ECA Newsletter

Volume22, Issue 1 January 2021

Introduction

Finally, 2020 is OVER! Bet you all couldn't wait. I just hope 2021 is a little more user friendly if you know what I mean. I hope you all got some good ham presents for Christmas. How about some reviews on your new equipment from some of you tech savvy folks out there? The newsletter could use some interesting reviews and articles. If you have an idea on how to build a field station like we did for SET 2020, put a few paragraphs together on what you did and how well it worked. If you need some help with grammar and splenilg, send it in and I will try to help. As most of you already know, English was not my best subject in school but spell checkers work wonders.

I suspect Wayne, our president, will be looking for programs for 2021 and some exercises (assuming we can actually get together to do something). If you have any ideas, let him know or send me a suggestion and I can pass it along. The SET 2020 exercise worked so well, maybe we will try something like that again. It has been suggested that an exercise with use of VARA FM might be interesting. We'll see what happens. ECA now has a ZOOM account so there is no limit to the length of our meetings as we had initially. Thankfully, ZOOM was generous and let us run over a few times.

There are some interesting technical articles in this issue from Ken Humbertson on VARA Part 2 and an equipment review on a pocket-sized spectrum analyzer for the low price of $50. Other articles on EMCOMM and CERT are also included so I hope you all enjoy reading this issue.

Since we are in the middle of winter, it might be a good time to consider how you could keep your stations running in the event of an ice storm that might take power down for an extended period of time like hours. If it is down for days, you have much bigger problems on your hands. In this part of the Midwest, neither scenario is off the table. There is also the aspect of the winter grab and go kit and what to keep in your vehicle in the event you go off the road due to ice or there are conditions that temporarily make driving unsafe. In the 2020 holiday issue (Vol. 21, Issue 5) there was a list of recommendations but that list was not necessarily exhaustive. There are many on-line resources for different parts of the country. Take a look-see and make sure you have the supplies you need in your kits.

Let's look forward to a great year in 2021 and stay active in the hobby of amateur radio and use it in our communities for the common good. We don't know what 2021 will bring but we can be assured it will be different than 2020. We can hope for better and plan for worse. Maybe it will come out somewhere in the middle. Best wishes in the new-year for all of our membership and readers.

- That's all for now. 73
  DE N0PNP

EMCOMM and You

The following is from the EC-001 manual:

"Plain Language

As ham radio operators, we use a great deal of jargon (technical slang) and specialized terminology in our daily conversations. Most of us understand each other when we do, and if we do not on occasion it usually makes little difference. In an emergency, however, the results can be much different. A misunderstood message could cost someone's life.

Not everyone involved in an emergency communication situation will understand our slang and technical jargon. Even terms used by ham radio operators vary from one region to another, and non-hams or new hams will have no knowledge of most of our terminology. Ham radio operators assisting from another region might understand certain jargon very differently from local ones.

For these reasons, all messages and communications during an emergency should be in plain language. "Q" signals (except in CW communication), 10 codes, and similar jargon should be avoided. The one exception to this is the list of standard "prowords" (often called "prosigns") used in amateur traffic nets, such as "clear," "say again all after," and so on.

Avoid words or phrases that carry strong emotions. Most emergency situations are emotionally charged already, and you do not need to add to the problem. For instance, instead of saying, "horrific damage and people torn to bits," you might say "significant physical damage and serious personal injuries."

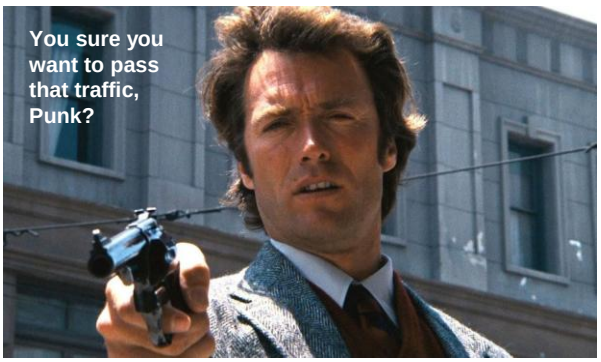
And please watch the speed at which you speak. It should be at a normal rate. Many times, emergency operators get too excited and talk very fast, making it hard for receiving stations to understand them."

