropus rufus</i>	kangaroo	secure	
<i>Odocoileus virginianus</i>	deer (3)	secure	one killed by tiger
<i>Panthera tigris</i>	tiger	missing	fierce and unpleasant
<i>Platymeris biguttatus</i>	giant African assassin bugs	missing	updated: whereabouts known
<i>Python molurus</i>	python (3)	secure	updated
<i>Taxidea taxus</i>	badger	secure	
<i>Ursus americanus</i>	bear with cubs	secure	

APPENDIX III: RUMORS FOR THE SHELTER

Rumors to start in the shelter:

Tell the shelter manager or the radio operators each rumor. Be persistent. If the person doesn't respond quickly, tell someone else. Be annoying. Only you know if the rumor is true or false.

(Note: Some actors also made up their own rumors.)

9:30

My husband said he saw a rhinoceros charging a Volkswagen. He said that he couldn't tell, but he thinks that all the occupants died. It was somewhere on 39th Avenue.

I heard that there are some enormous blood-sucking bugs loose in Gainesville. They are genetically engineered to transmit Ebola! They are all over town, and they bite you in your sleep, or they hide under toilet seats.

When I was driving up 34th St. just before the power went out, the traffic light boxes started exploding in flashes of blue light, one after the other. *[True.]*

I saw a fire at 34th St. and 16th Ave. that looked like it was started by a traffic light that caught fire. *[True.]*

My son has a cage full of weird bugs. He said his buddy gave them to him. I took a picture with my cell phone. *[True. Give them the address, XXXXXXX [actual address used in the scenario], if they ask.]*

10:00

I think I saw a lion hiding in the swamp around Hogtown Creek near 34th St.

My husband was out hunting last weekend and saw a giant rat as big as a wild hog. *[possibly true, but unrelated to the zoo]*

I heard that there's a python loose near the Hospice House.

I heard that there was a big snake at the Publix on 39th. It was hiding by the ice machine.

There's a tiger loose at the Village. *[true]*

I heard that a python ate somebody's baby. She tried to rescue her son with a rake and a pipe wrench, but it wasn't happening.

I heard that a cobra got out and it was hiding somewhere in the mall in a ladies' dressing room.

I heard that there's an elephant running down the interstate causing a traffic jam.

10:30

Some giant Asian wasps from an experiment at UF got loose and are stinging people. Some people turned blue and died.

I heard that a loose tiger swiped some poor old guy's steaks on the barbeque. *[True]*

Somebody saw a big ape swinging from a cell tower. *[could be true, but it's a moving target]*

I heard that the Tasmanian devil got loose and is killing cats in the neighborhood.

There are fires along 8th avenue by the traffic lights. *[true]*

Some tarantulas got loose. Somebody got bit by one hiding under a toilet seat!

11:00

There's a huge traffic jam at 34th St and Archer road. Somebody ran into a hardware truck, and there's nails all over the road puncturing tires.

A septic truck just crashed on University Avenue. They said it stinks!

Somebody saw a big monkey in the trees near Santa Fe. *[true]*

The place is full of lost delivery trucks. Nobody's GPS works, and nobody reads maps anymore! I heard one of 'em drove into Hogtown Creek thinkin' the GPS was still workin'.

I heard a Nile crocodile got loose and is in a drainage ditch near a day-care center.

I heard somebody broke into the USDA lab over on Archer Road and let the infected mosquitoes out. They're infected with malaria and Ebola.

The city bus ran out of gas on 39th Avenue and 43rd St., and it's near a fire started by the traffic light. I don't know if the people got out in time.

To tell the nurse:

I don't feel good. I'm dizzy and I have a stomach ache.

The toilet's overflowing. There's bloody poop all over the floor.

I'm allergic to walnuts, and somebody's eating them and aiming the shells at the light fixtures.

I think somebody just peed in the sweet tea.

I'm dizzy from fumes from the generator.

