



Signals

Keystone State Emergency Communications e-zine



Volume 1

August 2022

Number 1

WELCOME TO FIRST EDITION OF SIGNALS

To promote and refine Amateur Radio emergency communications in the ARRL Eastern Pennsylvania Section, we are pleased to present the first edition of *Signals*. This publication is of, by and for the dedicated members of the ARES® who step up to provide vital radio communications *when all else fails*.

We plan to feature stories of the talented teams of radio communicators and individuals throughout the 34 counties in the EPA who often toil anonymously in service of their communities when emergency managers seek their expertise.

We will also explore techniques, tools and topics of vital interest and identify and review equipment to help us get our signals through.

We will also use this publication to encourage others in the Amateur Radio community to join us in the ARES® to help make a better and stronger team. We ask for your help by contributing articles of interest.



Chris Kelleher, W3CTK watches as Tammi Maciolek, KC3MTT operates the DelCo ARES Field Day station at the Radnor Township building. Chris is the new EC for Delaware County.

NEW EMERGENCY COORDINATORS NAMED

Effective July 1 the EPA appointed two new ECs for Chester and Delaware Counties in heavily populated District 1.

Glenn Allison, N3MEL, will take the helm as EC in Chester County. Glenn has been a ham since 1992 and has helped to develop the first digital packet network in the county. He served for 38 years as a fire chief in Chester County and brings a wealth of public service knowledge to the position.

Chris Kelleher, W3CTK, will take over as EC in Delaware County, where he has served in ARES® for 3 years. He works as a software developer with a ton of IT expertise and maintains the Delaware County ARES® website. We are pleased to welcome both.

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QTX*

Bob Wilson, W3BIG

EPA Section Emergency Coordinator

As Section Emergency Coordinator I've been privileged to visit many ARES® units throughout eastern Pennsylvania, attending meetings, participating in exercises and interacting with scores of dedicated operators. If there's one observation I can make about the experience after 8 months on the job, it's that the ARES® in the EPA is alive and well.

Every volunteer organization in our nation is challenged by a shortage of personnel and the ARES® is in the same boat. Our units are graying and our numbers are dwindling rapidly. Despite a dearth of volunteers, those operators we count on are highly motivated individuals. They train to acquire new skills and religiously drill to practice familiar ones.

It's humbling to observe the professionalism in our ranks. Most of our volunteer efforts go unseen and that's okay. We aren't serving for glory. We're doing it because we want to help where we can and enjoy using our beloved hobby to assist people in need.

This new e-zine, **Signals**, is one way we can acknowledge your accomplishments. The spotlight is on you. Thanks for being the very best!

** QTX is a Q-code which means I will keep my station open for further communication with you.*



Signals



Signals is published bimonthly by the Eastern Pennsylvania Section of the ARRL with the express interest of fostering and promoting the art of Amateur Radio emergency communications.

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Editor: Robert G. Wilson, W3BIG, SEC

Articles, announcements and pictures may be submitted for consideration by emailing the editor at W3BIG@comcast.net. All materials are subject to editing for content, accuracy and brevity.

Upcoming Events

MARC / KIMBERTON HAMFEST: AUGUST 14, 0800-1200

Chester County ARES® will host a recruitment table at the MARC Hamfest located at 742 Pike Springs Road in Kimberton on Route 113. Hamfest information and website available here:

[MARC Hamfest \(marc-radio.org\)](http://marc-radio.org)

SEPA RED CROSS MEET & GREET: AUGUST 20, 1200-1500

Red Cross Amateur Radio Operators and Philadelphia County ARES® will host a get together for the five county SEPA area. There are significant opportunities for coordination and mutual support. County ARES® Emergency Coordinators are invited to introduce their organization and share their successes, goals and learnings. Venue is in Norristown. Interested ECs and AECs should RSVP W3ERS@yahoo.com to receive full information and register for the luncheon.