The above is a direct copy from the ARRL EC-001 manual. It has an important message for emergency communications. In an emergency situation, no one will be impressed by how much "Hamspeak" you know. They **ONLY** care about the clarity and content of the message you are trying to pass. In the position of a Net Control Operator (NCO), you have thousands of pieces of information flying at you at the same time. You do not have time to decode someone's "Hamspeak" jargon. We don't care if you are at your QTH DIYing with the XYL (i.e., at home, making cookies with the wife – yes, I know what you were thinking). The NCO has the responsibility to copy your message (along with all of the other messages on the net), translate it to a message form and pass it to the Logistics Section Chief or Incident Commander, take any return message and pass it back to the net. Depending on the available manpower, he may also have to log the traffic. The NCO is usually the busiest operator on the net. He does not have time to decode jargon that may have a different meaning to different people. Plain English is understood by most people. Sometimes various accents can be hard to copy but if it is at least in English, we can figure it out.

The other thing to avoid in an emergency is losing your cool. It can and does happen but remember that the message you are passing in some way affects other's lives, property or safety.

Be concise, accurate, calm and composed. Think through what you need to say. Think through how to say it in an understandable manner, Proceed slowly and calmly as though you had to copy it under a high stress situation.

The main take-away from this article is that the "Hamspeak" or jargon is best left off the nets and keep the communication to concise, precise and accurate communication in English. Use phonetics if necessary to prevent repetition in noisey conditions but use only standard phonetics. Your NCO should have a good understanding of them. Leave the Q-signs and 10-codes off the emergency nets and the practice nets. Remember, we tend to operate the way we practice.



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Technical Articles

The Three-Shelf Stacker and Job Site Radio

As some of you know, I recently had a garage added to my house. To most of you, that doesn't seem like a big deal but to me it was a major expense and construction undertaking. I live on a wedge shaped lot so the garage, to remain in compliance with some of the most ridiculous county codes I've ever seen, had to take on an odd shape to keep it at least seven feet from the property line. This left me with an 8 foot by roughly 8 foot extension on a 11 foot by 18 foot (roughly) area to actually park my car. Because of this odd arrangement, I couldn't go the 20 feet wide by 29 feet long which I would have liked. This caused me some trepidation. I wanted a radio shack in my garage as well as in my basement and a nice stereo to allow some music to calm the otherwise savage personality. My plan was to construct hinged work benches that tilt down with folding legs for when I actually park the car in the garage. I had a weird idea based on a battery operated tool rack I had built. I decided to put what little woodworking skills I may have to work to create a job site radio that operates on an internal 12 VDC, 10 AHr battery with speakers built in the unit and two external speakers to add some depth to my narrow garage. I also constructed a three-shelf radio rack for two Motorola Radius radios, a power supply and a power distribution panel from one of my past articles. The power supply is a 13.8 VDC, 30 Amp switch-mode supply that can charge the 10 AHr battery in the radio and run the two Motorola transceivers without breaking a sweat.

You can see in the photo above that there are two antenna connectors, one for VHF and one for UHF. These go to a MFJ-916B Duplexer and up to the antenna in the attic. I placed a dual-band mag mount antenna up in the garage attic on a 20" by 20" steel shelf unit from a rack cabinet. Seems to work like a champ while I work like a chimp (see photo in the introduction).

The radio for music is a very inexpensive mobile radio I purchased on E-bay and it has a Bluetooth input mode which can connect to my music app on my cell phone to provide hours of listening pleasure without commercial interruption. The speakers on each side of the unit are 4 inch full-range speakers in roughly 269 cubic inch sealed enclosures inside the unit. The two external speakers are the same in 269 cu-in enclosures. As it turned out, the sizing of the enclosure (driven more by available space than acoustic design) worked very well. The radio has a handful of equalization modes for Jazz, Classical, Rock, etc. at the very reasonable price of $20. The power output of the radio is over 60 watts of audio – more than enough to blow the 4 inch speakers if driven to the maximum setting.

I found it unnecessary to turn the volume up high enough to damage the system in my garage since the area is not that big.

The radio and the three-shelf unit mount on rails which are attached to the garage walls. I can move them around as I see fit. Obviously, my woodworking

skills need improvement (I've seen woodpeckers that do a better job) but the system is useable and not too bad looking.

