

# THE MAINE TELEGRAPH

NEWSLETTER FOR MAINE  
AMATEUR RADIO OPERATORS



## Maine State Convention and Hamfest 2022

WRITTEN BY CORY GOLOB, KU1U

The Androscoggin Amateur Radio Club hosted its annual Maine State Convention and Hamfest on Friday April 1 into Saturday April 2. There were 212 people in attendance. It felt good to start getting back in person to have those relished "eyeball QSOs". It was wonderful to see presentations on MESH networking and 6 meters as well as receiving updates from the League. A nice number of folks were present on both days to improve their soldering skills, building a voltage meter. This was the best year in recent memory for vendors being present. Attendees love coming away from a hamfest with some new acquisition and this hamfest provided plenty of tables to do so. Both the Androscoggin Amateur Radio Club and the Ellsworth Amateur Wireless Association were presented plaques in recognition of their clubs.





# YCECT - York County Emergency Communication Team

WRITTEN BY NEIL TOLMAN, K1NBT

## **Put your amateur radio skills to valuable use!**

Our mission is to serve our communities within York County. YCECT is affiliated with, certified by and directed by the York County Emergency Management Agency. The York County Emergency Communication Team is made up of volunteers that have a sincere desire to serve their community in the event of an emergency. Our purpose, our mission, is to be prepared to provide emergency communication for the YCEMA and their partners in time of need. We welcome any licensed amateur radio operator with a sincere desire to serve his or her community during a time of need to volunteer to become a part of the team. We are an all-inclusive team regardless of political, racial, religious, or lifestyle differences. We are looking for volunteers in every town and community in York County with a willingness to learn from one another and from our missteps without fear of judgment or criticism. We train and encourage one another in basic to advanced amateur radio techniques so that we are prepared to keep the lines of communication open when other technologies fail or are overwhelmed. The team training guidelines can be found at <http://k1nbt.com/index.html>

## **Next QCWA Meeting - June 4th**

The Quarter Century Wireless Association convened at the Maine State Convention with the presentation of certificates for amateurs who have been licensed between 30 and 70 years! Jerry Burns K1GUP will continue as President of the Pine Tree Chapter 134, Steve Curry KD1O as Vice President and Bruce Randall W1ZE as Secretary/Treasurer. Bill Woodhead has agreed to continue as Net Manager. The QCWA will reconvene after Hermon Hamfest June 4th.

# New England QSO Party

WRITTEN BY TOM FRENAYE, K1KI

The New England QSO Party on May 7th and 8th is a great time to check out antenna systems and offers a moderately paced opportunity to work new states and countries. You'll find a wide variety of participants, from newcomers to experienced contesters, all interested in making contacts with New England stations.

Our goal is to get every one of the 67 counties in New England on the air so we hope you will encourage your friends to join in the fun! Even if you can join the fun for a couple of hours, we'd appreciate it! Will you be QRV? Let us know with a message to [info@neqp.org](mailto:info@neqp.org)

The New England QSO Party is 20 hours long overall, in two sections with a civilized break for sleep on Saturday night. It runs from 4 pm Saturday until 1 am Sunday, then 9 am Sunday until 8 pm Sunday. Operate on CW, SSB and/or digital modes on 80-40-20-15-10 meters. For each QSO you'll give your callsign, a signal report and your county/state. Top scorers can earn a plaque and everyone who sends in a log will get a certificate. The goal is to work stations anywhere in the world - and their goal is to work New England stations, so you'll be very popular!

Last year we had logs from 947 stations from around the country and world. There were 134 stations from Maine on the air!

The full rules are here -> <https://neqp.org/rules/>

The full 2021 results were posted a couple of weeks ago -

<https://neqp.org/2021-new-england-qso-party/>

It's just under a month until the 2021 NEQP. Please get on and make some QSOs even if you don't want to send in a log!

Thanks!