CITY TO SHORE MS BIKE RIDE 2022: SEPTEMBER 24-25

The annual MS City to Shore Bike Ride, a top fund-raiser benefiting the Multiple Sclerosis Society, is seeking scores of Amateur Radio operators to staff the communications team. At least 150 radio operators are needed for the 20 and 40 mile bike routes that start in Cherry Hill and finish in Ocean City, New Jersey. This event is an excellent training opportunity for ARES® communicators to put their field operations skills to good use. You may volunteer for one or both days. There is a registration form available to volunteer your services. The form is accessed at this url: <https://forms.gle/hjAhY1AJMeEFyvu8>. If you need further information you may call: 609-795-0909 and leave a voice message.

MARSHALLTON TRIATHLON: OCTOBER 2, 0900

Chester County ARES® will provide communications for the Marshallton Triathlon. The 9.3 mile event includes a downhill bike race to the Brandywine Creek, a two-person canoe race on the scenic Brandywine, a fast-walk through the back country trails of Chester County and finishes with another bike race. Event info available here. <https://marshalltontriathlon.net/>. Radio operators are still needed. If interested, please contact CCARES EC Glenn Allison, N3MEL. N3MEL.EPA@gmail.com.

Any EPA ARES® unit with upcoming events to announce should forward information to W3BIG@comcast.net.

AMATEUR RADIO'S HIGHEST CALLING

Bob Famiglio, K3RF

Vice Director—ARRL Atlantic Division

Many hams, like myself, have been attracted to amateur radio because of the love of technology, radio operation and other electronic interests which can be developed as a practical skill through amateur radio. I was fascinated with electronics and radio leading to my novice license at the age of 12. This led to college and a starting career as an electrical engineer, and later as a lawyer. For many, the legal reason amateur radio exists may be a faded memory.



Amateur radio has a multitude of different activities within it. All of those activities we love exist because of the assistance the Amateur Radio Service provides to the public in times of emergency. Many are not aware that the law defines, among other things, our “fundamental purpose as”:

Recognition and enhancement of the value of the amateur service as a voluntary noncommercial communication service, particularly with respect to providing emergency communications...

FCC rule 97.1

In a sense, all of the other activities within amateur radio, no matter where they are on the spectrum and what type of technology we deploy to enjoy, those privileges exist because of the radio amateur's unique ability to provide emergency communications in times of need.

Some argue amateur radio is not an emergency radio service per se. Many have written and argued that we are not supposed to be primarily an emergency radio service, and strictly speaking, that is true. Those of us who live in the FCC Part 90 public

safety world know there are emergency radio services for which legitimate response groups can be licensed to use exclusively for such purposes. But, that misses the point.

In those definitions that follow the above cited rule, it is clear that we are granted privileges because of our unique ability to be “a back up to the back up,” *When All Else Fails*. The Amateur Radio Emergency Service®, a part of the National Association for Amateur Radio®, was created to meet our responsibilities to help others when normal means of communications are not available or will take some time to be restored.

I know I am preaching to the choir to those who take the time to read these newsletters, But, in recent times, we have been reminded by wildfires out west, serious flooding in the east and all of the problems being created by climate change why our services are valuable. The highly sophisticated systems that are deployed are usually quite reliable, but are not immune to the disasters that are more prevalent today.

Radio amateurs are typically the first to the scene of a disaster because they are already there or they're close by and can be more easily deployed because of their decentralization and their unique ability to provide basic messaging services out of a disaster area before government or commercial communications services can respond.

We should never lose sight of our role in the pursuit of our chosen avocation. As a radio amateur for 55 years, and an active volunteer emergency responder, I thank all of you for your service in ARES® and to amateur radio generally.

Bob Famiglio, K3RF, has been an amateur radio operator for more than 55 years, first licensed as a novice at the age of 12. He has served the EPA as a Section Manager and presently serves as Vice Director for the ARRL's Atlantic Division. He continues to serve as a volunteer counsel for the ARRL, assisting with a host of legal issues, helping members deal with antenna zoning restrictions and other concerns.

ARES® Activities Around the EPA



Dick Goodman WA3USG operates for York County ARES radio team during the April Peach Bottom drill.

