ECA Newsletter

Volume 25, Issue 4 September 2024

Introduction

Spring in the St. Louis metro area was a bit rough with severe weather in May and several tornados across the area. We had great support from the amateur community with over twenty weather spotters for most of the nets. The weather spotters from outside our group are becoming accustomed to our net procedures and protocols and the nets seem to run smoother than earlier in the spring.

There is a report on Field Day activities later in this newsletter. There were a number of exercises that took place over the summer that REM was involved with but our participation was minimal. Field Day however, is a major exercise for amateur radio – I hope you had the chance to participate.

Simulated Emergency Test (SET) is the next big exercise for ECA. SET will be held the first weekend of October which falls on the 5th of October and will run from 0900 to 1200 with a hot wash to follow. Lunch will be part of the hot wash at the staging site. We expect to have CERT, Red Cross, REM, and MARS involved to some degree with this exercise so come out and participate. We will be setting up the communications trailer and the NVIS antenna for some HF work with MARS. If the weather is good it should be a nice outing. Bring your kits as though you are responding to a real emergency.

We are about in the middle of the hurricane season as this is being read. If you want to hear what the hurricane watch net sounds like, tune in to 14.325 MHz in the daytime and 7.268 MHz in the evening. If you want to learn more about the hurricane watch net go to https://www.hwn.org/about-us/net-procedures.html and read up on it.

We hope you enjoy this newsletter and please sign in to our nets and come out for the meetings.

For more information on our meetings and links to other information, check out our website at www.w0eca.org.

Remember that our nets are according to the following schedule:

Regional Emergency Management Net – every Monday night at 1900 hrs on DEM-VHF-1 repeater.

ARES® Net – 2000 hrs on the 145.490(-) CTCSS 141.3 Hz repeater

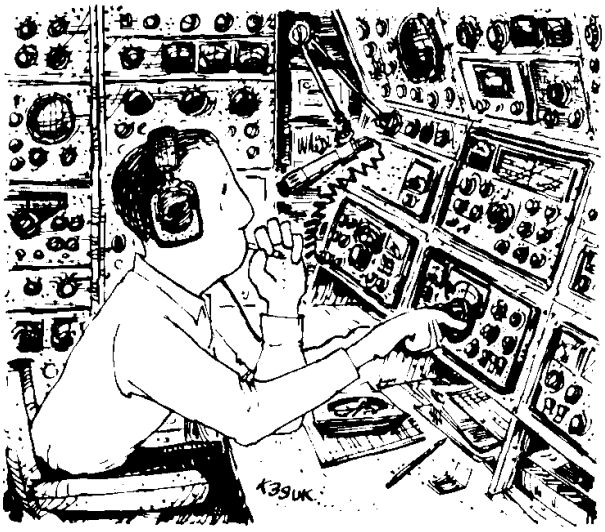
ARES Traveler's Assistance Net – As required in the event of a winter storm warning issued by the National Weather Service.

SkyWarn Nets – As required in the event of a severe weather warning for the St. Charles County area.

Our meetings are on the second Thursday of the month at 1900 hrs at the County EOC at 1400 TR Hughes Blvd near Tom Ginnever behind the County Police building. All are welcome to attend our meetings and all radio amateurs are welcome to check in to our ARES® nets.

EMCOMM and You

Have you ever wondered what you would do if you heard "Emergency Traffic! This is not a drill…" What would be your first reaction? What about if you heard an SOS or Mayday on HF? These are things you don't normally think about but you don't want to have to figure it out when it happens. This is why we (ECA) publish a Field Operations Guide for all our members. The Field Guide has the phone numbers you may need to call in an emergency. It is always possible to add numbers like the U.S. Coast Guard and other federal agencies in the event of an emergency that takes us off the US coast (please do NOT use these numbers unless it is a true emergency).



SSO . . . SSO . . . SSO . . .
I wonder what that means?