73 Tom/K1KI

<https://neqp.org/>

Call	County	Category	CW	SSB	Dig
<b>K1M</b>	<b>WASME</b>	<b>Multi-Operator</b>	<b>1226</b>	<b>598</b>	<b>1</b>
<b>K1JB</b>	<b>CUMME</b>	<b>Single Operator High Power</b>	<b>887</b>	<b>707</b>	<b>0</b>
K1ESE	OXFME	Single Operator High Power	771	0	0
N1RPH	FRAME	Single Operator High Power	0	489	0
AA4AK	CUMME	Single Operator High Power	178	0	0
W3AKD	HANME	Single Operator High Power	125	0	0
WT1A	ANDME	Single Operator High Power	0	140	0
<b>KA1R</b>	<b>AROME</b>	<b>Single Operator Low Power</b>	<b>907</b>	<b>0</b>	<b>0</b>
N1CGP	WALME	Single Operator Low Power	544	0	0
KX1E	CUMME	Single Operator Low Power	417	0	0
W1KX	KENME	Single Operator Low Power	387	2	0
KU1U	ANDME	Single Operator Low Power	273	187	0
N1DFD	FRAME	Single Operator Low Power	0	480	0
WW1ME	HANME	Single Operator Low Power	222	0	0
AA1SM	FRAME	Single Operator Low Power	114	8	0
W1DYJ	CUMME	Single Operator Low Power	102	45	0
KB1TCD	LINME	Single Operator Low Power	0	148	0
KO4GBD	SOMME	Single Operator Low Power	62	0	0
N1MA	SAGME	Single Operator Low Power	63	7	0
KE5ISO	FRAME	Single Operator Low Power	0	39	9
W5KF	AROME	Single Operator Low Power	0	68	0
W1DLC	FRAME	Single Operator Low Power	20	0	0
WA1URS	PENME	Single Operator Low Power	0	54	0
KB1H	HANME	Single Operator Low Power	0	27	0
W1ZE	SAGME	Single Operator Low Power	12	11	0
NZ1U/m	ANDME	Single Operator LP - Mobile	34	0	0
NZ1U/m	CUMME	Single Operator LP - Mobile	65	0	0
NZ1U/m	FRAME	Single Operator LP - Mobile	31	0	0
NZ1U/m	HANME	Single Operator LP - Mobile	73	0	0
NZ1U/m	KENME	Single Operator LP - Mobile	29	0	0
NZ1U/m	KNOME	Single Operator LP - Mobile	32	0	0
NZ1U/m	LINME	Single Operator LP - Mobile	54	0	0
NZ1U/m	OXFME	Single Operator LP - Mobile	41	0	0
NZ1U/m	PENME	Single Operator LP - Mobile	30	0	0
NZ1U/m	PISME	Single Operator LP - Mobile	30	0	0
NZ1U/m	SAGME	Single Operator LP - Mobile	36	0	0
NZ1U/m	SOMME	Single Operator LP - Mobile	47	0	0
NZ1U/m	WALME	Single Operator LP - Mobile	54	0	0
NZ1U/m	WASME	Single Operator LP - Mobile	26	0	0
NZ1U/m	YORME	Single Operator LP - Mobile	35	0	0
KC1NOM/m	ANDME	Single Operator LP - Mobile	0	3	0
KC1NOM/m	KENME	Single Operator LP - Mobile	0	1	0
N1AIA	YORME	Single Operator QRP	193	3	0
KC1DVT	CUMME	Single Operator QRP	16	0	0

# What I learned in my first year as a Ham

WRITTEN BY MATT PELLETIER, AC1KO

My amateur radio career nearly started in 1987 when I was working for CMP in the relay lab as an engineering intern. At that time, there was a lot of maintenance work on Power Line Carrier gear which involved mentors who were also active Hams. Around the same time, a friend at camp (K4FHB – fine homebrew, Mr. Baldwin from NC, now a silent key) was encouraging me to get involved with ham radio. At the time, I bought a rig, a TS-520S, was given an antique morse code key (Stamped “WUT” – Western Union Telegraph) which I still have, but never got an antenna in the air and could not conquer Morse Code. A year later, I graduated from UMaine with an EE degree, got into the power industry, started a family and life moved on.