YORK COUNTY ARES® PROVIDES COMMS DURING APRIL PEACH BOTTOM NUKE DRILL

York County ARES® / RACES assisted with radio communications during the April Peach Bottom nuclear disaster drill, providing voice and digital messaging for three EOCs. York County EC Anne Zarlenga KB3ZLJ lead the team including Steve Steffan WB3EFA, Jack Dellinger KC3JD, Bob Glatfelter N2BOB, Kris Bearscove, Dave Gent, Stan Walters, Ralph Brandt, Dick Goodman and Rich Reese.

DAUPHIN COUNTY ARES® TEAM PROVIDES COMMS FOR COUNTRY CRAWL 5K RUN

The ARES® team in Dauphin County provided event communications for the Country Crawl 5K and Fun Run in upper Dauphin County on Saturday, April 30. The team was deployed at six locations around the course to relay race progress. The radio team prevented a minor incident when a traffic control crew attempted to open a roadway prior to completion of the race. ARES® quickly relayed the information and the road remained closed, ensuring all runners finished safely.



Dauphin County ARES team pictured above left to right: Chuck KA1YSR, Steve KC3TGO, Bob K3RTS, Mike KD3MAD, Terry WB3BKN, Kendra KZ3KBD, Curt K3URT, Rene WB5URY and Matt KC3OMP.



Anne Zarlenga KB3ZLJ (left), Jack Dellinger KC3JD (center) and Bob Glatfelter N2BOB (right) operating NCS positions during the Peach Bottom nuclear drill.

More ARES® Activities Around the EPA

SKILLS BUILDING IN LANCASTER COUNTY

Doug Rice, W3COB

Lancaster County ARES® conducted a skills building training session for its members on July 23 at Mount Joy Township Forest Fire Station 93 in Elizabethtown. The purpose of the event was to complete and document requirements in the ARES® Emergency Communicator Individual Task Book.

Twelve ARES® members participated in the training facilitated by Lancaster County EC Ed McCauley KB3PBV, and AEC Doug Rice, W3COB. Net operations training was presented by Roger Burkhart, N3GE, NCS for the Pennsylvania Digital Traffic Net.

A valuable session on properly terminating coaxial cable with a PL-259 connector was presented by Ralph Hess, KC3KMT. A picnic followed the training.



Training participants (L to R) are Dan Boone KB3ZMB, Ralph Hess KC3KMT, Roger Burkhart N3GE, Peg Hamm KB3SCA and Jonathan Blake WX4LEB.



Lancaster County ARES skills building discussion members included (L to R) Jonathan Blake WX4LEB, Rick Hamm KB3SCB, Roger Burkhart N3GE, Dan Boone KB3ZMB and Ralph Hess KC3KMT.

EPA ARES® Field Day Activities

LUZERNE COUNTY ARES® FIELD DAY DRILL

David Kirby, N3SRO

Luzerne County ARES® teamed up the Murgas Amateur Radio Club for Field Day at Moon Lake State Forest Recreation Area on June 25 and 26. The two units fielded a crew of 29 operators who worked all 24 hours of the event. A total of 3 transmitters were used along with a GOTA station.

Luzerne County EC David Kirby, N3SRO, reports it was truly an off-grid field environment with only generators, batteries and solar panels powering the equipment. At one point the main 7KW generator, built into the antenna and equipment trailer, failed due to fuel starvation. The resulting fuel clog shut down the generator. The team wasn't fazed and switched to a backup generator to continue racking up contacts.

Like many ARES® units, Luzerne County used Field Day as a real-world exercise to test equipment and operators under actual deployment conditions. Emergency Coordinator David Kirby characterized the event as a success as the team was able to make hundreds of contacts on 20, 40 and 80 meters on both phone and CW without relying on commercial power.



Above, the Luzerne County ARES Field Day antenna installation looks impressive against a starlit night sky. Below, the Luzerne County team operates from the shelter of a pavilion.

Photos courtesy of EC David Kirby N3SRO.



