If you are having trouble reading this message, you can see the original at:
http://www.arrl.org/FandES/field/ares-el/?issue=2024-03-20

The ARES Letter

March 20, 2024
Editor: Rick Palm, K1CE
ARES Letter Archive
ARES Home
ARRL Home Page

ARES® Briefs, Links

2024 National Hurricane Conference Amateur Radio Workshop -- Amateur Radio will be represented at the 2024 National Hurricane Conference, which will be held this month in Orlando, Florida, at the Rosen Centre Hotel. The 2024 Amateur Radio Workshop - Tropical Systems and Disaster Communications - will focus on amateur radio involvement when tropical systems impact coastal areas of the Atlantic. The amateur radio community's response to significant hurricanes of the 2023 season and prior seasons will be discussed. A senior hurricane specialist from the National Hurricane Center will present on the importance of amateur radio surface reports to the hurricane forecasting process and meteorological impacts from the 2023 hurricane season. Also to be presented: an overview of WX4NHC -- The National Hurricane Center Amateur Radio station operations; the Hurricane Watch Net and how amateur operators maintain or harden their stations when hurricanes cause damage; the VoIP Hurricane Net and Best Practices in Amateur Radio SKYWARN operations during tropical system impacts; a presentation on SATERN, the Salvation Army Team Emergency Radio Network and how it supports communications during hurricanes; a presentation from the ARRL staff on national/international amateur radio hurricane response; a presenter on local hurricane response and personal

impact; and a presentation and overview of the Canadian Hurricane Centre and Amateur Radio operations and initial forecasts for the 2024 Atlantic Hurricane Season.
Additional topics relating to amateur radio and communications will also be presented. A moderated Q & A session will be completed as part of this informative workshop. This workshop will also be livestreamed or offered over Zoom pending high-speed internet capability. If not available, a recording will be posted a few weeks after the workshop. Those details will be available on the National Hurricane Center Amateur Radio station website, the VoIP Hurricane Net site, and the Hurricane Watch Net site.
All amateur radio sessions will be conducted on Tuesday, March 26, 2024 from 1:30-3:00 PM EDT and from 3:30-5:00 PM EDT. The session breakdown is as follows:
NHC Session #1 - 1:30 PM-3:00 PM EDT: John Cangialosi, Senior Hurricane Specialist from the National Hurricane Center will present on the importance of Amateur Radio surface reporting. Bob Robichaud, VE1MBR, from the Canadian Hurricane Centre will provide a video on a Canadian Hurricane Centre Overview and a few meteorological topics via a video recording. Julio Ripoll, WD4R, will present WX4NHC Operations and Bobby Graves, KB5HAV, will present an overview of the Hurricane Watch Net (HWN).
NHC Session #2 -- 3:30 PM-5:00 PM EDT: Rob Macedo, KD1CY, will present on the VoIP Hurricane Net and best practices in SKYWARN Tropical Systems presentation, and Joe Bassett, W1WCN, will provide a SATERN (Salvation Army Team Emergency Response Radio Network) overview video. ARRL Director of Emergency Management Josh Johnston, KE5MHV, will give an ARRL update and Rick Palm, K1CE, will present on his personal Hurricane Idalia experience.
This will be followed by a Q & A session and raffle prizes will be offered. Amateur radio presentations will be recorded and posted to YouTube after the workshop within the month of April.
ARRL Emergency Communications Training Courses Update -- ARRL Director of Emergency Management Josh Johnston, KE5MHV, reports that ARRL is discontinuing the ARRL Emergency Communications training courses EC-001 and EC-016, effective April 1. "We plan to launch the new Basic EmComm course on the 1st, as well as a new Intermediate EmComm course," Johnston said. "An Advanced EmComm course will be released by the end of June," he said. "We will also be releasing an ARES Leadership course in the near future." The update of courses will be enhanced by the release of an ARES position task book update as well. "Upgrading and refreshing our course offerings is important to keep the training relevant and in tune with current EmComm topics and tasks," Johnston said.
Florida *Governor's Hurricane Conference* is May 12-17, 2024 -- The theme for this 38th edition of the Governor's Hurricane Conference, "From Forecast to Action", reflects a comprehensive training and workshop experience taking into consideration the diverse responsibilities that drive emergency responders to a shared goal. This year, sponsoring organizations have selected 34 Training Sessions, 56 Workshops, and an informative General Session to share lessons learned from the 2023 season and better prepare