As amateur radio operators, we should always be ready to answer an emergency call locally or distant. So, what sort of information should we get from someone sending a distress call? One important piece of information is location – it's all about location (mile markers on a river, Lattitude/Longitude coordinates, street intersections, mile markers on the highway, etc.). If we don't know where they are, we don't know where to send help. Another important piece of information is the nature of the emergency. That is information the respnding agency will need to dispatch the right kind of help. Locally, we would probably call the Police Department or State Patrol and relay the information to them or put them directly in contact with those needing help. Most folks these days carry cellular phones so just having them dial 911 may be the best thing to do. Internationally, it may be the Department of State or the Coast Guard that needs the information. If the emergency is in international waters, the U.S. Coast Guard should be contacted directly by phone or radio – do NOT send an e-mail. By the time they see it, it will likely be too late.
The FCC regulations state the following:

"Section 97.111 of the Commission's Rules, 47 C.F.R. §97.111, authorizes an amateur station licensed by the FCC to exchange messages with amateur stations located in other countries, except with those in any country whose administration has given notice that it objects to such radio communications. Currently, there are no banned countries."

- DE N0PNP

Return to TOC

Don't Forget about **SET**. **Simulated Emergency Test** is held yearly and is sponsored by the ARRL. ARES® teams are encouraged to participate. The scheduled date is **October 5th** from **0900 to 1200 hours** so we'll be looking forward to seeing you there.

Technical Articles

Prototype Decoder with Internal Receiver

This version of my two-tone decoder project is an evolution of the previously published configurations with the addition of an internal FM receiver which functions according to the Table 1 frequencies and is a wide-band receiver which is capable of receiving higher deviation signals than the typical UHF FRS receiver.

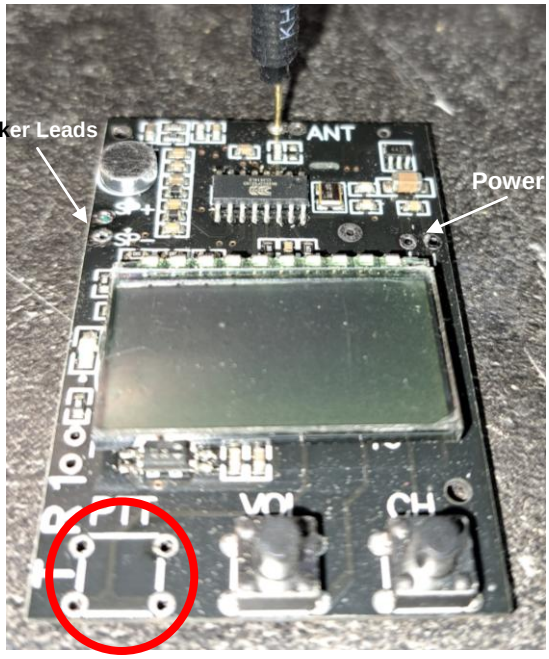
Table 1 – Internal Receiver Channels

RCVR CHANNEL	FREQUENCY (MHz)	CHANNEL DESIGNATION
CH. 1	467.6625	FRS CH. 12
CH. 2	462.6625	FRS CH. 5
CH. 3	446.05625	AMATEUR
CH. 4	409.8000	LOW POWER UNDEFINED
CH. 5	168.2625	LOW POWER UNDEFINED
CH. 6	40.650	LOW POWER LOW BAND VHF
CH. 7	27.125	CB. CH. 14

Channel 2 of Table 1 is highlighted because it is allowed to transmit at up to 5 watts of ERP on the 462 MHz GMRS channels. The 467 MHz channels allow only 0.5 watts ERP using a transmitter which complies with Part 95 of the FCC regulations.

The internal receiver is actually a walky-talky board from AliExpress which is pre-programmed with the Table 1 frequencies. Since these walky-talky boards are being used as receivers only, I don't have to worry about part 95 compliance. Use of the first two channels allows use on FRS channels 12 or 5, which is handy for CERT teams using those particular channels.

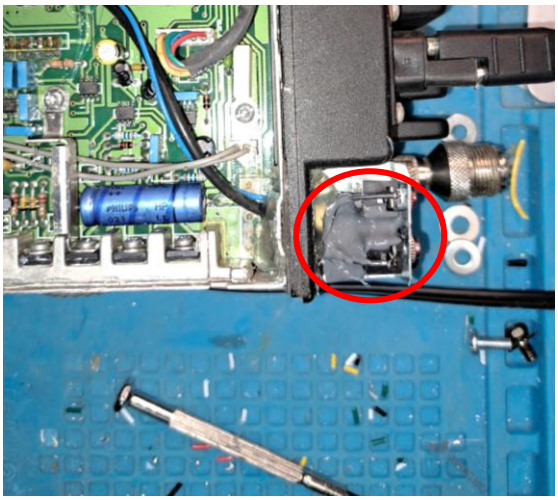
The following photograph is the walky-talky board modified to remove the push-to-talk switch to ensure it cannot be accidently pressed when the unit is fully assembled. The antenna is simply a coil of wire about 2 inches long and covered with heat shrink. It could be replaced with an external antenna to improve performance. The speaker and power leads are shown in the photograph. It should be noted that the speaker return is not ground so an isolation transformer is required.