-73 de N0PNP

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To VARA or not to VARA Part 2?

Refresher, VARA is a digital weak signal protocol that offers military grade performance available to the ham community. It is offered in two flavors VARA (HF) intended for SSB transceivers on the HF bands, and VARA FM used for VHF & UHF FM that I wrote about last month.

Note that the author says VARA is for amateur and commercial use. It is licensed software that must be registered for a fee of $70 to gain full speed access. You can try it free but at lower speeds. A license key unlocks full speed.

Update on VARA FM, if you want to be able to use traditional VHF 1200 baud packet with the DRA series soundcards it's now fully supported on my VHF gateway. Simply connect to W0KAH-10 using packet 1200, VARA FM Narrow (1200) or Wide (9600). The gateway will recognize and use the appropriate mode. For VARA FM, I suggest doing an auto-calibrate from the VARA FM Modem, Settings, SoundCard, Drive level, Auto Tune and Connect with W0KAH-10, click the a/c plug icon and the process will begin. Your radio should go through several levels of TX drive and my station will report back the level that gave the best signal to noise ratio. You should get at least 20 db, hopefully higher. It may tell you to increase the level from Windows soundcard, if so, increase the drive level from your soundcard. For the DRA boards, it's the top small pot facing the DRA board with USB & LEDS on the left & radio connector on the right. Consider the pot to be the face of a clock and increase by 1 hour forward (right) and try the test again. Keep doing this until there is no improvement.

The next version of VARA FM will include the ability for one hop of digipeating through another VARA FM station. This could be useful in emergencies to extend the range of lower power stations. As with packet digi's throughput will be cut in half, but half speed on VARA FM is probably as good as or better than 1200 baud packet.

This will work with Winlink Express, gateway and peer to peer connections.

Links:

VARA Software: https://rosmodem.wordpress.com/
VARA FM V3.1.1 is what I use for my gateways.

Masters Communications: https://www.masterscommunications.com/ I am using the DRA-30 with DB9 for my VHF Gateways and a DRA-65 (DB-9) for UHF. I bought the kits with cases. Note that the DRA-30 does not have self generated VOX, whereas the DRA-65 does. For VARA FM you don't need VOX. If you want to do packet at 1200 baud, you can download and install UZ7HO's soundmodem program v1.05 and his ptt.dll file as well. Put both files into the same directory/folder and in the soundmodem setup for PTT use the

advanced settings and select the RA board from the dropdown.

Visit Masters Communication site for help in deciding which model DRA board is right for your radio & intended use. Radio Adapter FAQ

Scott has a FAQ about setting up soundmodem for PTT with a DRA card here http://www.masterscommunications.com/products/radio-adapter/faq/ptt-soundmodem.html

UZ7HO soundmodem105.zip is available here along with ptt.dll UZ7HO soundmodem

Next month VARA HF.

73, Ken W0KAH

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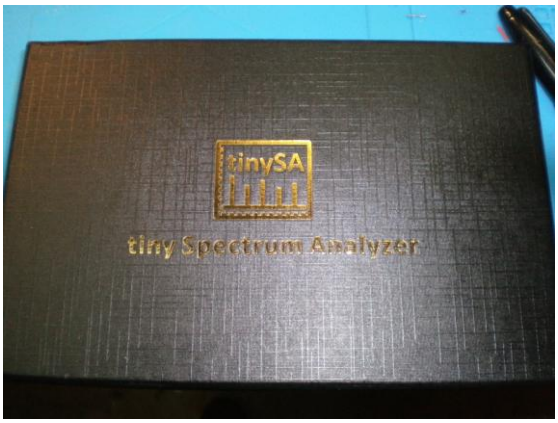
Product Review

Tiny Spectrum Analyzer (tiny SA)

