ECA Newsletter

Volume 23, Issue 5 – Special Holiday Issue **November 2022**

Introduction

Welcome to the holiday issue of the ECA Newsletter. We hope the holiday season finds you well and prosperous.

Rather than to find a Christmas story to put in the newsletter, I decided to put a YouTube link in instead so enjoy: https://www.youtube.com/watch?v=c_9REVC4dtc.

As this is written, SET has been completed, we have supported the County Police Open House and are ready to kick back and relax between Traveler's Assistance Nets, snow shoveling and helping the neighbors dig themselves out.

All the forecasts call for a snowy and cold winter due to the La Nina/El Nino weather patterns which we seem to be stuck in. I'll grant that it is rare that the forecasts are correct but who really knows – that's why they are called "forecasts" because it hasn't happened yet.

If you haven't been to a meeting recently, we've had some interesting presentations on station and antenna system grounding, what a decibel is and how transmitter power doesn't mean as much as you might think. If you're not attending, you are missing out on some good information.

We'd like to give a special welcome to some new members that have decided to join with us in 2022. Welcome to ECA/ARES® - good to have you with us.

Simulated Emergency Test was scheduled for October 1st and the results are in. We planned a learning session with some of the trailer equipment and the EOC radio room. We had a turnout of fourteen (14) people. Fifteen (15) had indicated they would attend. St. Charles County Regional Emergency Management (REM) provided lunch for the hot wash after the exercise which was greatly appreciated by the group.

We had good turnout for the County Police Open House on 24 September which REM appreciated. The count was around 13 members.

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

"Transceivers

VHF/UHF: *The most universal choice for emcomm is a dual band FM 35-50 watt mobile transceiver. Radios in this class are usually rugged and reliable, and can operate at reasonably high duty cycles, although an external cooling fan is always a good idea if one is not built-in. Handheld transceivers should be used only when extreme portability is needed, such as when "shadowing" an official, or when adequate battery or other dc power is not available. Handheld radios should not be relied upon to operate with a high duty-cycle at maximum power, since they can overheat and fail.*

Both portable and mobile dual-band radios can be used to monitor more than one net, and some models allow simultaneous reception on more than one frequency on the same band (Sometimes known as "dual watch" capability). Some mobiles have separate external speaker outputs for each band. For high traffic locations, such as a Net Control or Emergency Operations Center, a separate radio for each net is a better choice since it allows both to be used simultaneously by different operators. (Antennas must be adequately separated to avoid "de-sensing.")

Many dual-band transceivers also offer a "cross-band repeater" function, useful for linking local portables with distant repeaters, or as a quickly deployable hilltop repeater. True repeater operation is only possible if all other mobile and portable stations have true dual-band radios. Some so-called "dual" or "twin" band radios do not allow simultaneous or cross-band operation—read the specifications carefully before you purchase one."

In this article, we get into the equipment side of things rather than the operational. It is important to pick the right equipment for the job. I will not make any specific hardware recommendations but generally speaking, the emcomm excerpt from the EC-001 manual element 13 states the general recommendations well. There are times when a handheld transceiver will suit the need – particularly when you are operating at a remote base where there is a need to talk locally to an NCO in a communications trailer or if you are in a search operation or shadowing an official as mentioned in the excerpt. Generally speaking, if you are in a mobile unit like a truck or car working under an operations center, a 35 to 50 watt VHF rig is a necessity, a dual band rig is better since it offers more flexibility. Flexibility is what we as amateur radio operators bring to the table. Having both dual band handheld radios as well as a dual band 35 to 50 watt transceiver is a plus since you will have the capability to accommodate most situations. We'll discuss antennas in a future article but that is also critical to successful operation. Often the antenna is the weakest link in an otherwise successful operation. More on this later. There is also the subject of transmit power which will be part of that discussion. Stay safe out there.

- 73 DE N0PNP

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We need articles for the ECA newsletter. Please send any articles to william.a.grimsbo@charter.net. If you need some help pulling together an article, let us know and we can help. Text (.txt) and Document (.doc or .docx) files are fine.