More EPA ARES® Field Day Activities

DELAWARE COUNTY ARES® HOSTS FD DRILL

Chris Kelleher, W3CTK

Delaware County ARES® held its first Field Day in many years on June 25 and 26 and operated the event as an actual deployment at the Radnor Township Municipal Building, which also serves as the township Emergency Operations Center.

Newly appointed Emergency Coordinator Chris Kelleher, W3CTK, reports the Field Day station operated as a class 3 Foxtrot and included both HF and VHF/UHF transceivers. Two HF antennas and UHF/VHF verticals were deployed in less than one hour, reflecting a high level of readiness.

The Field Day station hosted a number of special visitors, including local politicians as well as ARRL Atlantic Division Vice Director Bob Famiglio, K3RF. Famiglio and Tammi Maciolek, KC3MTT, an ARES® team member and Special Operations Manager for the Delaware County Department of Emergency Services, assisted a newly licensed ham in selecting mounting options for an Amateur Radio antenna on



DelCo ARES Assistant EC Rich Caruth, K3RMC, makes an HF phone contact from the Field Day station at the Radnor Township Municipal Building.

his Jeep.

Field Day serves many purposes, such as testing equipment and techniques and practicing deployment and field operations. One of the most important functions is to demonstrate to the public what Amateur Radio is all about. Delaware County ARES® punched that ticket in a big way when they took a 10 year-old boy under their wing and made it a day he will probably never forget.

Having just returned from a trip to the shore, the young radio enthusiast arrived at the Field Day site with his mother. He had recently purchased his first radio and was interested in getting an Amateur Radio license. Delaware County ARES® teamed him with an HF operator and helped the boy make a phone contact in Colorado that thrilled him.

The Field Day team consisted of EC Chris Kelleher W3CTK, former EC Mike Thomas KB3SUS, AEC Rich Caruth K3RMC, Tammi Maciolek KC3MTT and Tom Barrett KC3KIB.



Delaware County ARES Field Day team at Radnor Township Building. Pictured left to right are Mike Thomas KB3SUS, Rich Caruth K3RMC, Tammi Maciolek KC3MTT and Chris Kelleher W3CTK.

MONTGOMERY CO. ARES® MICROWAVE MESH NETWORK NOW HAS OVER 80 NODES

Tom Nolan, W3EX

Amateur radio operators seem to have a love affair with radio frequency. That's what we do. But, with MESH networking, which operates on microwave frequencies, communicating this way is an entirely new challenge. In southeastern Pennsylvania, where hills and valleys abound, line of site modes are especially demanding.

Montgomery County ARES®/RACES has taken on the challenge. They have installed more than 80 nodes in a MESH network across the county. The microwave MESH network communicates between nodes using the internet and direct RF connections.

In the Pottstown area, Amateur Radio operators have approached the challenge seriously by working primarily with true RF connections. A group in the area has installed MESH nodes high in the air on a club tower on Fancy Hill north of Pottstown. The group is affectionately known as *MESHPOTS*.

The plan to expand the network will greatly enhance Amateur Radio emergency communications by eliminating many of the RF black holes in the region. If you are interested in learning more about the MCAR MESH network project email W3EX@arrl.net.



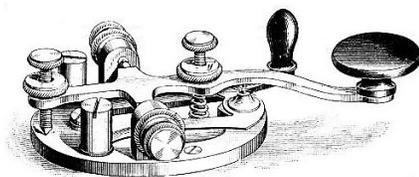
Tom Nolan, W3EX, of Montgomery County ARES, assembles multiple MESH nodes for the Bergey Electric site in his shop.