The Motorola Maxtrac m120 five pin version (which are easy to find at relatively low prices) is modified to bring the Push-To-Talk (PTT) signal and microphone audio to the outside of the radio (without using the microphone interface). I tuned the transmitter to 2.5 watts output. Some Maxtrac transmitters (the higher power versions) will go spurious if tuned down too far but the lower power (10 watt) versions do not seem to have that problem. The key is in the Motorola model numbering system. The model numbers start with an "M" and the first number following is the transmitter power rating. For this use I chose a M34GMCXXXXX model

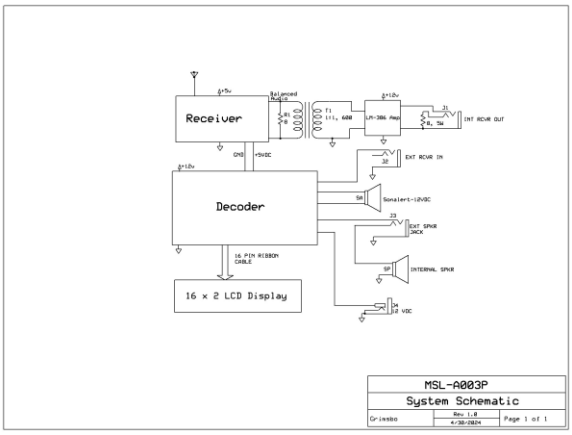
which is the 10 watt version. I set the deviation to less than 2.5 kHz to comply with the Part 95 regulations. This does not make the radio a NBFM radio but the deviation is within the requirements. When I got this radio from Ebay, the receiver was deaf as a post. I tried everything I could think of and started to go into the board itself. I found that the audio part of the receiver was working (hiss when unmuted) but it could not receive a signal. Further investigation using a handheld scanner on the crystal frequency, found the second oscillator crystal was dead. I had to order and install a 44.645 MHz crystal and it was working as specified. If I were to put this into field use, I would want to purchase a part 95 fully compliant radio as a transmitter. This is good enough for testing in my shop with dummy loads, etc. The walky-talky receivers are not very picky.

The figure above shows the modification to J8 of the Maxtrac. Pin 12 is the microphone audio input, pin 11 is the PTT and pin 10 is ground. The microphone audio is routed using coaxial cable to prevent noise coupling and the PTT is a single stranded AWG 24 wire (not critical). These wires go to two 3.5 mm mono audio jacks mounted to the radio heat sink using epoxy as shown below. The shield of the coax provides the return for the PTT signal as well.

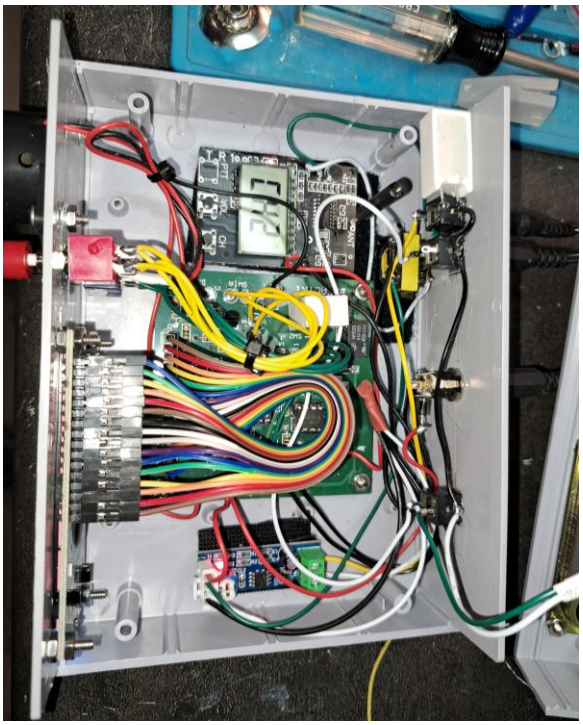


The five pin standard interface connector is removed to accommodate the two 3.5 mm jacks.
The encoder, shown below connects directly to the two jacks (PTT and Mic Audio) rather than needing an interface board as with the 16 pin Maxtrac.