Technical Articles

Two tone and Single Tone Decoder and Warning Display

The Mad Scientist Lab has come up with another development. This is a status on where we are at with that development. I was sitting here building up our two-tone paging decoders just for fun one day (It's amazing what becomes "fun" after you retire) and came up with the idea that it might be nice to have a couple of scanners or a scanner and an old weather radio hooked up to the same decoder through an audio mixer and have the decoder tell you which alert went off. Hmmmm… the NWS puts out a 1050 Hz tone for ten (10) seconds before every alert for the old weather radios that don't have SAME decoding and Emergency Management alerts with two-tone sequential 1-second/3-second sequence. If I could devise a way to decode the 1050 Hz tone (head scratching), I could probably adapt that for the two-tone sequence with a little logic and some timing considerations. You might ask "OK, do you really need to do this since we already have a two-tone decoder and a weather radio?" and the answer would be an emphatic **NO!!!** It's not always about what we **NEED** to do but sometimes it is about what we **CAN** do (especially when you are a retired nerd like me). So, off to the Mad Scientist Lab for another head-pounding, brain wrenching software/hardware development cycle. Rather than to start with what we already have, I decided to start from scratch (of course – why would anyone want to start from something with a proven track record?). Ah hem – anyway, I decided to use the **COUNT** function in PIC Basic Pro v. 3 (PBP3). With the **COUNT** function, you can specify the sample time and I/O port pin and it will count the number of pulses in that sample window. For the two-tone sequence, I sampled for a half second, then paused for a half second then sampled again for a whole second. If the first tone is 1050 +/- 1% Hz, the program looks for the second tone (really still the first tone) to be 1050 +/- 0.75% then tells the LCD to display the **"Weather Alert".**

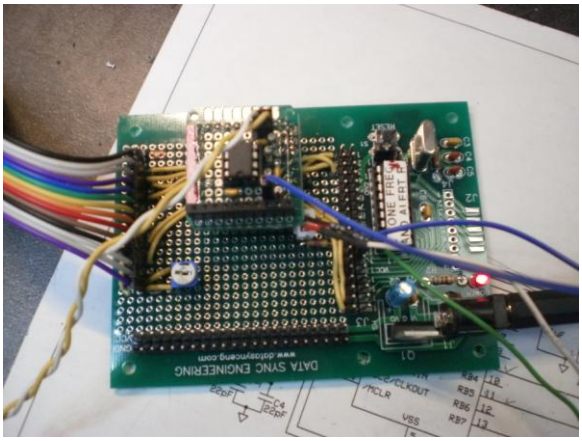
If the first tone by chance is 569 +/- 1% Hz, the program looks for the second tone which would be 832 +/- 1% Hz. If both tones are present, the program displays **Amateur Radio Alert.** I put another tone set in for the *DEV-VHF-001* repeater (Motorola Type 2 Group 5, tones 3 and 0) which displays "**Emergency Mgt Alert**." I also put in another two-tone pair for my church alerts for security. That one displays "**Church Alert**".

Christmas Party

ECA will have its annual Christmas party at Bandanna's on Veteran's Memorial Parkway by Cave Springs on 8 December (our normal meeting Thursday night) at **6:00 pm**. We look forward to seeing all of the membership in attendance. This is usually a great time so come on out and stuff your face with tasty vittles.

If there are no discernible tones, the program displays "**No Current Alert**." The program runs on a 100 ms sampling loop until it detects a tone above about 280 Hz (this can be changed but it is above the CTCSS tones so that will not interfere in any way), then it goes into the longer sample times for the respective tones.

At the moment, the layout is just on a 16F628A prototype board from Data Sync Engineering as shown below.

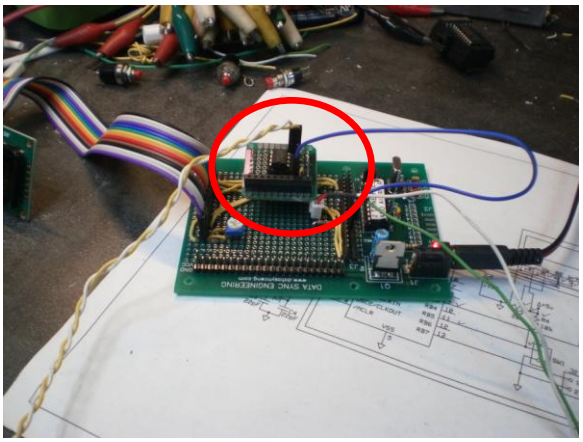


The potentiometer in the lower-left is the contrast control for the LCD. I have decided to use a backlit blue LCD rather than the unlit standard LCD display. The cost of the backlit blue display is not that much more.

I also put together a software development prototype with a Zero Insertion Force (ZIF) socket for the PIC microcontroller. It results in fewer bent pins inserting and removing the chip when doing future development.