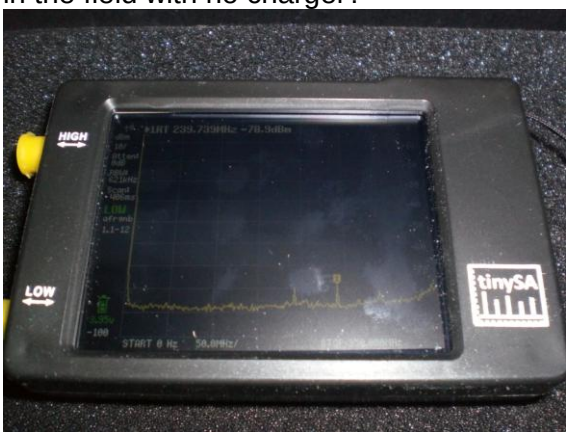
Alright folks, it's time for another product review from the N0PNP Mad Scientist Lab. I saw this little gem in QST magazine last month (December 2020) and had to have one. It is called the Tiny SA or Tiny Spectrum Analyzer. I thought this would go well with my Nano-VNA or Nano-Vector Network Analyzer. The Tiny SA comes in this very ubiquitous black box with the words "tiny Spectrum Analyzer on it.



Opening the box, you will find the analyzer in a small bag. There will be a female to female SMA adapter and two SMA male to SMA male cables about 8 inches long. This unit is small enough to fit in a shirt pocket but I was curious what it could do. On the bottom of the analyzer is a label that tells part of the story. Unlike the Nano-VNA with its 1.5 GHz bandwidth, this unit only goes up to 960 MHz. Before you all get too disappointed, remember that most of us are using equipment that operates below 460 MHz so we may not be able to see the third harmonic of a 450 MHz signal but what do you expect for a very cheap and very portable unit. If you're not careful, you could easily forget you have it in your pocket.

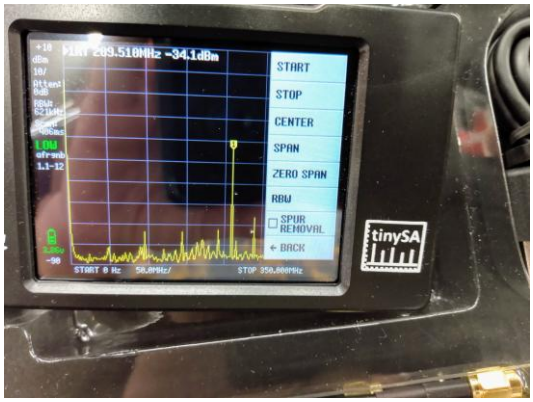
Of course, this unit came with no instructions. The port marked "LOW" is the low frequency port from 100 kHz to 350 MHz and the "HIGH" port is the 240 to 960 MHz port. The default mode is to use the lower frequency port. The unit is USB charged which is nice but it does not go for

too long on a charge. I got a few hours of playing time before it got low and needed a recharge but how many hours would you expect to be operating a spectrum analyzer in the field with no charger?

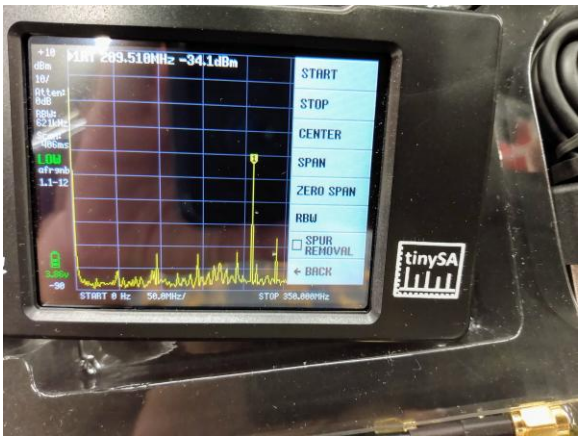


The interesting thing is that this unit is also a signal generator. Either port can be used to receive or generate signals. If the two ports are connected together, a calibration signal is sent from the LOW port to the HIGH port. This function allows you to verify the comb spacing (i.e., 10 MHz, 20 MHz, 30 MHz, etc.) on the analyzer. I hope you all can forgive the poor photography. Next year, I may need to buy myself a new camera for Christmas.

