ECA Newsletter

Volume 24, Issue 3 **June 2023**

Introduction

Welcome to the third newsletter of 2023. It sure seems that 2023 has been a busy year so far. The number of winter weather warnings was not that high and it seemed like a cool but not too bad winter. Spring has been OK thus far but there is more to come as this is written. The La Niña weather patterns are continuing but decreasing to a more neutral phase of El Niño Southern Oscillation (ENSO). ENSO is an alteration between warm phase El Niño and cold phase La Niña events. What this all means is that the temperatures of the ocean's surface is tending to a more average surface temperature with some minor variation between warm phase El Niño and cold phase La Niña events. Climatologists make all sorts of money trying to figure this out. Until they do, I'm going to still bake cookies in my gas stove and drive my gas powered car to the grocery store (sorry guys – not really).

Anyway, back to radio,,,

Field Day is scheduled for the 24th through the 25th of June 2023. Field Day is always the fourth full weekend of June so I hope everyone is looking forward to it. The Simulated Emergency Test schedule is only tentatively set for 7 October 2023. We will try to coordinate SET around statewide exercises if possible. It would be nice to be able to work both concurrently but it depends on many factors. The County Police Open House, usually scheduled in early to mid-September will be postponed until 2024 and run on an every-other year basis as we understand from the County Police sources.

Hopefully, in this newsletter, we will have something for most people's interest. There are some technical articles, some EMCOMM articles and something to help with completing some of the skills in your skills book. As this introduction is written, we are collecting articles. If you want to submit an article for a future newsletter, send it via e-mail to william.a.grimsbo@charter.net and we will do our best to get it in the very next newsletter. Almost any format is acceptable including .txt, .doc, .docx files. **Please do not send articles in .pdf format since translating them over are more difficult and time consuming.**

Net attendance has been good and we appreciate the check-ins.

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.

Our meetings are on the second Thursday of the month at 1900 hrs at the County EOC on 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

Simulated Emergency Test (SET) is our next major exercise after Field Day. The following is an excerpt from the 2015 ARRL ARES® Handbook addressing the SET exercise.

"Chapter 6: The Simulated Emergency Test

The ARRL Simulated Emergency Test is a nationwide exercise in emergency communications, administered by ARRL Emergency Coordinators and Net Managers. Both ARES and the National Traffic System (NTS) are involved. The SET weekend gives communicators the opportunity to focus on the emergency communications capability within their community while interacting with NTS nets. SET weekend is usually held in October, and is announced in *QST*.

6.1 Purpose of SET

- To determine strengths and weaknesses, in an exercise environment, of ARES groups at local and section levels.
- To provide a public demonstration of Amateur Radio Service capabilities to partner organizations and agencies during times of emergency or disaster.
- To help radio amateurs gain experience in communications using standard procedures and a variety of modes under simulated emergency conditions.

6.2 SET Format

The SET can be organized at any level within the ARES organization structure. It can be organized by an ARES group or as part of a larger exercise designed by a partner organization or agency. The exercise should have a defined timeframe and follow standard exercise protocols and practices. The exercise may focus on any event that would potentially require an Amateur Radio response, e.g. hurricane, 911 outage, flood, etc. Participating groups should focus on testing/utilizing a variety of Amateur Radio modes and bands, accurate handling of disaster-related messages (tactical as well as health and welfare), and utilizing the public information officer function of ARES.

6.3 SET Date

The official SET weekend is the first full weekend of October; however, ARES groups are free to conduct their SET any time during the calendar year. The activity period should not exceed 48 hours. The deadline for receipt of all reports is early February of the following year, i.e. 2014 SET reports are due February 3, 2015. All SET reporting forms will be available on the ARRL website.

6.4 Preparing for SET

Specific skills are required to design an exercise properly. It is not something that everyone knows how to do instinctively. Your SET should be designed by someone who has exercise design training, such as Independent Study course IS-139: Exercise Design, available online at no charge from FEMA's Emergency Management Institute (EMI). Employees of your local or state emergency management agency may have this or more extensive exercise design training and can be a valuable resource.