Currently, the system uses the PIC Port B, Bit 7 as an output pin that is active as long as the display keeps the message up

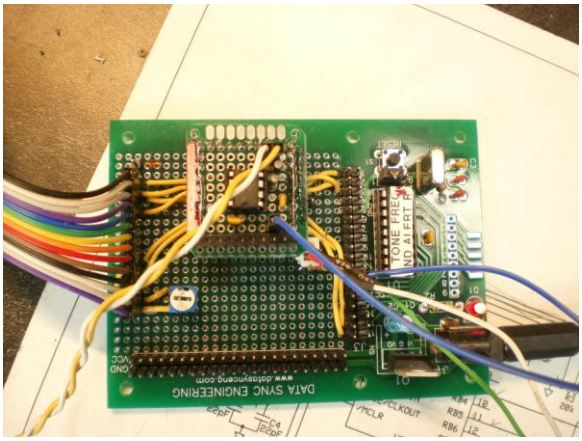
which is 120.1 minutes or just over two hours. If you haven't seen it by then, the alert doesn't matter much. I also added an SCR hold-up circuit to flash an LED as the current decoder does (so I actually did steal some of the design of the old decoders). The feature that makes the display easy to implement in PBP3 is the **LCDOUT** function which allows the program to position the message correctly in the 16 x 2 character LCD display. The **COUNT** and **LCDOUT** functions in PBP3 are really a call to library routines in assembler – much easier than trying to figure it out for myself. After all, I don't feel a real need to reinvent the wheel (just add a few features to it). I used an LM358 Op-Amp chip as a sine wave to square wave converter (same as the current decoders) and put it on a daughter board.



The software development proto board has all the features on one board – much cleaner.

As far as the head-banging is concerned, I had built up the display interface on the proto board and I couldn't get the display to give me more than just a black bar on the top line of the display. I ran through the wiring and troubleshot software for a whole day before I figured out that the 4 MHz crystal on the proto board was bad. After pounding my head a few more times for good measure, I replaced the crystal and all was working. Now with a few more dents in my head, the project was going forward.

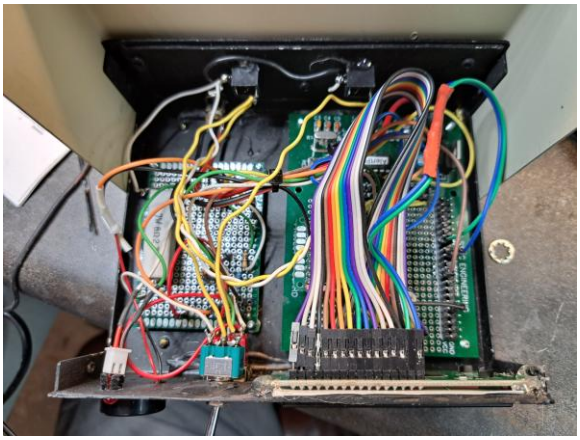
In the figure below, the yellow and white wires are the signal inputs to the LM358 daughter board and the blue wire goes to Port B, bit 6 which is used as a TTL-level signal input to the PIC.



The other connection on the proto board is for the reset switch.

The tape on the 16F628A is just for identification since I have various programmed chips around for different functions and it helps to keep things straight.

Below is a photo of the boards in the box.



The photo below is the unit installed in my station.

It looks OK next to my power monitor and dual zone clock (in my humble opinion).

Bottom line at this point is that all of the functions in the software are working. The Sonalert and the blinky light so are also working.

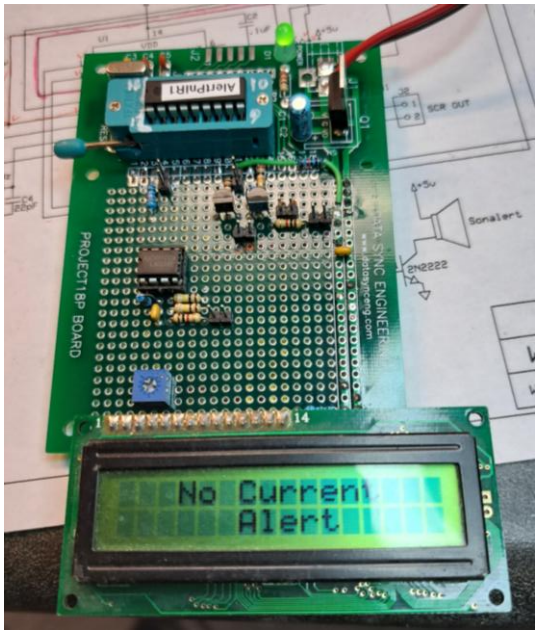
The Sonalert gives a 30 second tone (easily enough to drive one crazy if you're not there already). I put a Mute/Audio switch on the front similar to the old units so you can switch the audio on if you want to listen. I didn't put the automatic switching in with the relay since I didn't want the thing squawking at me for a minute or two so if I want to listen to the audio, I just switch it in.