The signal routing of the decoder is shown in the diagram below.



The internal routing is shown below using the standard wiring of the decoder with the additional walky-talky board and LM-386 audio amplifier board added. An audio isolation transformer is required since the audio return on the walky–talky board is not power ground.



This version of my decoder is very effective at short distances and testing is underway for longer distances (~150 meters). It is expected that the distance will not matter assuming the transmitter has the output power to reach each receiver with a full or nearly full quieting signal. There are no adjustments to increase receiver sensitivity unless a (Ramsey SA-7 or equiv.) preamp is used to boost the incoming signal (assuming the SNR is high enough to make the preamp effective).

The receiver and the LM-386 amplifier are velcro'd to the bottom of the enclosure using the high strength Velcro.

All functions of this decoder unit are the same as for the older version which has been published in this newsletter with addition of the internal speaker and internal receiver.

Note that in the photo there is a diode gate on the power input to prevent using a center-negative power supply.

There are three 3.5 mm jacks on the back of the unit. One is the internal receiver output (amplified by the LM-386 amplifier), the external receiver input jack and the external speaker output jack. An external receiver such as a Bearcat scanner or equivalent can be plugged into the external receiver jack or a 3.5 mm male to male jumper can be used to connect the internal receiver. Since this is a prototype, I wanted the flexibility and adding another 3.5 mm jack is easier than adding a switch to enable/disable the internal receiver.

- 73 N0PNP

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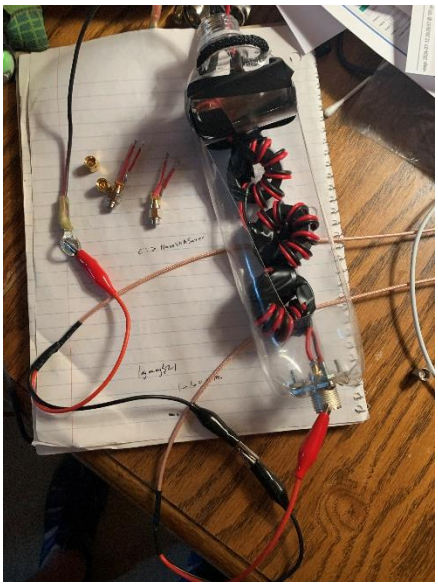
Check out our website at www.w0eca.org.

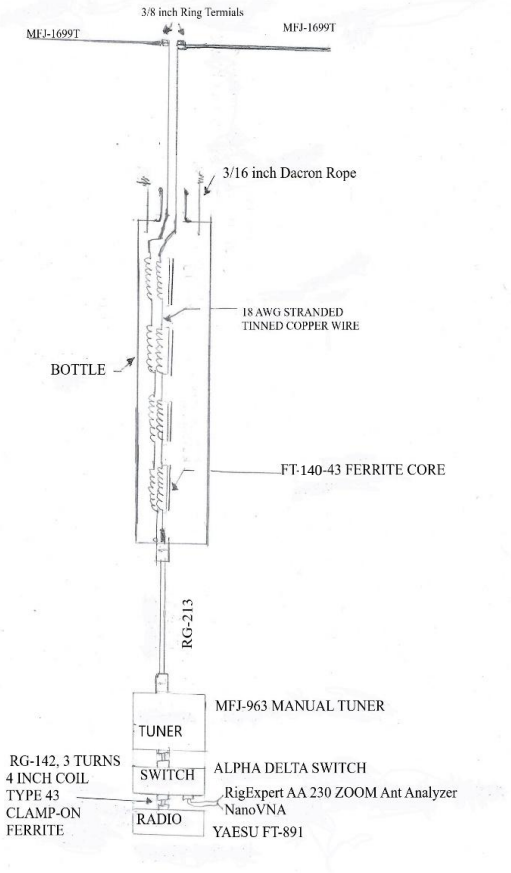
Bottle Choke 6-160meters greater than -30db