APPENDIX IV: FORMAL MESSAGES FOR THE SHELTER

1. Incident Name (Optional): Power out test message 1		
2. To (Name and Position): Emergency Manager		
3. From (Name and Position): Cheryl Carr, Shelter Manager		
4. Subject: gasoline	5. Date: 30 Mar 2019	6. Time
<p>7. Message: Test message 1 The generator is about to run out of gas. We need some ASAP, because some people are medically dependent on electric devices.</p>		
8. Approved by: Name: _____ Signature: _____ Position/Title: _____		
9. Reply:		
10. Replied by: Name: _____ Position/Title: _____ Signature: _____		
ICS 213	Date/Time: _____	

1. Incident Name (Optional): Power out test message 3		
2. To (Name and Position): Emergency Manager		
3. From (Name and Position): Cheryl Carr, Shelter Manager		
4. Subject: medical situation	5. Date: 30 Mar 2019	6. Time
7. Message: Test message 3 Shelteree has heard about missing bugs and believes that the bugs are infesting his body. He is attempting to wash with bleach, remove his clothes, and perform other inappropriate behaviors (case of delusory parasitosis). He is alarming other residents. Please advise.		
8. Approved by: Name: _____ Signature: _____ Position/Title: _____		
9. Reply:		
10. Replied by: Name: _____ Position/Title: _____ Signature: _____		
ICS 213	Date/Time: _____	

1. Incident Name (Optional): Power out test message 4		
2. To (Name and Position): Emergency Manager		
3. From (Name and Position): Cheryl Carr, Shelter Manager		
4. Subject: possible fires	5. Date: 30 Mar 2019	6. Time
7. Message: Test message 4 We have had at least one fairly credible report of multiple exploding traffic lights or traffic light control boxes. Some fires might have started around the explosions.		
8. Approved by: Name: _____ Signature: _____ Position/Title: _____		
9. Reply:		
10. Replied by: Name: _____ Position/Title: _____ Signature: _____		
ICS 213	Date/Time: _____	

POWER OUT! AFTER-ACTION REPORT AND IMPROVEMENT PLAN

1. Incident Name (Optional): Power out test message 5		
2. To (Name and Position): Emergency Manager		
3. From (Name and Position): Cheryl Carr, Shelter Manager		
4. Subject: medical situation	5. Date: 30 Mar 2019	6. Time
7. Message: Test message 5 A gentleman is complaining of serious chest pain. He needs immediate medical evaluation.		
8. Approved by: Name: _____ Signature: _____ Position/Title: _____		
9. Reply:		
10. Replied by: Name: _____ Position/Title: _____ Signature: _____		
ICS 213	Date/Time: _____	

1. Incident Name (Optional): Power out test message 6		
2. To (Name and Position): Emergency Manager		
3. From (Name and Position): Cheryl Carr, Shelter Manager		
4. Subject: glue	5. Date: 30 Mar 2019	6. Time
7. Message: Test message 6. A four-year-old just drank a bottle of Elmer's glue. Please advise appropriate first aid.		
8. Approved by: Name: _____ Signature: _____ Position/Title: _____		
9. Reply:		
10. Replied by: Name: _____ Position/Title: _____ Signature: _____		
ICS 213	Date/Time: _____	

1. Incident Name (Optional): Power out test message 7		
2. To (Name and Position): Emergency Manager		
3. From (Name and Position): Cheryl Carr, Shelter Manager		
4. Subject: Frisbee danger	5. Date: 30 Mar 2019	6. Time
7. Message: Test message 7 One of the Frisbee golfers packed his Frisbee with explosives and is threatening to blow up the shelter.		
8. Approved by: Name: _____ Signature: _____ Position/Title: _____		
9. Reply:		
10. Replied by: Name: _____ Position/Title: _____ Signature: _____		
ICS 213	Date/Time: _____	

1. Incident Name (Optional): Power out test message 8		
2. To (Name and Position): Emergency Manager		
3. From (Name and Position): Cheryl Carr, Shelter Manager		
4. Subject: irrigation issue	5. Date: 30 mar 2019	6. Time
7. Message: Test message 8 The irrigation came on and won't quit. We have a big flood.		
8. Approved by: Name: _____ Signature: _____ Position/Title: _		
9. Reply:		
10. Replied by: Name: _____ Position/Title: _____ Signature: ____		
ICS 213	Date/Time: _____	