The source code, assembler code and hex code listings will be available on request if anyone is interested. You might also need schematics so I can make those available as well.

If you are interested in this sort of thing as a kit, let me know. It means I will have to design a circuit board but maybe I can solicit some help with that part. This is a variation on the theme of an alerting system that started as a very effective two-tone decoder kit that Jeff (KB3HF) put together and has had good success with.

I've been beta testing it and have several hours of testing under my belt with it.

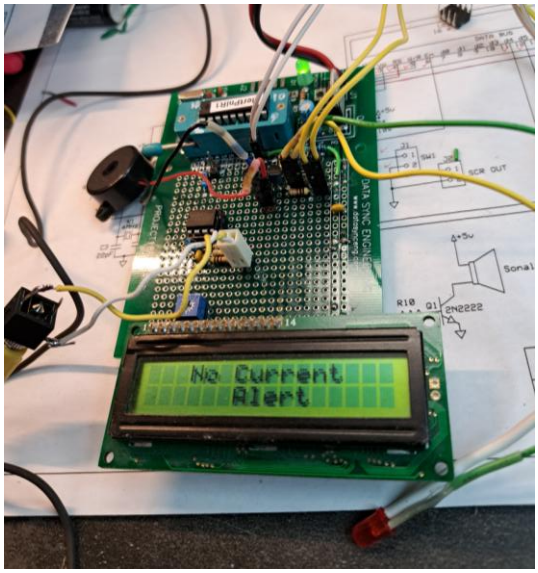
Below is a photo of the software development prototype I mentioned earlier.



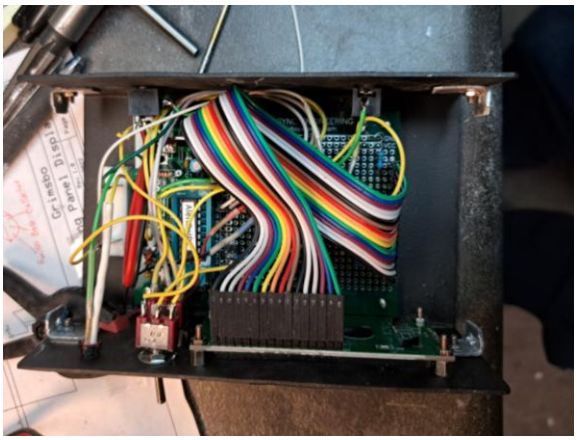
A ZIF socket can really make software/firmware development much easier and is much better on the chip leads. This prototype is much cleaner – amazing how much nicer the second copy can look. The hardware prototype is integrated into

my station and I will be monitoring to see if it misses any tone pairs.

Below with all of the wires hooked up the software development prototype still looks neater than then first board(s).



I broke down (got stupid) and put the software prototype in an enclosure as well with the blue LED backlit LCD on a ribbon cable. It fit into the smaller of the data switch boxes as you can see below.



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And last but hopefully not least, the finished product as shown below.

The lower half of the enclosure is made from aluminum which was cut to the dimensions of the lower half of the data switch box and bent on my 18 inch box and pan breaker (Harbor Frieght special) out in my shed. The paint on the bottom half is actually a powder coat compliments of my Harbour Freight powder coating gun and toaster oven. This was an exercise in fitting 10 lbs of "stuff" (put the word in that you feel comfortable with) in a 5 lb bag. As you can see, I gave up on the dry transfer lettering and went to my Brother labeler – saved a lot of time, colorful explatives and overall frustration.

Anyway, that's it for now. Have fun building your next DIY project. If you're interested in this project, drop me an e-mail and I can send the schematic and a programmed PIC for your convienience.