attendees for what the future holds. The conference will also offer networking opportunities to meet and reconnect with colleagues across the profession and develop lasting partnerships across the emergency management community. Register here.

AccuWeather is sounding alarm bells for a supercharged 2024 Atlantic hurricane season (February 21, 2024). -- Months before the official start of the 2024 Atlantic Hurricane Season the news is not good. And that's even before the National Hurricane Center, AccuWeather and Colorado State University have issued their first, early predictions for what the season will hold. The reasons are twofold: the return of La Niña and record high ocean temperatures. "Neither are good news when it comes to hurricanes and especially not when they work together; ocean temperatures in February are already as warm as they historically have been in mid-July," said Jon Porter, AccuWeather chief meteorologist. "That's a big concern." -- *FEMA Disaster Emergency Communications News Clippings and Topics of Interest Vol. 14 Issue 4, February 16-29, 2024*

Former chairs of the FCC have expressed concern that the American 9-1-1 system, a vital part of the nation's emergency response infrastructure, is outdated and urgently requires a technological overhaul to enhance public safety. Since its inception in 1968, the 9-1-1 system has saved countless lives, but it currently relies on aging technologies not suited to the data-centric and multimedia communication methods prevalent today. The advancement to Next Generation 9-1-1 (NG9-1-1) is essential for improving emergency response capabilities, including better reliability, cybersecurity, accessibility for the disabled, and data sharing for effective emergency response. -- *Donnie Monette*, *Regional Emergency Communications Coordinator, Response Division, FEMA Region 04*

Amateur Radio as Educational Tool Represented to Policymakers in Washington DC (February 16, 2024) -- ARRL and Amateur Radio Digital Communications (ARDC) represented amateur radio at a symposium in Washington on February 1 at which the top domestic spectrum policymakers from across the federal government considered implementation of the National Spectrum Strategy (NSS). ARRL ensures that amateur radio is represented at sessions such as this so that decisionmakers understand amateur radio's roles when spectrum decisions are made, including its substantial contributions to student interest and education in STEM subjects at schools throughout the country and its role during emergencies and natural disasters. In the NSS, released by the White House in November, national policymakers identified some 2,790 megahertz of spectrum to be considered for future commercial needs.

Tri-State (Texas, Oklahoma, Arkansas) 2024 Eclipse Exercise Conducted Last Month

Because of the probable high-volume influx of non-residents into rural areas by observers of the upcoming total solar eclipse, Statewide Interoperability Coordinators (SWIC) Karla Jurrens of Texas, Nikki Dallas of Oklahoma, and Penny Rubow of Arkansas, applied to the Cybersecurity and Infrastructure Security Agency (CISA) to fund an Interoperable Communications Technical Assistance Program (ICTAP) to support an exercise. This exercise would test the operability and

interoperability of both Public Safety, CISA SHARES Winlink, and amateur radio in support of public safety for the April 8, 2024 eclipse. The request was granted to the three states, and exercise planning began in January.

The exercise was held on February 13, 2024. Each state separately tested their county-to-county and county-to-state EOC communications capabilities, and the states were to test their EOC-to-EOC communications capabilities. One of the capabilities to be tested at all levels was Winlink through CISA SHARES and Winlink and SSB voice through Amateur Radio.