- Emergency Coordinators sign up all available amateurs in their area and incorporate them into the SET plans. They should make sure to include newly-licensed radio amateurs as well as veteran amateurs. Well in advance of the SET, the Emergency Coordinator (or a person he/she has designated) should:

- Determine whether there is a district or section scenario relevant to the local jurisdiction.
- Identify skills, techniques, and modes that are important to the local jurisdiction that ought to be exercise or tested.
- Consider which partner agencies or organizations might be interested in participating.
- Develop a scenario that will use those skills and make the event interesting for the participants.
- Identify a set of specific activities to be performed during SET, as well as those activities listed on the SET scorecard.
- Prepare a briefing that can be used to solicit participation of ARES members and prospective members.
- Prepare another briefing for the EC and Assistant ECs to use when explaining the goals and objectives of the SET to partner agencies and organization representatives. This briefing should have absolutely *no jargon*.

Publicity is arranged, in consultation with an ARRL Public Information Officer, in local online, print, and broadcast media. Appropriate use of social media outlets is also encouraged. Be sensitive to the concerns of any served agency partners regarding publicity. Coordinate with their public information officers — don't make your ARES group look good by making your served agency partner look bad.

6.5 During the SET

The "emergency" situation is announced and the emergency net is activated. Stations are dispatched to partner agencies and organizations. Designated stations originate messages on behalf of served agencies. Test messages may be sent simulating requests for supplies. Simulated emergency messages (just like real emergency messages) should be signed by an authorized official. Tactical communications for served agencies is emphasized.

6.6 After the SET

An important post-SET activity is an after-action review to discuss what occurred. All Amateur Radio participants should be invited to the meeting to review good points and weaknesses apparent in the drill. Prepare an after-action report indicating areas needing improvement, areas of strength, and lessons learned. This can serve as input to the next year's SET or to other events the jurisdiction might run.

The EC, or his/her designate, should complete the SET report forms and submit them to ARRL headquarters in a timely manner. The after action report should also be submitted with the report form.

Submissions can be made via email to **SET@arrl.org**."

Sorry about the length but I wanted you all to get the full picture. Planning for SET has already started and if you want to get involved please contact me at william.a.grimsbo@charter.net and I'll get you tied in.

- DE N0PNP

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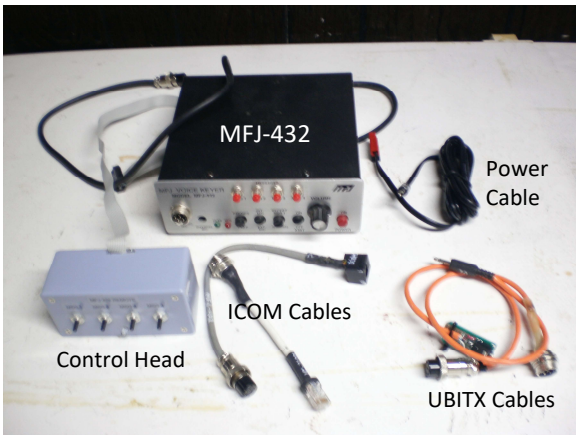
Technical Articles

What Can Be Done with Hamfest Junk

Did you ever wonder what you can do with some of the junk you bought at a hamfest? I picked up an old MFJ-432 that I knew had some problems. It sat on the shelf for a few years before I decided to try to fix it. I took the covers off and I knew I needed a new digital voice recorder chip so I ordered one (actually two) from ebay. Thinking it would take six weeks, I put it back together and set it back on the shelf. Much to my surprise, the chips came within a few days. I took it off the shelf again and started by replacing the DVR chip. Now it wouldn't record anything so I started troubleshooting. It has an internal microphone (condenser type) so I knew it needed to have 5VDC on one of the mic pins to work. No 5VDC! So I went back in the circuit (fortunately, I was able to find the schematic online – Ahhh… the wonders of the internet). I found a resistor completely missing (R3), which, when I replaced it, the record function worked like brand new. The pads and silkscreen component designation were there for the resistor but alas, no resistor. Checking the connectors before trying to build interfacing cables, I found a missing ground on the pin of the cable to the radio. Checking the schematic again, I found that the ground should have been connected. Looking at the board I saw that the ground lead had corroded away from the printed circuit board (PCB).



No problem – I re-soldered the ground/shield wire to the PCB and now the unit as a whole worked. Next step was to build interfacing cables to my ICOM IC-7100 and my HF Signals UBITX V6. The UBITX cable was simple since it has only three wires. The ICOM cable is much more complicated with RJ45 connectors and round 8 pin connectors. Next you have to set up the jumpers to work with both radios. No problem. Now I can call "CQ QRP" or "CQ Field Day" all day without losing my voice. It only has 20 seconds of record time with four messages but that's enough to set up a CQ message. If you have an old paperweight from a hamfest you can't even remember, take some time and put it to good use. There's nothing like recycling.