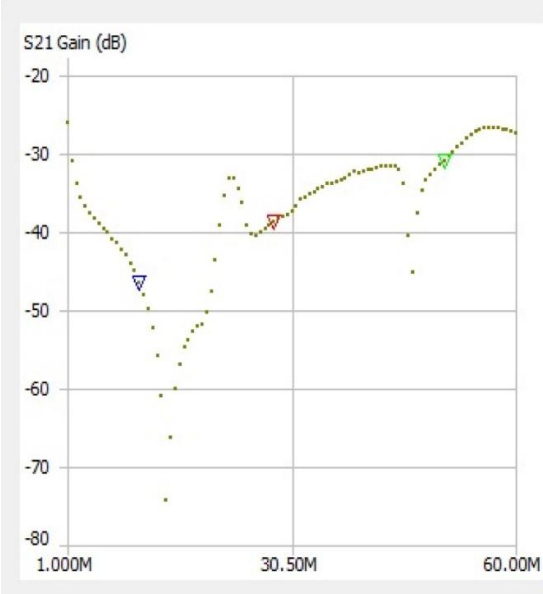
Common mode insertion loss
By Jerry Schapp AE0MY



Above there are four FT-140-43 ferrite cores in series, 3 are showing, the 4th one is hiding, each with 8 dual parallel 18 AWG stranded copper wire windings (Teflon silver coated copper would be better). Two-port S21 measurements were made using the NanoVNA model H, where signal entering port 2 on one of the red leads is compared to the signal from port 1 on the other red lead. The reference plane was moved from the Nano front connectors to the allegator clip leads by performing the calibration at the clips, instead of using the SMA short and open caps on port 1 the red and black leads were shorted and the left open, for thru cal between ports 1 and 2 black leads were shorted and red leads were shorted, thru cal lead remained shorted for the first measurement to test the zero reference, the next measurement was made with black leads shorted and red leads on either side of the choke shield winding(the center conductor winding will test the same), the choke has an SO-239 at one end and the other end has a pair of ring wire terminals to accommodate 3/8 inch stud, the size of the antenna hamstick mounts.

The cores were wound in series to allow greater heat disipation though 50W forward power is the most that the dipole will see. When taped to my portable wooden atenna mast at 20 feet the bottle wiil be lighter and have less wind resistence than he previous 5 inch dia. coil of coax with ferrite clamp-ons. Being more water resistant be will necessary outside when leting the heat out without leting water in by rolling down the plastic flap now taped to the neck.





The green marker above is in the 6m range, from another chart of the 6m band 54 MHz has -29db common mode attenuation, not bad for an amateur.

Here it is installed on my attic hamstick dipole, ready and just in time for the JS8 QSO Party which is an all-day event held monthly on the second Saturday where an operator of a low power station with a poor performing antenna can have some fun. **73** – Gerry

Return to TOC

Editorial Note: *There is a great set of screw extractors available at Harbor Freight from ICON that covers from 1/8 to ½ inch for the 15 piece set. There is a larger 25 piece set that covers up to 7/8 inch as well but it is quite a bit more for extractors most of us will never use. The 15 piece set is $40 and the 25 piece set is $60. Each extractor has the drill bit size marked on it so you don't have to guess. These extractors are multi-spline and do a nice job grabbing the screw you need to extract. You can use a standard socket to drive them rather than the old square back that requires an adjustable wrench. Not advertising for HF or anything but a good deal is a good deal.*

Return to TOC

ECA OFFICERS (2024-2025):

Following is the officers as of the July 2024 meeting:

- Bill Moss, KE0RXS as President
- Mark Hall, AE0ME as Vice President
- Jeff Young, KB3HF as Secretary/Treasurer
- Ken Humbertson, W0KAH as Director
- Wayne Garrison, KB0BZR as Director
- Wayne Ault, WD6EZQ as Past President Director

Return to TOC

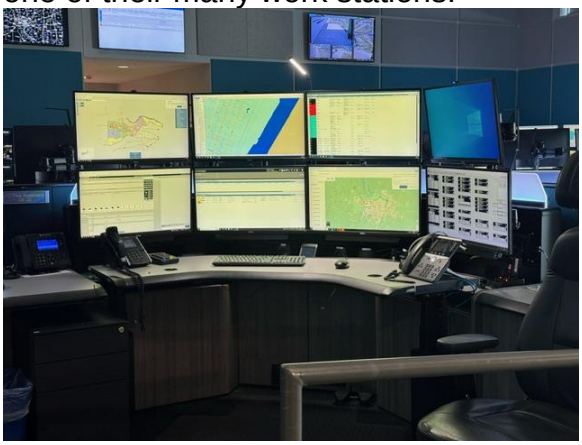
County Police Open House

For those of you that missed the County Police Open House, you missed a very informative and friendly event. The weather was perfect for the event with the high in the mid-70s. The layout was different than past years but it made for an efficient flow of people. Unfortunately, it was not as well attended as in past years.