- Bill (N0PNP)

Reviving an Old Handheld

Did you ever have one of those old handhelds that has seen a lot of service and you just couldn't bear to let it go? I have an old Rexon RL-501 that I have some sort of weird affinity for. It's big, ugly and clumsy but it always served me well back in the days when ECA did all sorts of things like flood response and sandbagging, etc. It's a dual band handheld with few features but I like it. The batteries are hard to find these days and they are the Nickel Metal Hydride (NiMH) batteries. I didn't want batteries that do not age well so I decided to replace the NiMH batteries with Lithium-Ion for longer service life and shorter charging times. I bought a 12 V, 1800 mA-Hr lithium pack for about $24.00 (cheaper than a replacement NiMH pack), cut the old pack open and pulled out the old batteries. The pack I destroyed was a 1500 mA-Hr pack so there was **just** enough (Just – as in NO EXTRA) room in the case for the Li-Ion pack. I also had a smaller pack (batteries dead as well) that I gutted, added a 12V coaxial power receptacle and closed back up as an adapter from any 12V source to my handheld.

NiMH 1500 mA-Hr Battery Pack Converted to 1800 mA-Hr Lithium-Ion Pack

The nice thing about Lithium batteries is that they are very lightweight and they are not as badly affected by "memory" like the old Nickel Cadmium or NiMH batteries that the radio originally came with. My handheld is still big and ugly but now it works again so I'm happy. Just one word of caution – Lithium batteries have a very energetic battery chemistry and I do not recommend charging them with anything other than the charger they came with (which is why I left the charging cable external to the pack – also, no room inside). Also, they don't like to be shorted – they tend to get very irritated by that (catch on fire, melt stuff and generally cause smoke issues) so proceed with caution.

Redesigned Quantum Battery Pack (now 12 V Li-Ion) with the Battery Adapter Pack

The glue I used on the battery pack case is called "Fix It" by Superglue. It has all sorts of toxic substances in it – that's why it works. Apply it to both sides, wait ten minutes and then stick them together. You had better get it right the first time or you may not get it apart. It actually fuses the plastic together. An unfriendly little chemical called Xylene does the magic. Keep it out of and far away from your eyes and use in a well ventilated area.

Why this old radio is worth the trouble is a mystery to me as much as you.

Sometimes the old equipment that you always trusted holds a special place. I guess that's why. – N0PNP

Old RL-501 Rexon/Ritron Radio with New Battery

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ECA OFFICERS (2021-2022):

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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Editor's Note:

Wikipedia has an interesting explanation of "skin effect" which is relevant to the discussions we had a few month ago on lightning protection. Check it out at https://en.wikipedia.org/wiki/Skin_effect.

"Skin effect" occurs with alternating currents in wires where the electric current flows on the surface of the conductor rather than to penetrate into the conductor. With RF and microwave frequencies, the current is carried almost exclusively on the skin of the conductor. This is due to counter electromotive force or back-EMF which is strongest in the center of the conductor. Current in a conductor produces a magnetic field in and around the conductor. When the intensity of current in a conductor changes, the magnetic field intensity also changes which in turn creates an electric field in opposition to the change in current intensity. Since the back-EMF is strongest at the center of the conductor, it forces the current carriers (electrons) to the outer part of the conductor or the "skin". Direct Current or DC has nearly uniform conduction across the entire cross-section of the conductor. Check out the Wikipedia explanation – they have the mathematics to go along with it.

- Editor

SET Report

It was a beautiful morning for an exercise. Weather in the 70s and clear. The ECA/ARES® communications trailer was in place and ready to go. By 9:00 am, most of the participants were on site and ready to go. We had a total of 13 members come out to play and one member of O'Fallon, Missouri's CERT communications team. St. Charles County ARES and ECA are always open to members of other teams coming in to assist and learn what capabilities we have in the event of an emergency and our communications trailer is very well equipped. Some of our members also serve in CERT so it is a good, symbiotic relationship.

We copied one message from US Army MARS which was 230 words in length sent at a speed which was significantly faster

than comfortable copy but we did copy the entire message. Use of the NVIS antenna made the copy from Warrenton much easier than the vertical on the EOC. That in itself proved the viability of the NVIS antennas for local to medium distance communications.

NVIS Antenna Set-up

Once the NVIS antenna was up, HF communications began with attempts to contact US Army MARS. About 11:00 am we were able to establish solid communications at about 50% power from the trailer.

The photo below shows the trailer deployment with the various steps of installing antennas, routing coaxial feed-lines and running the generator for power. We were able to claim some points for operating on emergency power and for working with a repeater that has emergency power.