POWER OUT! AFTER-ACTION REPORT AND IMPROVEMENT PLAN

1. Incident Name (Optional): Power out test message 9		
2. To (Name and Position): Emergency Manager		
3. From (Name and Position): Cheryl Carr, Shelter Manager		
4. Subject: shelter count	5. Date: 30 Mar 2019	6. Time
7. Message: Test message 9 Shelter count for 11:30 AM, 30 Mar 2019 General population: 39 Special needs: 22 (8 in wheel chairs, 4 on oxygen, 2 on breathing machines, 6 unconscious or comatose, 7 unspecified) 13 require electricity to remain alive Pets: 3 canaries, 14 cats, 8 dogs, 1 ferret (might have escaped), 1 tarantula, 1 monitor lizard, 1 horse		
8. Approved by: Name: _____ Signature: _____ Position/Title: _____		
9. Reply:		
10. Replied by: Name: _____ Position/Title: _____ Signature: _____		
ICS 213	Date/Time: _____	

APPENDIX V: OUT OF COUNTY MESSAGE

1. Incident Name (Optional): Power out test message Trenton		
2. To (Name and Position): Emergency Manager		
3. From (Name and Position): Trenton		
4. Subject: Power Out	5. Date: 30 Mar 2019	6. Time
<p>7. Message: Power Out! Test message from Trenton From State EOC: Power out throughout eastern USA due to international hacking event. Satellites and internet also out indefinitely. Other infrastructure may have been hit. Federal authorities working to fix problems. Advise GNV status.</p>		
8. Approved by: Name: _____ Signature: _____ Position/Title: _____		
9. Reply:		
10. Replied by: Name: _____ Position/Title: _____ Signature: _____		
ICS 213	Date/Time: _____	

APPENDIX VI: SCRIPT FOR ZOO EMPLOYEES

Script for search and capture team (voice actors on FRS radios)

Three hunters, probably zoo security employees, are looking for the escaped beasts. We called them Billy, Jake and VJ, but feel free to change names and accents. All the acting is voice over FRS radios, so you just need to be in radio range where you can hear each other, and HAM operators can eavesdrop. The scene, however, is that VJ is at the zoo, and Billy and Jake are in vehicles (pick-ups, we think) driving in and around the Santa Fe campus. You can stay in character and ad lib in character if you like, but please use euphemisms for colorful words. These are salt-of-the earth folks, hard-working, honest, trying their best under difficult circumstances.

From time to time, HAM radio operators might call and ask for some clarification. It is fine to talk back and tell what you know (up to that point in the script).

<IMPORTANT>

From time to time (often), in your normal voice, say something like, “This conversation is part of the HAM radio Simulated Emergency Test. These are not real events!”

Script (starts about 10:00)

HAM incident commander has received the 9:30 zoo update

Jake: Billy, where you at?

Billy: I’m on North Rd., fixin’ to go look in the apartment complex between here and the main road. Any sign of el tigre?

Jake: Not that I’ve seen. Amazing a beast so big and mean could go to ground so quick. VJ, are you on frequency?

VJ: Yep. They’re tryin’ to figure out what else went missing – especially the snakes! They can’t find a couple ‘a big pythons, an’ they’re pretty sure we lost the black racer.

Billy: Black racer? The Florida kind?

VJ: Yep.

Billy: I already seen three today! How we gonna know which is ours? Does he have a chip or something?

VJ: Don’t think so. Some student brought him in. Somebody said some bugs went missing too.

Jake: What kind ‘a bugs?

VJ: Some African assassin bugs – big and mean, with a nasty bite.

Jake: How’d they get out? They can’t push the door open. They were in a little cage –right?

VJ: Looks like they walked, cage an’ all.

Jake: (with a sigh) Great!

VJ: How are we going to bag El Tigre if we find him?

Billy: Jake an' I have some dart guns to put him out. I don't think we can lift him though. I think he'd fit in Jake's pickup. Mine has a tool box takin' up most of the bed.

VJ: Do you have any idea why the power went out?

Billy: Nope, but the problem's bigger than Gainesville. The interstate's a parkin' lot, an' there isn't any gas up here.

VJ: Just askin', cause just before the power went out an' I got the call on the radio about the zoo, I saw somethin' really weird. You know those control boxes that regulate the traffic lights? Them things started blowin' up, one after the other startin' from the east and goin' west. Each of 'em blew up with big flash of blue light, one right after the other, like I said.

Jake: You know what? I think the same thing happened here. I'm down here on 23rd an' Ft. Clarke, an' it looks like there was a fire that started at the traffic light. It looks like it went out – fortunately, but that explains it – the traffic light, that is.

Billy: Do you s'pose somebody hacked the traffic light timing system? There's some weird irony in that!