Arkansas uses a "hub and spoke" arrangement to relay messages to and from the State. The design incorporates Voice and Winlink. The counties use primarily VHF/UHF between themselves, and HF to reach the state. The Arkansas State EOC under the Arkansas Division of Emergency Management (ADEM) utilizes WebEOC, and therefore, prefers receiving messages electronically. This means that at some point a voice-originated message must be translated into an electronic form that may be imported into WebEOC. The design included net control operators from the Razorback Net, all experienced traffic handlers. These operators, stationed around the state, listened and assisted with messages from the other states and counties as needed. Stations from all three states were invited to attempt to overwhelm the Winlink system, which did not happen, nor did it even come close to taxing the system. Amateur radio volunteers were asked to pass voice messages, which included checking in as available.

Conditions proved to be only fair for voice on HF due to a solar flare. However, as far as the State of Arkansas EOC was concerned, Winlink performed flawlessly. Messages were passed normally, through Winlink's HF store-and-forward modes, using both VARA and PACTOR. Arkansas also has Winlink VARA FM VHF RMS gateways with digipeaters, and messages also arrived through that media. We intentionally recruited an amateur radio volunteer from the Operations Branch, provided him with just-in-time training, and he was using Winlink within minutes.

Very favorable comments were heard throughout the exercise about the ability of amateurs to adapt to changing conditions and challenges. Some challenges still exist, such as more counties need to be on HF to save a step in the message chain, and more operators need to be Winlink-proficient. All things considered, I feel amateur radio performed admirably in all three states, given the complexity and scale of the exercise. -- *J.M. Rowe, N5XFW, ARRL Arkansas Section Emergency Coordinator; Arkansas SHARES/RACES/ESF 2 Liaison Officer; COML; COML Instructor; AUXCOM Instructor; Chair, Arkansas COMU*

Letters: FirstNet

I don't know if you heard anything about this, but when parts of AT&T went down recently, parts of FirstNet went down as well. My FirstNet rep in western Ohio said it was for less than an hour, but that may be the official line. You might mention this if anyone tries to convince you that amateur radio isn't needed anymore. -- *Michael Schulsinger, N8QHV*

Ham Radio Science Citizen Investigation (HamSCI) Solar Eclipse-Focused Operating Events

A total solar eclipse that will be seen across North America will occur on Monday, April 8. It will be the last of its kind in the US for the next 20 years. Hams across North America are asked to participate in a study about how the ionosphere functions by getting on the air to help scientists in a series of ionospheric experiments. Ham Radio Science Citizen Investigation (HamSCI) will hold presentations for hams interested in participating on Wednesday, March 27 at 8:00 PM (Eastern) - 5:00 PM (Pacific), and that same day at 10:00 PM (Eastern) - 7:00 PM (Pacific). Both 30-minute presentations will be held on Zoom and they will feature HamSCI's Festivals of Eclipse Ionospheric Science (FoEIS). The presenters will take your questions during the presentations. The program will start by covering HamSCI's basis and purpose, and quickly move into why they are conducting experiments, how hams and shortwave listeners (SWLs) can participate, and what HamSCI hopes to learn from the event. Along the way, they will discuss why the science behind the event is important to users of the high-frequency radio spectrum -- including amateur radio operators! -- *FEMA Disaster Emergency Communications News Clippings and Topics of Interest Vol. 14 Issue 5, March 1-15, 2024*

https://www.arrl.org/news/solar-eclipse-one-month-away
Solar Eclipse QSO Party (SEQP) - https://hamsci.org/seqp-faqs/
Gladstone Signal Spotting Challenge (GSSC) - https://hamsci.org/gssc-faqs/
Medium Wave Recording Event - https://hamsci.org/mw-recordings/
Time Delay of Arrival (TDOA) Event - https://hamsci.org/tdoa-event-2024/
Grape 1 Doppler Receiver Project - https://hamsci.org/grape1/

All-Ham Technical Leadership and Mesh at the 2024 Stifel Loppet Cup, Minneapolis

For some years hams have volunteered for the Loppet Foundation, which runs outdoor recreation programs for inner city youth in a large Minneapolis, Minnesota area park. They built a good Nordic ski course which, in winter, overlays the city-run golf course. A few times a year, larger events cover more of the city, and we are called in to help with aid stations.