I also built a remote head for the unit so I can place the controls where they are easy to access. Just another piece of hamfest

junk turned into a useful station accessory. I think I might need a bigger shack. I must not have enough to do…

- 73 DE N0PNP

End-Fed Half Wave Antennas

By Jay Underdown

They (EFHW antennas) are called Zepps because they actually were the antenna used on the German Zeppelins around WW1. They trailed a wire behind the air ship and fed the near end with their spark transmitters. They had a cone shaped weight at the far end to keep the (very) long wire strait. Remember the frequencies they were using were long waves (below 500 khz).

Zepp antennas are voltage fed, High Impedance antennas. That is why you need high ratio transformer if you are going to use a coax feed line. It is much easier to use 450 ohm ribbon wire (even old 300 ohm TV ribbon wire works OK). The best option is 600 ohm open wire feed line but it is hard to find and expensive. You can make your own but it's a little work. There are plastic insulators made to do this on the web. That way you do NOT need a impedance matching transformer at the antenna end. Find an OLD handbook (before 1960's), there are instructions in there on how to make open wire feed lines.

You use an antenna tuner with an internal 1:1 balun to feed the line. That way the antenna does NOT need to be resonant! I am using an end fed antenna about 54 feet long that runs across the top of my house. It loads up from 160-10 meters. My antenna tuner matches what-ever impedance the line is, to the transmitter.

The interesting thing is one side of the feed line is attached to the antenna wire. The other side is connected to NOTHING. Voltage is induced in this wire from the current flow in the other wire.

In the day of vacuum tube transmitters with a PI network output circuit that could match almost any feed line, the use of open wire or ribbon wire was common and antenna tuners were not needed.

- Jay Underdown (W0PS)

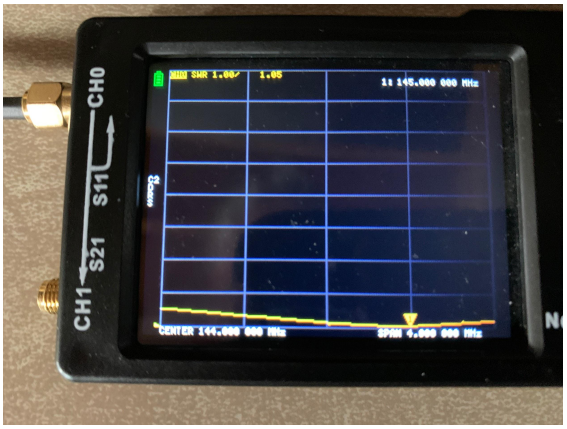
Editor's note: *Thanks Jay for that bit of history. With modern transmitters, that high voltage/high VSWR could be fatal to your radio. Use of an antenna tuner or a transformer to step down the impedance is required to protect your equipment. More to come in future articles on EFHW or Zepp antennas.*

First Use of NanoVNA

By Jerry Schapp

At Winterfest I purchased the H version of the NanoVNA which came with the battery charged but without a stylus, a thru calibration connector or user manual, all for the take- home price of $35. I couldn't resist. A q-tip works well as a stylus. A five piece NanoVNA calibration kit was ordered from eBay for $10. An Amazon Kindle book, "A Guide to the NanoVNA" by Christopher and Maximilian Schwarzler was purchased for $3. The calibration instructions were more than halfway through this slim volume and were easy to follow. The calibration I did was for only for one port of this two port device which is all that is needed for a SWR sweep on a 2m and 70cm antenna which was recommended in the guide for the first use.

My magnetic mounted antenna had suffered an open circuit at the base of the antenna: the point where a 27pF 1kV capacitor coming from the coax center conductor was soldered to the bottom of the antenna had come apart. I re-soldered it in the magnetic base. It was a compromise that left a strong but less than desirable cusp. Sweeping the antenna with the NanoVNA with center frequencies and spans set for 2m and 70cm showed VSWR of a little more than 1 for 2m and a little less than 1.5 to 1.0 on 70cm.