ECA attendance was 17 people from 10:00 am to 3:00 pm for 85 volunteer hours. The photo above is the Regional Emergency Management Emergency Operations Center (EOC) radio room which is packed full of amateur radio and public safety systems as well as siren encoders (shown below).

The Interagency Command Center and the communications trailer were parked in the lot behind the EOC.

Tours of the ICC and Comm. Trailer were given by staff and volunteers. County Dispatch opened their doors for tours as well. See the photo below for one of their many work stations.



The County Police helicopter was a big attraction for young and old alike. With the cockpit open to view.

Everyone likes watching an aircraft fly that that is constructed from hundreds of moving parts all of which were built by the lowest bidder.

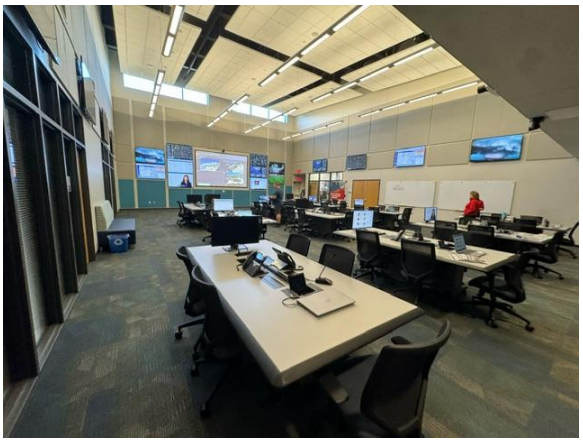
Another favorite is the Bomb Squad robot. This tool is really amazing. It can shoot water at twice the speed of sound and cut through nearly anything.

The Regional Emergency Management (REM) fan boat is also an attraction. This craft is used in floods where the objects in the water could foul a lower unit on an outboard motor.

The Special Weapons and Tactics (SWAT) team was there to display their gear as well as the Tactical Support Unit below.

REM also had their drones on display and flew one above the event to demonstrate their capability.

This Open House is always a good event and an opportunity to get to know some of the people that work in the public safety arena. The last photo is our very own EOC.



As volunteers, we should be proud to be part of this important sector of the response organization that exists to serve our community. This event is expected to occur every other year so the next one will be in 2026. We look forward to it.

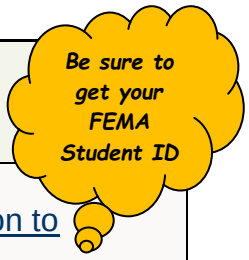
Thanks to REM for providing lunch for the staff and volunteers.

Thanks to Robert Graham (NØPJX) for the really excellent photos.

Return to TOC

Skills Training

If you have not been to the FEMA Independent Study website in a while, you should go take a look. There are literally hundreds of on-line courses there to take advantage of. Here in St. Charles County, we take advantage of a close relationship with Emergency Management so obtaining a free education on Emergency Management is a sensible thing to do. The MO. Section Skills Book has several courses as recommended for the ARES® member including IS-100, 200, 700 and 800 but there are many more to learn from. Those interested in the Emergency Management Professional Development Series will want to take the following courses:



Course Code	Course Title
IS-120.c	An Introduction to Exercises
IS-230.e	Fundamentals of Emergency Management
IS-235.c	Emergency Planning
IS-240.c	Leadership and Influence
IS-241.c	Decision Making and Problem Solving
IS-242.c	Effective Communication
IS-244.b	Developing and Managing Volunteers