Back in 2018, the small Foundation applied for and won a bid to host a World Cup race. These events, held mostly in Europe, last a weekend and are about the size of Dayton Hamvention®, i.e., up to 35,000 attendees. The 2020 race was cancelled by COVID five days before the start. A bid was accepted for 2024.

Hams were first asked to run the rented radio operation. Dwight Gibson, KQ0RS, stepped up to lead it. We walked the hilly park and did some testing as I was skeptical of UHF handheld simplex range. We were requested to order 165 radios and insisted on adding a repeater channel or two for backup.

We ended up leading the entire technology operation. The internet/Wi-Fi situation was challenging. We had seven different groups -- about 1,200 people -- needing internet. Fortunately we did not require public Wi-Fi. There is no internet fiber in or near the park and fiber bids were over $50,000. Cable internet was available, limited to 30 megabits upstream. Media/TV partners helped pay the bills and upload was at a premium. (A 1080 video stream needs around six dedicated megabits. UDP streaming protocol is not "best effort.")

There were no hardwired network links between venues. The previous Internet Manager had a good mesh network. He insisted that anyone taking over should have "large event experience" -- we did after a decade with mesh at the Medtronic Twin Cities Marathon, which is 10 times bigger. We decided to build a whole new network just for the event and leave the current network untouched to minimize disruption, security risks, etc. Over 30 temporary office containers were brought in.

The finish line and media interview area were unique. Olympian Jesse Diggins wanted the finish moved farther away (600 feet) from the main building -- it made for a thrilling runout for the grandstand and TV viewers. We "adapted" a light pole there with 115V power and I ordered a pair of Ubiquiti 60 GHz radios. These, after fussy aiming adjustment, were rock solid and provided 1 Gigabit, and backed up

the tactical fiber network. (The week before the race, fiber conduits filled with water and froze.)

Failure Mode Analysis

My leadership insisted on failure mode analysis. We ended up renting a Starlink High Performance dish for the streaming backup. This needs unobstructed full sky and on a home-made mount with 20 feet of pipe was good for about 190 M down, 19 M up. Given all the upload and "dedicated" requests, I ordered seven new Comcast 900 M/30 M ports. At the last minute, Comcast announced we could order "Gigabit Extra" 1.25 G down, 250 M up, which was huge.

We ended up with five separate physical and seven logical networks. I wanted no single point failures. We used Ubiquiti UniFi hardware in five instances. Doug Reed, N0NAS, suggested we use on-hand HP thin clients and load Linux ourselves for these to save funds. Network visibility and the ability to handle hundreds of wireless clients was key. Peter Corbett, KD8GBL, was our offsite race day system manager as is our custom. I saw long faces when I refused to issue more "read write" network manager credentials. Production network changes in the heat of the moment can be catastrophic.

Race Weekend

On race weekend, we had 7.5 Gigabits of internet online and almost 30 new access points and 10 switches.


Eric Westgard, NY9D

Actual Wi-Fi demand was 10% of what I expected -- I did see most athletes sign on -- they were on international cell roaming. The cellular/5G networks such as AT&T were rock solid. I warned the carriers sternly we would have 18,000 fans per day -- they did not seem worried. Indoors, on my phone, the network was still providing 250-350 megabits all weekend. Even Swiss Television, who flew in a large team and expected 1 million viewers race days said their LTE/5G air cards were fine for livestreaming.

Lessons Learned

- Wi-Fi access points have a real-world range of about 300 feet. Divide the published hardware performance numbers exactly in half.
- Cable modems may not be able to handle hundreds of clients each for DHCP (High-bandwidth Digital Content Protection) services
- 5G cellular requires fiber to the towers and scales well under heavy loads.
- Phone company pro tip - start early. 120 days is a bare minimum for circuit orders.