The magnetic mount antenna and the NanoVNA in this photo are sitting on a steel desk. When they were sitting on a wooden table with wheels the SWR was higher, about 1.5 to 1. The steel desk is in my basement is a better ground plane for the mag mount antenna since it has a copper ground strip sitting on it that is connected to a copper water pipe.

The instruction for two port calibration requires a second thru calibration connector and a second 50 Ohm load. So I have ordered a second calibration kit from eBay.

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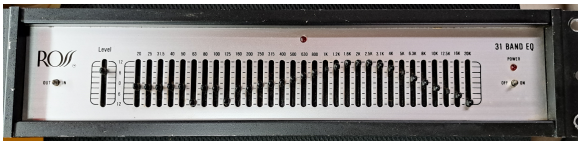
AE0MY

Editor's Note: *Thanks for the info Jerry. Sounds like you got a good deal. The NanoVNAs are a very powerful tool that fits in a shirt pocket. They can be purchased at a fraction the cost of an antenna analyzer and can actually do more. There is a learning curve but once you get it figured out, you'll wonder why you didn't do it sooner. There is also a TinySA Spectrum Analyzer available. With both and a pocket DVM/O-scope, you can carry an RF lab with you wherever you go (minus the bench space of course).*

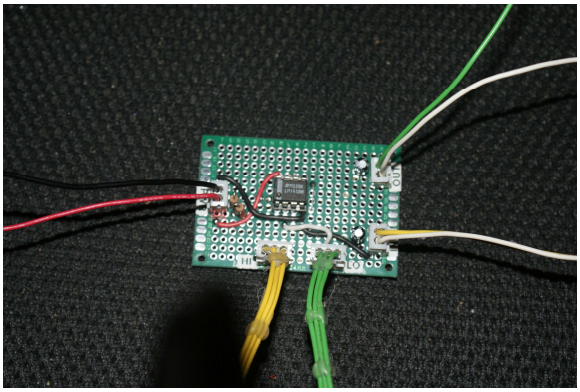
Audio Equalizer for QRP Stations

I have to admit that I stole this circuit from Bob Heil's Amateur Radio Handbook but if you can't steal an idea from a handbook, what good are they? His handbook is a bit pricey for what you get but this circuit alone makes it worth the money. It's not as pretty as the Ross 31 Band Graphic Equalizer (below) I purchased for $20.00 at a music store recently but for what I wanted to do, it was good enough.



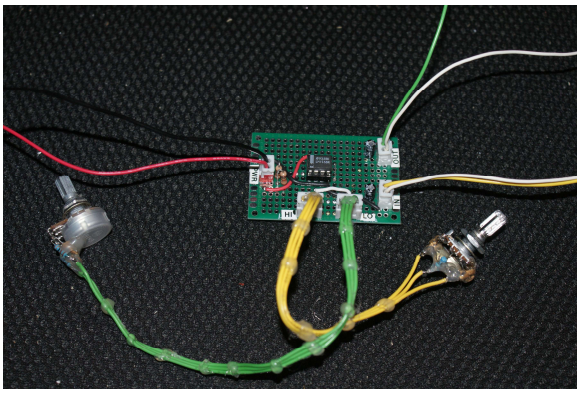
You may notice that, like most of my projects, it is built on a green fiberglass (FR-4) proto board. These boards are dirt cheap (so they have a lot of appeal to me) and usually come in the Raspberry Pi or Arduino parts kits. I buy them 32 boards at a time and they last pretty well. It is good practice to learn how to lay out the board for easy wiring. If you make a mistake, they are cheap enough to just throw them away

and start from scratch (which is usually the best idea anyway – especially if you have a tendency to forget what you did).



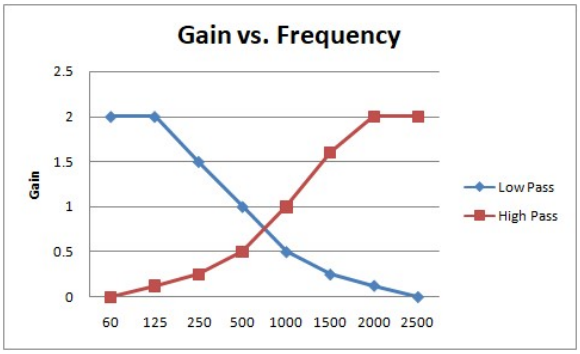
Most of the components are capacitors and resistors which I mounted to the potentiometers for convenience sake. The HI potentiometer has the passive components for the high pass part of the circuit and the LO potentiometer conversely, has the components for the low pass part.