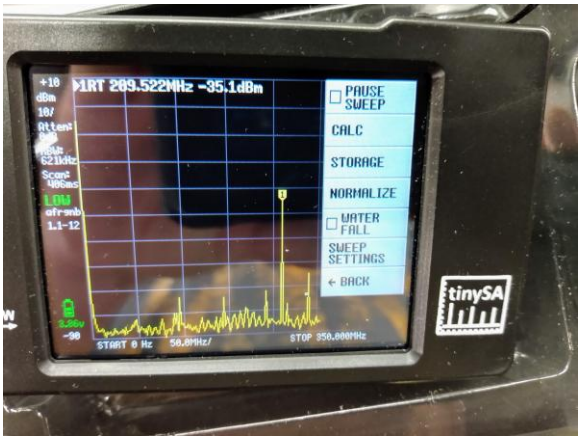
The tiny SA has a touch screen and a toggle switch on the top that allows selection of the many functions and modes. The photo below shows the main menu.



The menu is hard to read in this photo but much easier on the unit. There is a preset default that sets the unit to factory settings, then a FREQUENCY submenu that allows you to set the range of the SA. The frequency settings are: start, stop, center, span, zero span and spur removal. There is a BACK choice that takes you back to the main menu. The LEVEL Menu shown below has the amplitude scaling functions and unit choices (i.e., dBm, dBuv, etc.).

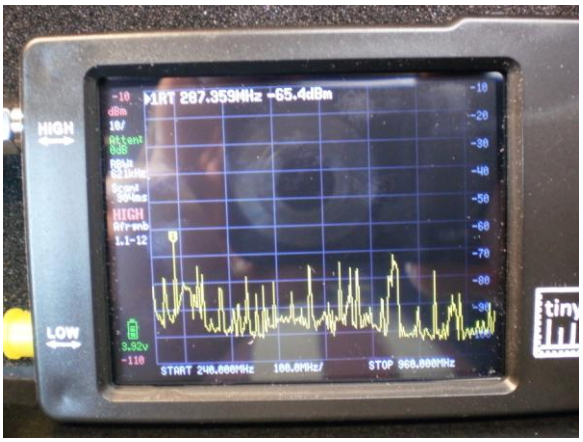


There is a menu which allows control of the sweep and allows a waterfall display below the normal spectral display. I could not get a good photo of that menu – camera issues (more likely operator error). There is a marker control menu that has some of the same functions as the larger, much more expensive spectrum analyzers, markers can be set up, there is a marker ops function and a search function (really a submenu that allows left/right searches for max and min values).



This SA can calculate your -3dB bandwidth for you, harmonics and who knows how much other “stuff.”

There are menus and options for operation that I have not even had time to explore yet. For the price, if you want to get at least some graphical capability, this is a good buy.



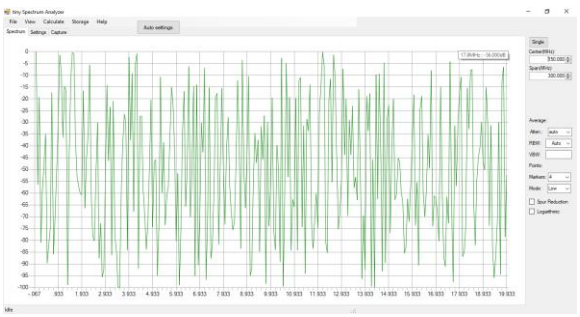
The tinySA has very clear and is a nice touch sensitive screen that seems to work in very much the same manner as the Nano-VNA. One thing I didn't like was the update rate, also, the screen is a bit small. It is noticeably slower than my Rigol DSA815 but at the low cost of $50, I am not complaining since the Rigol cost more like $1300. This is a very inexpensive SA with a lot of power for the average user. I still have not tested all of its capabilities but I wanted to get something in print to let you all know what is out there for a very low price.

I checked it for accuracy against my service monitor (CT-3000B) and my Rigol DSA815. The tiny SA is so close to the mark on both that I was impressed. The folks that designed this did a decent job. I don't know how it operates in high RF environments since the case is plastic. The Nano-VNA case is metal and it has susceptibilities so I can imagine the tiny SA does as well.