- We forgot to put an access point in the metal Jury office -- a window mesh unit deployed in five minutes (one hop -- in view of our Finish Line light pole) saved the day.
- Rented radios have been popular but we only handed out three-quarters of our pre-ordered supply.
- Power outages should be planned for. I added large UPS units to all network nodes for an hour of backup at least.
- Older 24 V and newer 48 V Power over Ethernet (POE) equipment works poorly together. POE is handy for places with no 115 V outlets.
- Make sure outdoor networking gear and cable is commercial grade and temperature rated. Tactical fiber (we used single mode and LC connectors) is a new thing for us. One Gigabit is not much these days. Ubiquiti makes a single fiber full duplex adapter that conserved strands for us. For a future event I would use 10 Gigabit adapters.

Conclusion

If you venture away from "that's not ham radio" and into what the FCC Part 97 calls "technical experts," you can expand your scope and impact. Word from athletes and organizers is they want us to come back next time. -- *Erik Westgard, NY9D, Head of Technology, Stifel Loppet Cup 2024*

K1CE for a Final

Donate your used, no-longer needed gear to your local EOC's ARES team! I recently donated a Bird 43 wattmeter, slugs and three ASTRON power supplies to the Gilchrist (Florida) County EOC's ARES team and its radio room. I saved some space in my shack and felt good about donating to a good cause. Think about doing the same - you'll be glad you did! - *73, Rick, K1CE*

From left to right, Mike Shaffer, KD4INH; Fred Lewis, KO4YOL, and Rick Palm, K1CE, at the Gilchrist County, Florida, EOC.

ARES® Resources

- Download the ARES Manual [PDF]
- ARES Field Resources Manual [PDF]

- ARES Standardized Training Plan Task Book [Fillable PDF]
- ARES Standardized Training Plan Task Book [Word]
- ARES Plan
- ARES Group Registration
- Emergency Communications Training

The Amateur Radio Emergency Service® (ARES) consists of licensed amateurs who have voluntarily registered their qualifications and equipment, with their local ARES leadership, for communications duty in the public service when disaster strikes. Every licensed amateur, regardless of membership in ARRL or any other local or national organization is eligible to apply for membership in ARES. Training may be required or desired to participate fully in ARES. Please inquire at the local level for specific information. Because ARES is an amateur radio program, only licensed radio amateurs are eligible for membership. The possession of emergency-powered equipment is desirable, but is not a requirement for membership.

How to Get Involved in ARES: Fill out the ARES Registration form and submit it to your local Emergency Coordinator.

Support ARES: Join ARRL

ARES is a program of ARRL The National Association for Amateur Radio® . No other organization works harder than ARRL to promote and protect amateur radio! ARRL members enjoy many benefits and services including digital magazines, e-newsletters, online learning (learn.arrl.org), and technical support. Membership also supports programs for radio clubs, on-air contests, Logbook of The World®, ARRL Field Day, and the all-volunteer ARRL Field Organization.

Join ARRL or renew today! arrl.org/join

The ARES Letter is free of charge to ARRL members. Subscribe: www.arrl.org/opt-in-out

Find ARRL on Facebook, Instagram, YouTube, X (@arrl and @arrl_ares), and Threads

ARRL Store: arrl.org/shop

Support programs not funded by member dues! arrl.org/donate

Contact us to advertise in this newsletter (space subject to availability): ads@arrl.org

---

The ARES Letter is published on the third Wednesday of each month. ARRL members may subscribe at no cost or unsubscribe by editing their Member Data Page at www.arrl.org/opt-in-out.

ARRL The National Association for Amateur Radio®
225 Main Street, Newington CT, 06111-1400 USA
860-594-0200
www.arrl.org