In Passing

Edward McGowan, N3JOX—Silent Key

Bob Howard, KB3QAQ

It is with great sorrow that I share the news that Ed McGowan, N3JOX, passed away unexpectedly on Thursday, July 28. I was blessed to call Ed my friend and knew him for nearly 45 years. I first met Ed as a senior at Lebanon High School where he was a media service technician. He taught me a great deal about electronics and got me interested in CB Radio emergency services and eventually encouraged me to become a radio amateur. He was a mentor, confidant and great friend. Ed was active in the volunteer fire service in many capacities. He retired from LCCTC as the instructor for its media program where he shaped many young minds as he introduced them to radio, television, photography, videography and electronics. Ed was my right-hand man in Lebanon County EmComm and served as the assistant for ACS-RACES. He served for more than 20 years, working on more than two dozen major exercises and drills as well as countless real world emergency spin-ups. Ed and I spent many 24-48 hour shifts in the Lebanon County EOC handling emergency traffic. Ed was active in the LVSRA and was a charter member of the Cornwall Ranger Station ARC, which he supported as a volunteer and donated heavily to several projects. He regularly participated in National Night Out and represented Amateur Radio wherever he could. Ed was a dedicated ARRL Volunteer Examiner and helped many people obtain their licenses.



Tools of the Trade

THE VERSATILE G5RV 10-80M HF ANTENNA

Operating HF in the field can be challenging when it comes to selecting and deploying antennas. Too often space is at a premium. Dipoles cut for 40 and 80 meters are 65 feet and 130 feet respectively. And with a rush to get up and running, there usually isn't enough time or space to hang more than one HF antenna.

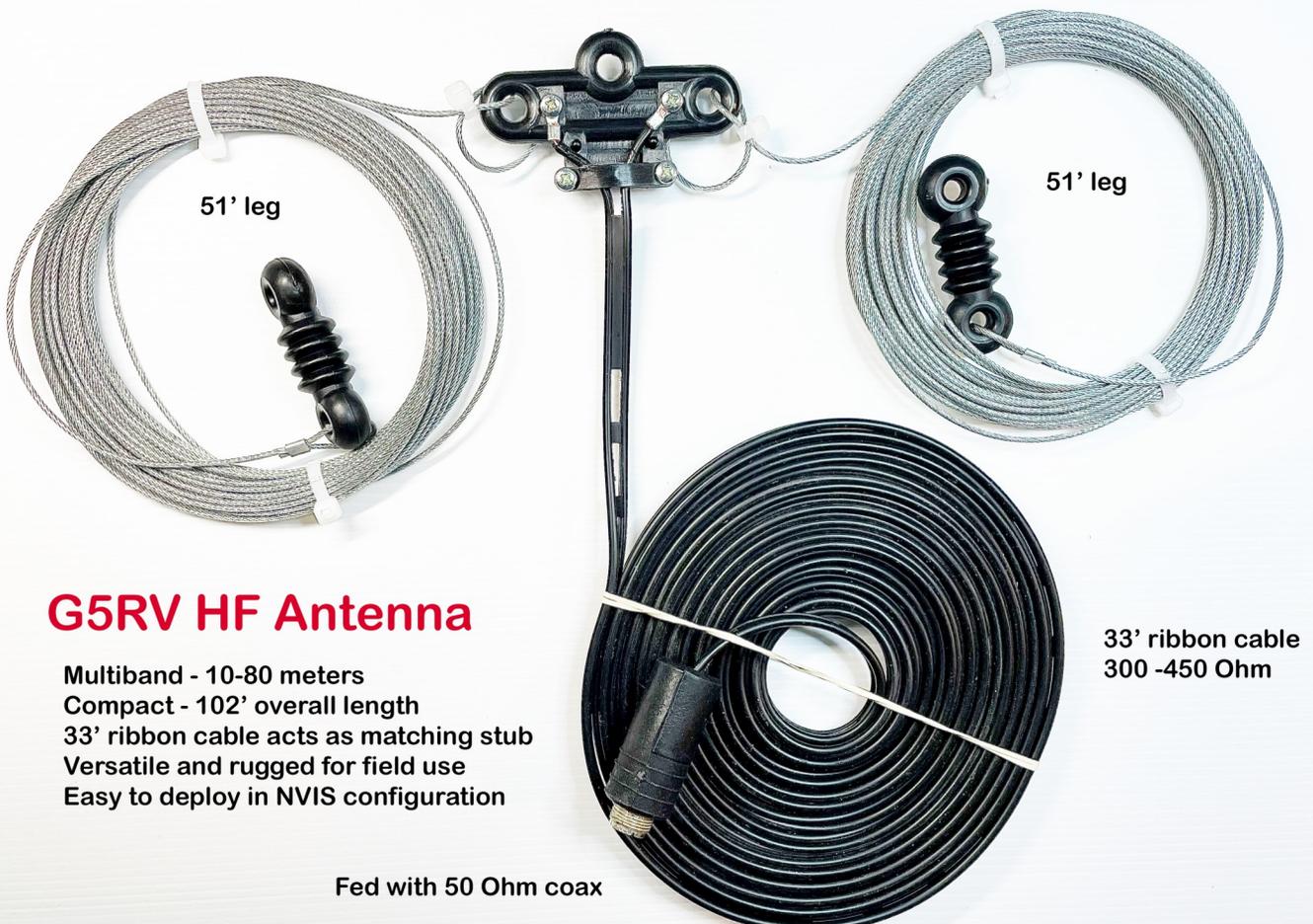
The venerable G5RV is a great compromise antenna that has been around since it was designed and refined by UK amateur Louis Varney. That's his callsign in the name. The G5RV operates quite effectively on 10 through 80 meters, radiating very efficiently on 20 and 40 meters. It is compact with an overall