VJ: Agreed.

Jake: My GPS quit when the power went out.

Billy: Must be whatever happened took out the satellites too.

Jake: Has the zoo put out any update about what's missing?

VJ: I think they already have a preliminary report out, but it'll be a while before they know for sure. Everybody's freakin' out. They had a close call with the gibbons. The lock had to be rigged with some duct tape. Not sure how long that'll last. Those things are smart!

Little break

Jake: Hey – I'm at SW 27th Boulevard an' 82nd Street. It looks like Mr. Stripy was here, unless there's a pack of coyotes loose. Some mangy stray dog was torn to bits. I thought I saw Mr. Stripy out of the corner of my eye, but I think he went in the woods towards 83rd street.

Billy: Just what we need – a tiger loose in a retirement community! Did they get all those people into a shelter somewhere?

Jake: They tried, but you know, there's always some old lady can't find her cat.

Billy: Well I guess we can't find ours either at the moment! Anyway, be safe. Keep an eye out for rogue golf carts over there – an' make sure everybody stays in their house!

VJ: What a mess!

Billy: I'm takin' a break.

Jake: Me too.

BREAK for a while – get a snack.

About 10:30

VJ: Billy an' Jake –you back on frequency?

Note: if HAM Incident Commander requests 10:30 update, please provide it.

Jake: yep.

Billy: me too.

VJ: any luck yet?

Billy: not so far.

Jake: Nuthin 'cept the poor mut! Hey, my vehicle's gonna need gas pretty quick.

Billy: Good luck with that! Nobody has any gas 'cause the power's out, and where they have generators, the lines are impossible!

Jake: Shades of Hurricane Irma! Hey, does the zoo have anymore information about what went missing?

VJ: Ya know how I told ya we had to rig the lock on the gibbon cage with some duct tape?. Just like I thought would happen, the duct tape failed an' both of 'em got loose. They're up in the trees now havin' the time of their lives. Ellen saw 'em swingin' in the trees overhead. They must be lovin' it!

Billy: Any idea yet why the power went out?

VJ: Not that I've heard. It's hard enough to get any info from the zoo. Far as I know, they haven't even accounted for the big snakes yet!

Jake: Any idea what happened to those bugs? That's bizarre! Who'd take a cage full a' bugs?

Billy: Maybe some kid?

Jake: Darned if I know.

VJ: They're workin' on a little fact sheet about the bugs. I heard they found two of the pythons, and the capybara's OK.

[provide fact sheet if requested]

Little break

Jake: Some lady just stopped me. Said she saw Mr. Stripy on the walkin' trail, an' he nabbed somebody's laundry hangin' on the line. She ran like you know what.

VJ: Nabbed the laundry??

Jake: That's what she said. I'm clueless.

Billy: Not to change the subject, but there's a traffic crash and some sort of altercation over on 39th and 91st. It's gettin' ugly. Sounds like some shots were fired. I think they were shoutin' 'bout a can 'a Pepsi.

Jake: Man, that's all we need. How do we even call the cops?

Billy: No clue. Any more news from south campus?

Jake: Not much. There was a lady out walking a little dog all dressed up in pink ruffles – even some booties. Told her to get herself an' the animal in the house an' shut the door. She seemed not to understand, so I tried some sign language. Finally she went in.

Billy: There was a guy up here mowin' the lawn, as if nothin' was happenin'. I tol' him to get himself inside right away. Guess there's no real way to warn folks that there's a tiger loose!

VJ: An' possibly a python or two, some weird bugs, a couple of gibbons, an' who knows what else!

Jake: Oh-oh! A guy just tol' me that he was cookin' some steaks for brunch on the barbeque. He went inside for a minute, an' the tiger nabbed the meat!

Billy: Beast is hungry!

VJ: An' he's a mean one.

Billy: Hang on a minute. I need to check somethin' out.

Little break (maybe 5 minutes)

Jake: You'll NEVER believe this! There was a lady up on the flat roof of the porch – in a wheelchair!

Billy: How'd she get there?

Jake: She can't remember – but unless the chair has significant powers of levitation, she had to have help. I tossed her a bottle a' water an' half a package a' dried squid.

Billy: I hope she's got some teeth left.

VJ: I never did understand your taste in junk food. We eat stuff like doughnuts an' corn chips, and you gnaw on something unpronounceable with a bad smell. Anyway, seems like the lady might need a rescue (from the squids if nothin' else).