This equalizer is for the transmit side of my HF Signals UBITX V6 transceiver which is currently the only SSB rig I have in my QRP station (my V4 is currently in need of a firmware upgrade). As Mr. Heil mentioned in his presentation, my ICOM IC-7100 has built-in equalization as a sub-menu in the system. It seems to work fine so I don't mess with it. I bought the Ross equalizer to connect up to my other radios to enhance the audio output through a mixer from all of the radios. That's perhaps a later article if it actually happens. I got the thing so cheap I couldn't resist it.

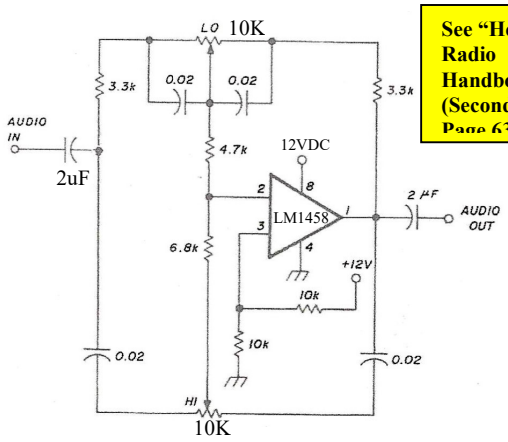


Anyway, as I was saying, I mounted most of the components to the potentiometers (see photo above). I threw the first attempt away – too many components on too small a board – cluttered and UGLY. It doesn't matter how many times you do this stuff, you learn something every time (especially if you forget what you learned last time). The second cut is much simpler and nicer looking. I purposely did not include a photo of version 1.0 – it was a bit embarrassing. No point in publishing the bad stuff right?

Anyway, the circuit has an overall gain of about two or 6 dB with high and low pass/attenuation where the low cutoff is around 500 Hz and the upper cutoff is around 1 kHz to allow the intelligibility part of the voice spectrum while dampening the lower frequencies (500 Hz and down) that make the voice sound muddy and difficult to copy. The attenuation is variable to allow flexibility in the "tone" from the microphone through the equalizer.



The plot above is as close as I could get with my audio generator and oscilloscope. It gives the general idea. The brown/red plot is with the HI pot at max and the LO pot at minimum and the blue plot is vice-versa with the LO pot at max and the HI pot at min.



See "Heil Ham Radio Handbook" (Second Edition) Page 63

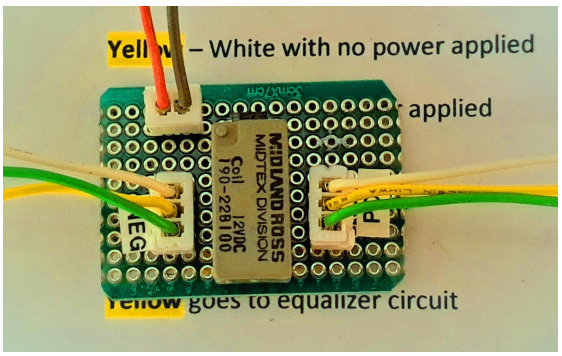
I thought about adding an amplifier to act as a compressor but I didn't see the need to add distortion to a clean voice signal. You all may or may not know that audio compression consists of "smoothing" the audio signal to the point that it makes the loudness level increase in the received signal. Supposedly, 6 dB of compression will improve the received audio from a loudness perspective by 10 phons on the Fletcher-Munson loudness curves (Don't expect me to explain all of that – just Google it). This is purposeful distortion to maximize the sideband modulation which increases the signal to noise ratio on the receive side (SNR) without adding significant audible distortion (depends on what you consider "significant"). Many stations use over-compression which distorts the audio and deters readability while they are trying to increase their SSB modulation percentage. I see little point in doing that, especially when I can accomplish better audio using the inherent equalization that this circuit provides. I have thought about adding a microphone gain potentiometer but it is really not necessary since use of the HI and LO pots essentially do the same thing. There is plenty of room inside the enclosure to a bypass relay if I decide to do so later. The enclosure was an old video modulator case from ReStore.

Thanks to Bob Heil for the idea from his Ham Radio Handbook (Page 63). By the way, some of the component values in the handbook are missing. I used 10K ohm potentiometers – his schematic didn't show values. You can experiment to your heart's content. The Op-Amp chip is the ever useful LM1458 dual op-amp. I've used that chip on many projects including audio mixers. They are also used in the tone decoders we all use for paging. They work exceptionally well.