Each of these courses present some good background information on Emergency Management. These courses are not requirements in the skills book but in the Incidents/Events Participation section or in the blank spaces in the Leadership section, you may add these courses.
For those that have a plan or interest to eventually enter ARES leadership at some point, these courses will come in handy. Most of the courses are relatively easy to pass since they are essentially common sense exercises. Some will challenge you to think about

how to apply them to specific situations we could run across here in the Midwest. If you are interested in these courses, you can go to the https://training.fema.gov/is/searchis.aspx?search=professional%20development website or click on the hyperlinks in the table above. Much of the training on exercise planning deals with Homeland Security Exercise and Evaluation Program (HSEEP) paperwork and how to properly fill it out but there are some very good pointers in the training as well regarding how to set up an exercise, how to identify players vs. staff, press, etc., what part to play in the exercise and how to carry out a successful exercise. There are pointers on how to document the exercise and pull lessons learned from it. Since we will be working closely with Emergency Management, a knowledge of how to fill out the necessary HSEEP paperwork for exercise credit can be helpful. If you have been around Emergency Management for any period of time you will find that there is great emphasis on paperwork and reports. Knowing how to document your exercises to enable Emergency Management to take advantage of them for exercise credit is important to them and it should be to us as well. Regarding the other courses, I found the Leadership and Influence, Decision Making and Problem Solving and Developing and Managing Volunteers courses to be useful as well. In addition, each of the courses has Continuing Education Unit (CEU) credit if you have interest in building your CEUs. Once completed, you will receive a certificate that you have completed the Professional Development Series which is a nice piece of paper to put on your wall.

- N0PNP

Return to TOC

Items For Sale

We have a few items for sale including the following:

Various meters and test equipment including frequency counters, capacitance and inductance meter, see below:

- 50 MHz B&K Model 1801 Freq Meter for $20
- Heathkit 2240 LC Bridge for $20
- RF Applications Model D-144 VHF Deviation Monitor with manual for $20
- Antennas, power supplies, etc. for various prices depending on the unit
- Small stereo amplifiers (10 to 15 Watts) for around $20
- VHF Amplifiers, etc.

I also have a 102 pin SMD PIC development kit if anyone is interested for **$50**. This kit is brand new and is the EasyPIC V7 for the 102 pin SMD PICs. That's less than half the price if ordered directly from Mikroelektronika. Software tools and library examples are free online and compilers for PIC Basic and C are available online.

If you have interest in any of these things, send an e-mail to william.a.grimsbo@gmail.com and I will get back to you. If you have any items you would like to advertise for sale send in an e-mail and we will try to get them in the next newsletter. Please keep these things to radio or emergency-related items in keeping with the intent of the newsletter. Thanks.

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Net Control Roster

Week	NCO	Callsign
1	*Jim Combs/Richard Tadlock	KF0HFB/KF0JEJ
2	Ken Humbertson	W0KAH
3	*Paul Orf/Jeff Young	AD0YL/KB3HF
4	*Zach Bush/Bill Grimsbo	KF0FXJN0PNP
5 (Floater)	*Don Weir/Bill Grimsbo	KZ8E/N0PNP

* First name/callsign is the primary and the second name/callsign is the backup.

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@gmail.com.

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).

Return to TOC

Calendars

September 2024

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

Notes:

1 REM Net is on DEM-VHF-1
2 ARES Net is on 145.490(-) MHz. CTCSS: 141.3Hz
3 **HAPPY LABOR DAY!**

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October 2024

Sun	Mon	Tue	Wed	Thu	Fri	Sat
29	30 EM Net at 1900 ARES Net at 2000	1	2	3	4	5 **SIMULATED EMERGECY TEST - 0900**
6	7 EM Net at 1900 ARES Net at 2000	8	9	10 ECA Meeting 1900 hrs	11	12
13	14 EM Net at 1900 ARES Net at 2000	15	**16**	17	18	19
0	21 EM Net at 1900 ARES Net at 2000	22	23	24	25	26 ***No Halloween Hamfest this year. Sorry***
27	28 EM Net at 1900 ARES Net at 2000	29	30	31 	1	2

Notes:

1 REM Net is on DEM-VHF-1
2 ARES Net is on 145.490(-) MHz. CTCSS: 141.3Hz
3 HAVE A GHOSTLY HALLOWEEN!

[Return to TOC]

November 2024

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

Notes:

1 REM Net is on DEM-VHF-1
2 ARES Net is on 145.490(-) MHz. CTCSS: 141.3Hz
3 HAPPY THANKSGIVING!

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December 2024

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

Notes:

1 REM Net is on DEM-VHF-1
2 ARES Net is on 145.490(-) MHz. CTCSS: 141.3Hz
3 MERRY CHRISTMAS & *Happy New Year*!

Return to TOC