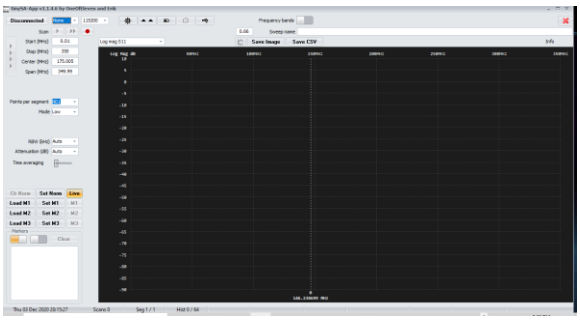
One other thing I discovered about this SA is that it has a tracking generator up to 350 MHz so you can show filter bandpass or tune duplexers (for VHF). This does not come out clearly in the documentation but it is a capability of this little device.

Bottom line is WOW!!! It is hard to imagine that you can now buy both a very capable spectrum analyzer and vector network analyzer for under $200. In years past, this consisted of barely portable equipment costing thousands of dollars. If they could come out with a nice pocket sized 500 MHz four trace pocket oscilloscope and a pocket Time Domain Reflectometer (TDR) for around $50 each, I'd get rid of some of my shelf stack and carry my lab around in my pockets (might have to get some cargo pants). This makes tremendous capability available to folks with average to lower budgets. If you want to learn more about this really impressive device, check out https://tinysa.org.

There is also PC based software that controls the SA and captures data from the unit and a user's manual of sorts available from the website noted above. Go check it out. You can't beat it for the $50.00 price tag. If you buy one, just make sure you button your shirt pocket so you don't bend down and lose it.



Tiny SA Software Screen



Tiny SA App Screen

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ECA OFFICERS (2020-2021):

President:	Wayne Ault
Vice Pres:	Bill Moss
Sect/Treas.:	Jeff Young
Director 1:	Wayne Garrison
Director 2:	Steve Cave
Director 3:	Bill Grimsbo

Items For Sale

We have a couple of items for sale including the following:

- Three element beam antenna kits for DF'ing - $10. Four available
- TDoA DF'ing kits (Time Direction of Arrival) - $12. Two available
- Various meters and test equipment including frequency counters, capacitance and inductance meter, etc.
- Various antennas including VHF base station and VHF beam.

If you have interest in any of these things, send an e-mail to william.a.grimsbo@charter.net and I will get back to you.

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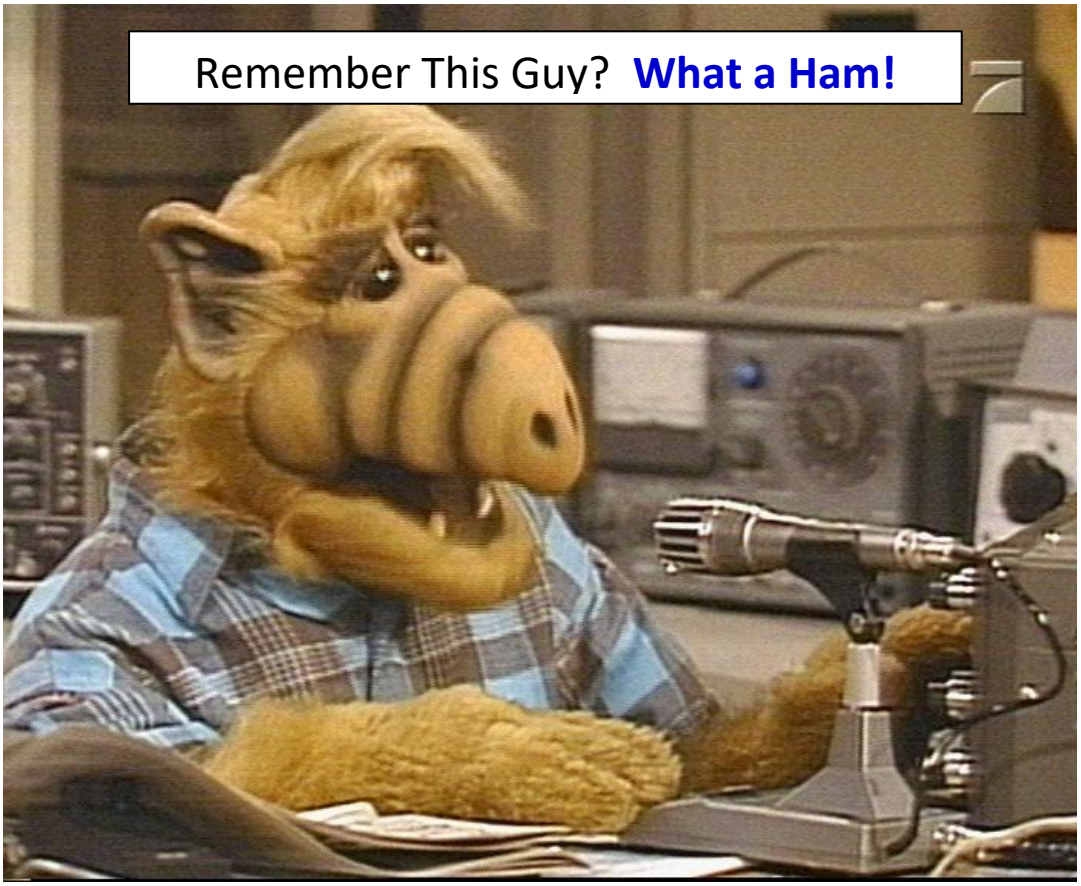