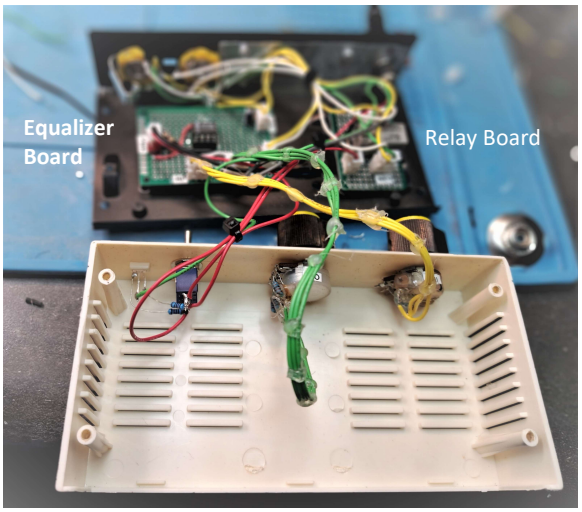
Until next time – *73, N0PNP*

Subsequent Addition:

I actually decided something – I decided to add a bypass relay. Since the initial circuit had a SPDT power switch with a center off position, I could use the down position for the bypass relay power. When the relay is engaged, the audio signal is switched around the equalizer. When not engaged, it goes through the equalizer. I used a 12VDC DPDT relay (because I had a bunch of them in my parts bin). The photo below shows the relay board. I color coded the wires so I could figure out where they went (always a good idea). Now the LED on the front panel is **red** for bypass and **green** for equalizer. Relay board is shown below:



Sorry it's a bit out of focus. The relay board is to the right and the equalizer to the left:



Shown with Equalizer applied below:

Shown in BYPass mode below:

That's it for now. *73 DE N0PNP…*

Editor's Note: *If you're interested in this sort of stuff, there is a nice little used music store next to the Subway in Regency Plaza. They sell used mixers, equalizers, microphones, musical instruments, etc. Even drums so if you're into audio or music, check it out.*

ECA OFFICERS (2022 - 2023):

Following is the officers as of the July 2022 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

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Skills Training

ICS 214 Activity Log

The following are the instructions for filling out the ICS-214 Activity Log. This log is used to document any activity during an activation including your activity and your unit's activity. Fill one out and attach to your Skills Book for training credit.

Purpose. The Activity Log (ICS 214) records details of notable activities at any ICS level, including single resources, equipment, Task Forces, etc. These logs provide basic incident activity documentation, and a reference for any after-action report.

Preparation. An ICS 214 can be initiated and maintained by personnel in various ICS positions as it is needed or appropriate. Personnel should document how relevant incident activities are occurring and progressing, or any notable events or communications.

Distribution. Completed ICS 214s are submitted to supervisors, who forward them to the Documentation Unit. All completed original forms must be given to the Documentation Unit, which maintains a file of all ICS 214s. It is recommended that individuals retain a copy for their own records.

Notes:

•The ICS 214 can be printed as a two-sided form.

•Use additional copies as continuation sheets as needed, and indicate pagination as used.

BLK	Blk Title	Instructions
1	**Incident Name**	Enter the name assigned to the incident.
2	**Operational Period** •Date and Time From •Date and Time To	Enter the start date (month/day/year) and time (using the 24-hour clock) and end date and time for the operational period to which the form applies.
3	**Name**	Enter the title of the organizational unit or resource designator (e.g., Facilities Unit, Safety Officer, Strike Team).
4	**ICS Position**	Enter the name and ICS position of the individual in charge of the Unit.
5	**Home Agency** (and Unit)	Enter the home agency of the individual completing the ICS 214. Enter a unit designator if utilized by the jurisdiction or discipline.
6	**Resources Assigned**	Enter the following information for resources assigned:
	- Name	Use this section to enter the resource's name. For all individuals, use at least the first initial and last name. Cell phone number for the individual can be added as an option.
	- ICS Position	Use this section to enter the resource's ICS position (e.g., Finance Section Chief).
	- Home Agency (and	Use this section to

	Unit)	enter the resource's home agency and/or unit (e.g., Des Moines Public Works Department, Water Management Unit).
7	**Activity Log** •Date/Time •Notable Activities	•Enter the time (24-hour clock) and briefly describe individual notable activities. Note the date as well if the operational period covers more than one day. •Activities described may include notable occurrences or events such as task assignments, task completions, injuries, difficulties encountered, etc. •This block can also be used to track personal work habits by adding columns such as "Action Required," "Delegated To," "Status," etc.
8	**Prepared by** •Name •Position/Title •Signature •Date/Time	Enter the name, ICS position/title, and signature of the person preparing the form. Enter date (month/day/year) and time prepared (24-hour clock).