Communications Trailer Deployment

Simulated Emergency Test (SET) 2022 was a good test of amateur radio and ARES® capability in St. Charles County and was effective in strengthening the relationship with O'Fallon CERT and County Regional Emergency Management. Our collective score was 128 points which is not a high score but the exercise had value far beyond the points scored.

Some lessons learned include the following:

1. A 90 degree connector on the back of the dual band transceiver would make connecting the heavier coax feed-line much easier.
2. A set of instructions on paper for deployment of the trailer would be good – a checklist of sorts to make sure nothing is missed in the process.
3. A diagram of the trailer indicating where the ports are for passing the feed line into the trailer.

These things will be given some thought for future deployments.

- N0PNP

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Items For Sale

Buy yourself a Christmas present - we have a few 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
- **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 - $25 ea.
  - VHF Amplifiers, etc.
  - Craftsman 10 inch miter saw and stand for $50.00

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.

Bill Moss has an **ICOM IC-7300 for sale**. This is a very nice rig for HF through 6m and a good price of $850.00 firm. Talk to Bill KC0RXS for details (KE0RXS@outlook.com).

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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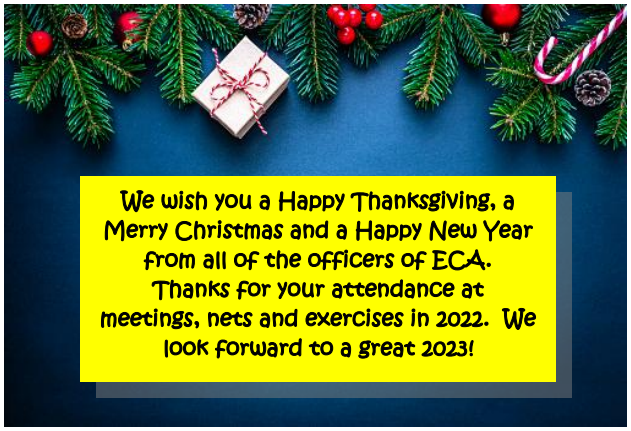
Even Santa Likes a QSL Card



OK, I wasn't entirely truthful about no ham Christmas stories – so sue me!

This year, Santa is coming to town over ham radio

By Corey H. Jones
· Dec. 22, 2021, 4:00 am

Corey H. Jones/CPR News: John Chilson of Longmont, who hosted around 150 remote visits with children over Zoom and ham radio ahead of Christmas, poses in his home on Dec. 2, 2021.

On a recent December evening, a white-bearded man wearing a red button-down shirt and a big red hat with a fluffy, white pom-pom on the end sat at his desk in Longmont. Santa was at work, ready to listen to the wish lists of Christmas lovers. Soon, Natalie from Oklahoma City was patched in via ham radio. The 11-year-old said she wants a hair straightener for Christmas this year, and Santa promised to bring her a surprise on Christmas Eve. But, he said, "you just have to be sound asleep — and no traps!"

John Chilson bought his first Santa Claus suit 22 years ago, after his mother passed away. She loved the color red, and when he stumbled on the costume at a Wal-mart, he thought of her and bought it on a whim. While the suit was first a hobby, it eventually **became a profession** and identity (Chilson prefers to go by Santa).

Last year, Santa couldn't do any events in person because of the pandemic, so he went looking for other ways to connect with kids. He began setting up video chats via Zoom for a fee. And when the **Longmont Amateur Radio Club**, or LARC, invited him into the world of ham radio, he embraced the opportunity.

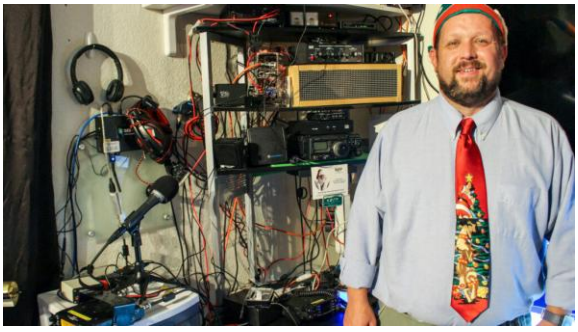
"I'm just enough of a geek that I can pull it off," he said.

Ham radio is similar to citizens band, or CB, radio, but you need a license from the FCC in order to operate one. Because ham radio is regulated, you won't hear cursing, political talk or commercial content over those parts of the radio frequency spectrum.