Net Control Roster

Week	NCO	Callsign
1	Bill Grimsbo/Jeff Shilt	N0PNP/KC0ATF
2	Ken Humbertson	W0KAH
3	Jeff Young	KB3HF
4	John Regan	AD0MO
5 (Floater)	Wayne Ault	WD6EZQ

The scheduled Net Control Operator is responsible for finding a replacement if he/she is unavailable for their scheduled net or paging. Any EMA volunteer interested in becoming a Net Control Operator on either the EMA Training Net or the ARES® Net should contact Bill Grimsbo (N0PNP) at william.a.grimsbo@charter.net.

Some things to remember:

NCOs - If someone does not open the net by 5 min after the designated time, one of the other NCOs are requested to open the net, take check-ins and handle any traffic as appropriate.

NCOs - If you are unavailable to run the net, please make arrangements – in advance – to have one of the other NCOs run the net in your place.

Membership - The net is a very important method of keeping involved with what is happening with the Association and ARES® - Please consider it part of your weekly calendar (i.e., check in and let us know you are still out there).

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Calendars

January 2021

Sun	Mon	Tue	Wed	Thu	Fri	Sat
27	28 EM Net at 1900 ARES Net at 2000	29	30	31	1 **New Year's Day**	2
3	4 EM Net at 1900 ARES Net at 2000	5	6	7 ECA Meeting 1900 hrs	8	9
10	11 EM Net at 1900 ARES Net at 2000	12	13	14	15	16
17	18 EM Net at 1900 ARES Net at 2000	19	20	21	22	23
24/31	25 EM Net at 1900 ARES Net at 2000	26	27	28	29	30

Notes:

1 All meeting locations are subject to change depending on room availability. Tune into nets for latest information.
2 DEM Net is on DEM-VHF-1
3 ARES Net is on 145.490(-) MHz. CTCSS: 141.3Hz

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February 2021

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8 EM Net at 1900 ARES Net at 2000	9	10	11 ECA Meeting 1900 hrs	12	13
14  Valentine's Day	15 EM Net at 1900 ARES Net at 2000	16	17	18	19	20
21	22 EM Net at 1900 ARES Net at 2000	23	24	25	26	27
28	1 EM Net at 1900 ARES Net at 2000	2	3	4	5	6

Notes:

1 All meeting locations are subject to change depending on availability. Tune into nets for latest information.

2 DEM Net is on DEM-VHF-1

3 ARES Net is on 145.490(-) MHz. CTCSS: 141.3Hz

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March 2021

Sun	Mon	Tue	Wed	Thu	Fri	Sat
27	1 EM Net at 1900 ARES Net at 2000	2	3	4	5	6
7	8 EM Net at 1900 ARES Net at 2000	9	10	11 ECA Meeting 1900 hrs	12	13
14 **Daylight Savings Time**	15 EM Net at 1900 ARES Net at 2000	16	17 **St. Patrick's Day**	18	19	20
21	22 EM Net at 1900 ARES Net at 2000	23	24	25	26	27
28	29 EM Net at 1900 ARES Net at 2000	30	31	1	2	3

Notes:

4 All meeting locations are subject to change depending on availability. Tune into nets for latest information.

5 DEM Net is on DEM-VHF-1

6 ARES Net is on 145.490(-) MHz. CTCSS: 141.3Hz

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