Jake: Yeah, and thing is, she aint light. She might weigh in at 220.

Billy: You're gonna need a front end loader! You could roll her into it and gently bring her down. Any sign of Mr. Stripy? I feel like he's up to mischief.

[If someone asks where you are in order to send the front end loader, you are at the corner of NW 27th Blvd and

NW 81st St.]

Jake: Hang on. Here's a guy in a garbage truck that wants to ask something.

Short break

Jake: He says he went to pick up a dumpster at the student apartment complex north of here and a tiger jumped out – nearly landed on the truck! The tiger ran off – not sure where.

VJ: Dumpster diving tiger. What next? He could get used to this urban livin', with barbeque, stray dogs, and now left over hamburgers. Better watch out he doesn't go after your squids (or whatever they are!).

Billy: 39th Avenue's still a real mess, and the interstate's still a parking lot. Some semi must have overheated, 'cause it's sittin' on the shoulder smokin'. The cops are at the convenience store over here, I spose they're dealin' with the guy willin' to kill for a Pepsi.

About 11:15

VJ: Well, I heard from the zoo. They found all the pythons, an' they think they know where the bugs are. That leaves the racer, the gibbons, an' Mr. Stripy. They plan to let the racer go an' get another one on a better day.

Billy: We'll prob'ly need Animal Control for the gibbons. We don't want to hurt 'em. They're havin' a good ol' time up in them trees.

Jake: I went up by the dumpster, an' I think I saw Mr. Stripy run back on the campus. He goes between the buildings where you can't see him. He might get hungry for a student!

Billy: Yeah – I saw some girl walkin' around in a daze tryin to figure out why her cell phone didn't work.

Jake: We need some air ops!

ABOUT THE AUTHOR

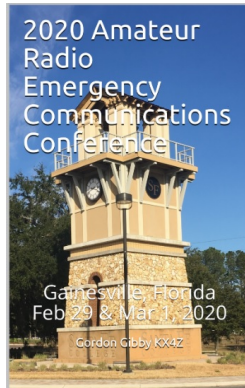
Susan Halbert is a Ph.D. entomologist and an accomplished amateur radio emergency communicator. She has a passion for protecting food crops from insect pests and especially from vectored plant pathogens. She also deployed in post-Hurricane Michael communications support to assist Bay County, the Florida Baptist Disaster Relief effort (stuck without working communications) and the State of Florida.

On any given Monday you will find her sending in multiple radio emails to the Florida Winlink Training Net, from telnet, to VHF packet (AX.25) and multiple HF modes.

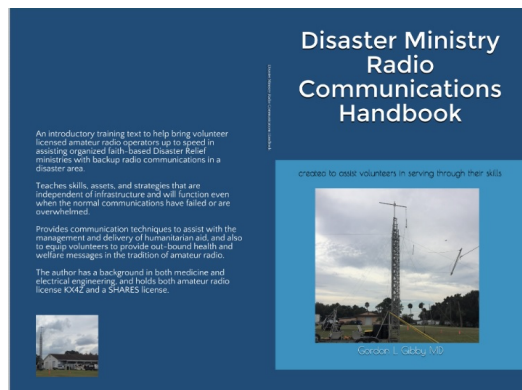
She has been an enthusiastic member of the Alachua County ARES® group for many years, and more recently the North Florida Amateur Radio Club, for which she has ably serviced as Treasurer for several years.

This was her first formal exercise creation and prosecution and a lot of fun for all of us!

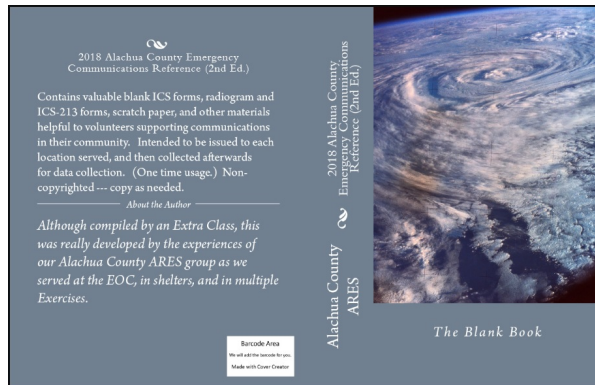
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