length of just 102 feet.

The G5RV incorporates a matching section using a length of 300 or 450 Ohm ribbon cable or open line measuring about 33 feet. It is usually terminated with an SO-239 connector and can be fed with 50 Ohm coaxial cable in either 45 or 90 foot runs. It is important to keep the coax these lengths for matching the line to the antenna.

The G5RV can be configured easily for NVIS operation at a height of 10-15 feet. You will find it necessary under most circumstances to use an antenna tuner to match the impedance to your transceiver with a G5RV. That is probably the only drawback to this extremely versatile and compact antenna that can be quickly deployed in minimum time.

You can either purchase a commercially made G5RV or easily make one yourself. It is a great addition to your HF go-kit because it's a go-to antenna.



G5RV HF Antenna

Multiband - 10-80 meters
Compact - 102' overall length
33' ribbon cable acts as matching stub
Versatile and rugged for field use
Easy to deploy in NVIS configuration

Fed with 50 Ohm coax

Your Go-Kit - Don't Leave Home Without It

TO GET ON THE AIR YOU NEED CONNECTIONS

If you've set up an emergency field radio station even once, you've no doubt suffered anxiety about unpacking your gear, connecting the equipment and testing it out that first time.

There's a lot to connect; transceivers, power supplies, batteries, antennas and a myriad of other gear like laptop computers, auxiliary lighting, microphones, and whatever else you require to get your signals from point A to point B.

You may find it necessary to join two or more antenna cables together to get the required length. You may even find it necessary to use an existing cable from a rooftop antenna that terminates in a *foreign* connector. If you're not prepared with a grab-bag of tricks, you'll be out of luck.

EmComm operators are, if nothing else, resourceful and always prepared. That's why your *Go-Kit* should have a handy selection of RF connector adapters including PL-259, BNC, N, F and combinations of all of these permutations that interconnect. You will also need to have gender changers from male to female and those that connect male to male and female to female. Don't scrimp on your selection of adapters.



Most good quality RF connectors and adapters cost between 3 and 5 dollars. If you're not in a hurry to acquire the connectors and adapters, wait for a hamfest in your local area. There are always vendors that carry just about every connector you will ever need.

Once comfortable with your selection of RF connectors, store them in a small box with a secure lid. Ensure the box is easily identifiable and can be retrieved quickly. You may find it convenient to paste a list of the connectors and adapters inside the lid of the storage box.

DON'T FORGET TO PACK EXTRA SOCKS

You're probably very careful packing all of the radio equipment you will need to get on the air. You double and triple check the gear to ensure you have it all ready to roll. If there's one aspect of deploying that inexperienced ARES® operators often overlook it is taking care of the most important equipment you will bring - yourself.

When we deploy, we never really know how long we will be on station. The best plans are prone to change and you may be operating for a period considerably longer than planned. That's why you need to keep a separate Go-Bag of personal gear you may need to be comfortable and safe for an extended shift.