ICS-214 Fillable Form (Download):
https://training.fema.gov/emiweb/is/icsresource/assets/ics%20forms/ics%20form%20214,%20activity%20log%20(v3.1).pdf

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Items For Sale

We have a few items for sale including the following:

- **Assembled Two-Tone decoders for the ARES® tones on the repeater – two fully assembled boards for $25 ea and two in plastic boxes with speakers for $30 ea. If you need a scanner to go with it, I have some Bearcat BC-350A scanners for $30.00 each. I can't let them go any cheaper anymore. The cheap ones are gone.**
- TDoA DF'ing kits (Time Direction of Arrival) - $12. Two available
- **Sinclair Labs Duplexer Model Q-202GR. Set up for 145.490 TX and 144.890 RX. Four cavity Q-circuit (pass/reject) rack mount unit. Looking to get $200 for the unit. Spec sheet is available online.** I'd really like to get this one out of my basement.
- Various meters and test equipment including frequency counters, capacitance and inductance meter, see below:
  - 50 MHz B&K Model 1801 Freq Meter for $25
  - Heathkit 2240 LC Bridge for $20
  - Heathkit IT-121 FET/Transistor Tester for $10 with the manual
  - 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
  - Two -10dB *TX RX Systems Inc.* Taps for station output monitoring with N connectors for IN/OUT and a BNC for the tap - $15 ea.
  - 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.

I also have one VHF 25 Watt Motorola MaxTrac Go-Kit with power supply and antenna (Cushcraft ARX2 5.5dB gain on VHF). The MaxTrac is pre-programmed with local repeaters, etc. I'm looking to get $100 for the whole kit.

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. 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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Upcoming Events:

Hamfests:

08/13/2023 *- St. Charles Amateur Radio Club*
Location: O'Fallon, MO
Type: ARRL Hamfest
Sponsor: St. Charles Amateur Radio Club
Website: http://wb0shi.org

Other Events:

International Digital Contest: 3-4 June

Field Day: 24-25 June

RTTY Rookie Roundup: 20 August

Simulated Emergency Test: 7 October

County Police Open House (normally held in September) will not be held until spring of 2024 and it will be on an alternating year basis from that point forward.

This area is for your material. If you have done something interesting in Amateur Radio or you have a DIY project, sketch up an article and some photos and we'll publish it in the ECA Newsletter. It can be Amateur Radio related, public safety related or just something useful to other folks. If you need help putting an article together, send an e-mail to william.a.grimsbo@charter.net.

Net Control Roster

Week	NCO/Backup	Callsign
1	Paul Orf/Richard Tadlock	AD0YL/KF0JEJ
2	Ken Humbertson/Vince King	W0KAH/KD0JGB
3	Jim Combs/Jeff Young	KF0HFB/KB3HF
4	Zach Bush/Bill Grimsbo	KF0FXJ/N0PNP
5 (Floater)	Don Wier/Bill Grimsbo	KZ8E/N0PNP

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

June 2023

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

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
4 Happy Father's Day and Happy Field Day!

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July 2023

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

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
4 Have a Safe and Happy Independence Day

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August 2023

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30	31 EM Net at 1900 ARES Net at 2000	1	2	3	4	5
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
20	21 EM Net at 1900 ARES Net at 2000	22	23	24	25	26
27	28 EM Net at 1900 ARES Net at 2000	29	30	31	1	2

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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BUMMER – NO HOLIDAYS OR SPECIAL EVENTS IN AUGUST – NO REASON NOT TO HAVE A LITTLE FUN. HOW ABOUT A HAM HOLIDAY AT A PARK TO HAVE A LITTLE BARBEQUE, SET UP SOME RADIOS AND MAKE SOME POTA CONTACTS OR JUST SHOW SOME FOLKS WHAT AMATEUR RADIO IS ABOUT?