The idea of connecting Santa to children over ham radio was the brainchild of members of LARC, who introduced him to Chuck Poch, LARC's board president.

Poch only adopted the hobby about five years ago, he became enamored with the technology. He is now licensed and has his own call sign — KØITP — to connect with other ham radio operators.

"I started playing with it and found that there's all kinds of facets with ham radio," he said. "You learn something new every day, from building antennes to building your own radios. There's a lot of science involved."



Pedro Lumbrano/CPR News: Chuck Poch of the Longmont Amateur Radio Club poses alongside his ham radio inside his home in Firestone, Colo., on Dec. 2, 2021.

Poch said there are millions of ham radio operators worldwide and more than 20,000 licenses issued in Colorado. For him, it's a way for people to connect using technology that's been around for more than 100 years. While many people use ham radio for fun, the technology can be lifesaving in the event of an emergency.

"Usually in a disaster-type scenario, when you've lost power — cell phone, internet, all forms of communication — most emergency agencies are going to go look for a ham radio operator to make contact," he said.

That was true in Colorado during **the 2013 floods that hit Boulder County particularly hard**, Poch added.

Despite its utility, ham radio's popularity is dwindling because cell phones and the internet have made it easier to communicate. So Poch and the LARC have been looking for ways to introduce more young people to the hobby. When the pandemic interrupted in-person gatherings last year, the club came up with the idea to connect kids to Santa over the airwaves.

The experiment worked. And earlier this month, Santa did another round of ham radio visits every night for nearly a week.

"Last year was so traumatic for so many people," he said. "They needed somebody like Santa to talk to and to encourage them; to bring them some hope and joy. And that's something I seem to be good at."

Throughout that night in December, Santa shared jokes and stories about Mrs. Claus and the reindeer. And with Natalie from Oklahoma City on the ham radio, he asked if she had ever heard someone say Santa isn't real.

"Yes I have. But I really don't believe it," she said.

"Well Natalie, I'm glad you don't believe it," he said. "But let me tell you what the most important thing is: that you remember Santa Claus believes in you. And I do. You're a

Poch — who goes by Chuckie the Airwaves Elf — served as the control operator, moderating the communication and making sure everyone followed FCC rules. At the beginning of one session, he called into his radio transceiver: "Good evening, looking for boys and girls from around the world, Longmont, or wherever you're from to talk to Santa Claus this evening."

In order to participate, the kids need to know someone with a ham radio and a license to operate it — usually a parent, grandparent or neighbor. Many of the families find out about this through Facebook or word of mouth. Kids have radioed in from across the Front Range, from states like Ohio, and as far away as Canada.

Though Santa uses computer software called EchoLink that patches him into the ham radio signals, he still has a call sign: N0P, which stands for The North Pole. When he runs into technical problems, he chalks the bad connection up to interference from sunspots and the Northern Lights near his home in The North Pole.

But, he says the technical hoops are worth jumping through in order to talk to families he might not otherwise reach. Especially at a time when **there's a Santa shortage**.

delightful person, and just keep on being kind to everybody."

Come on – you know you enjoyed it. Go ahead and admit it. No one will make fun of you (probably).

Return to TOC


Happy
Holidays
AND A
JOYFUL NEW YEAR

Net Control Roster

Week	NCO	Callsign
1	Paul Orf	AD0YL
2	Ken Humbertson	W0KAH
3	Jeff Young	KB3HF
4	Bill Grimsbo	N0PNP
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

October 2022

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 EM Net at 1900 ARES Net at 2000	HALLOWEEN 31 	1	2	3	4	5

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 There will be normal nets on the 31st

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November 2022

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	12 EM Net at 1900 ARES Net at 2000	22	23	THANKSGIVING 24 	25	26
27	28 EM Net at 1900 ARES Net at 2000	29	30	1	2	3

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 Thanksgiving

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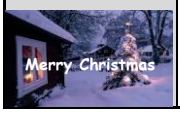
December 2022

Sun	Mon	Tue	Wed	Thu	Fri	Sat
29	30 EM Net at 1900 ARES Net at 2000	31	1	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 Hanukkah Starts	19 EM Net at 1900 ARES Net at 2000	20	21	22	23	24
CHRISTMAS 25 	26 EM Net at 1900 ARES Net at 2000 Hannukah Ends	27	28	29	30	New Year's Eve 31 

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 Merry Christmas and Happy New Year to all

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