Pack water, snacks, convenience foods, medicines (if needed) and extra clothing. On one deployment to a shelter during a hurricane. I was setting an antenna in driving rain and stepped into a deep water-filled hole. Because I failed to pack extras, I sat at my operating position for 36 hours in a wet pair of socks.

W3BIG



EPA NEEDS MORE WINLINK RMS GATEWAYS

Bob Wilson, W3BIG

With most of our served agencies relying on email for communication, Winlink has become a highly effective tool for ARES® units. If there is any one aspect of our communications arsenal that impresses emergency managers it is our ability to send emails via Amateur Radio. While many in the EmComm community often look on Amateur Radio as dated technology, this utility keeps our ARES® units viable and valuable.

At the heart of the Winlink system is packet radio, a protocol refined by radio amateurs long before there was an internet. While Winlink comprises both HF and UHF/VHF components, it is often the VHF packet RMS (Radio Message Server) nodes and the newer VARA FM gateways that offer the most valuable utility to ARES® teams. Not to discount the value of HF Winlink, the rapid nature of deployments coupled with limited operating space often makes erecting HF antennas a severe liability. VHF packet or VARA FM operation, in contrast, rely on smaller antennas with higher gain and quicker installations.

A serious challenge we face in Eastern Pennsylvania in providing Winlink-delivered emails is the lack of RMS nodes. Presently, there are fewer than 20 active packet and VARA FM gateways in the EPA. The access to many of these gateways is greatly affected by the hilly and mountainous terrain in our state. The straight-line nature of VHF propagation also degrades the effective distance at which these gateways can be accessed. Even in the lower elevations of the southeastern corner of Pennsylvania, the greatest distance we can expect our packets to fly

is only about 20-25 miles.

It is imperative we do our best to ensure there is at least one RMS node or VARA FM gateway readily accessible by ARES® units in each county of the EPA. For ARES® to remain valuable to emergency managers, we need to capitalize on this tool and develop a more robust VHF/UHF Winlink network to enable us to routinely provide radio email service.

A more regional approach to Winlink gateways is encouraged by newly-appointed Chester County EC Glenn Allison, N3MEL and CCARES Winlink Manager, Martin Odom, KB3PCY. Glenn states the current set-up in Chester County features a repeater system for both voice and digital communications permitting real-time networked communications between sites. Additionally, there is a county-wide 5.8 GHz network for high speed data. For field deployment, Glenn explains that NBEMS (Narrow Band Emergency Service) can be used simplex or via the repeater system.

Glenn reports that both NBEMS and the 5.8 GHz network have limitations and that's where Winlink enhances communications. Glenn believes a better and faster Winlink approach is to incorporate VARA FM gateways managed by local ARES® units.

Whether we use the older VHF packet networks or newer VARA FM gateways, we need to develop these valuable Winlink resources in the EPA to enable them to be used by all of our ARES® units. We thoroughly encourage each of our county ARES® teams to undertake a project to add a Winlink gateway they can access on a regular basis.

SOME USEFUL WINLINKS

[Winlink Express](#)

[Winlink Gateway Maps](#)

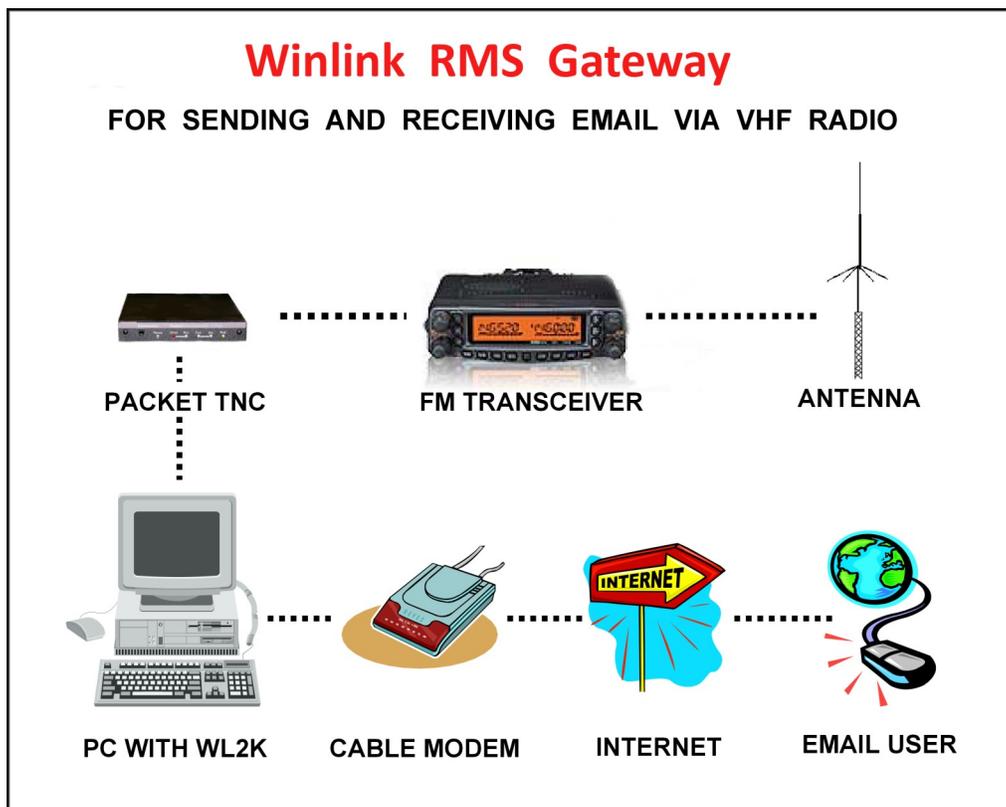
[VARA Presentation By N7CW](#)

[VARA Software](#)

[VARA HF 4.0 Quick Guide](#)

EPA Winlink VHF Packet and VARA FM Gateways

GATEWAY	FREQUENCY	COUNTY	GRID	MODE
W3DRA-10	145.070	DELAWARE	FM29FU	PACKET
N3MEL-10	145.090	CHESTER	FM29DX	PACKET
AA3E-10	145.050	MONTGOMERY	FN20GD	PACKET
K3FZT-10	145.670	PHILADELPHIA	FN20JA	PACKET
WA3LWH-10	145.010	BERKS	FN20FJ	PACKET
W3AVP-10	145.010	LANCASTER	FN10WC	PACKET
K3IR-10	145.030	LANCASTER	FN10SE	PACKET
W3HZU-10	145.010	YORK	FN10PA	PACKET
K3CHB-10	145.010	CUMBERLAND	FN10MF	PACKET
KB3PCY-10	145.670	CHESTER	FM29EV	VARA FM
NEMEL-10	145.670	CHESTER	FM29DX	VARA FM
K3FZT-10	145.670	PHILADELPHIA	FM20JA	VARA FM
AA3E-10	145.050	MONTGOMERY	FN20GD	VARA FM
KE3HG-10	145.670	MONTGOMERY	FN20EF	VARA FM
N3EP-15	145.010	WYOMING	FN21AM	VARA FM



PHONETIC ALPHABET

The International Radiotelephony Spelling Alphabet, commonly known as the ICAO phonetic alphabet, sometimes called the NATO alphabet or spelling alphabet and the ITU radiotelephonic or phonetic alphabet.

A - ALFA	M - MIKE	Y - YANKEE
B - BRAVO	N - NOVEMBER	Z - ZULU
C - CHARLIE	O - OSCAR	1 - WUN
D - DELTA	P - PAPA	2 - TOO
E - ECHO	Q - QUEBEC	3 - TREE
F - FOXTROT	R - ROMEO	4 - FOW-ER
G - GOLF	S - SIERRA	5 - FIFE
H - HOTEL	T - TANGO	6 - SIX
I - INDIA	U - UNIFORM	7 - SEV-EN
J - JULIETT	V - VICTOR	8 - AIT
K - KILO	W - WHISKEY	9 - NIN-ER
L - LIMA	X - XRAY	0 - ZEE-RO