Fast forward to 2020, Christmas morning. My wife tried to call her mother in SC and got that rare “all circuits are busy” message....all day. Apparently, someone decided it would be a good idea to bomb the AT&T hub in Nashville, and to this day I don't think we've ever heard the full story about that. Since I had been considering getting my license and getting on the air all those years, that was the tipping point. What if a backup means of communication is needed, at least to learn from other hams what is really going on in their area, and potentially being able to pass messages if the need ever arose? Things were getting weird, who knew what would happen next? So, I bought the books, studied, attended the University of YouTube ham radio classes, took the practice exams, sought out more info from qrz.com and bought the ubiquitous \$25 Baofeng UV5R so I could listen on 2m. I discovered the newcomer's roundtable net on the Falmouth '09 repeater, (W1QUI 147.09) and from that and qrz.com was able to reach out to some local hams. I didn't key the mic, because I wasn't licensed, but reached out to Steve WZ1J by landline, and Tim WITGG via his YouTube livestream and some other hams and got some recommendations on equipment, where to buy, etc. That help was much appreciated. I walked into the exam session in NH with no license and walked out an extra. I had studied a lot, and certainly had a head start from 30 years as a EE, but now what? All I had proven was my ability to pass a test. I knew nothing about Ham radio, other than to follow recommendations from people with more experience than myself. When I got home from passing the exams, I could finally open the boxes from HRO. I passed! I don't have to return them. Like another Christmas for myself, I opened the shiny new Icom IC-7300 and a Yaesu FT-2980R. Now to get to work getting a shack in place.

I had read about noise floor and the importance of reducing it for receiving weak signals. I had read about Radio Frequency Interference (RFI) and how that might be an issue but had no idea how that would

up or how to fight it. Noise sources: the house might be full of them, what do I do about that? I'm going to key the mic for the first time soon, and a lot of people are going to hear me. Am I going to screw up? It was time to dive in, proceeding without fear like a 4-year-old in a Batman suit. I was going to take it seriously, because I don't do anything halfway (which is why I no longer drink, hi-hi).

I had a feeling that the first build would be a prototype. I hoped not, but that's how it went. The following Tuesday my license showed up in the database, and I was on the air! My first call was to Steve, WZ1J, who had helped me quite a bit, and days later received my first QSL card from Steve. Soon after I got a phone call from Phil, N1EP, saying that he had something for me called "formal traffic" which was the congratulations message that sometimes goes out to new licensees, but I had questions. "Geez, Phil, what is this formal traffic you're talking about, and how does that happen?" He graciously explained it and that's when I first heard of the Seagull net. That net, if I recall correctly, is the oldest continuously operating net in the country, and meets on 3.940 MHz, Mon-Sat at 1630 local in the winter, and 1700 in the summer.

<https://maineseagull.net/> Folks without an hf rig can listen online at <http://sebagolakesdr.us:8901/>, set to 3940 kHz, LSB.

I built a mast made from chain-link fence cap rail, mounted a small VHF antenna on top and an EFHW-8010 end fed wire from myantennas.com at about 35', mounted level to a tree across the yard. I got mixed results on the 2m signal, and when I checked into the seagull net for the first time, got complaints about "RF in your audio". What the heck is RF in my audio? I was also struggling to hear many of the folks on the 80m net because my noise level (noise floor) was so high. Time to go back to YouTube, which is when I discovered Dave Casler, and others.

Also, I wondered what little bit of knowledge from my 60 Hz career could I leverage to help this situation? I was discouraged to say the least... but.. proceed without fear, and git 'er dun.

**RF in my audio** - There are papers written by true experts on this, and I don't claim to be one. I did, however,



solve the problem. I use the term “solved,” lightly, because it seems in this hobby just when you declare victory on something it comes back. Let’s just say it’s fixed for now and has been for some time. RFI in audio isn’t something you can detect yourself, unless you happen to be listening to yourself on a separate receiver (such as websdr.com) or on headphones. We rely on our fellow hams to let us know when there’s an issue with our signal, and we should welcome the feedback. RFI can get into your microphone, which is then amplified and transmitted and makes it hard for others to make out what you’re saying, and is at best annoying to the listener like nails on a chalkboard. The RFI can come from rf noise sources or from your own transmitted signal and can be a real bear to find and eliminate. Some don’t have the issue, but I had it bad. So, here’s what I did, using the belt and suspenders approach:

**Noise Sources** – they are everywhere I discovered. How do you find them? Well, start turning breakers off one by one, right? Not quite. If you turn off circuit breakers one at a time, and there are multiple noise sources, you’re never going to find them because you may have shut one off, but the others are still radiating. The only way I found to hunt them down is to get your rig on battery power, shut off all the breakers in the house and see if the “birdies” on the scope go away. Birdies are noise signals seen at regular intervals on your scope. I was plagued by those birdies on 75m, right where the Seagull net is held, and low and behold, with all breakers off, no birdies. OK, now I know the noise is coming from inside my house, not the neighbors, which is good. With the YL at the breaker box holding a flashlight, we went thru turning each breaker on one at a time, while I checked for birdies on all the bands, and I wrote down which circuits caused the problem. This narrowed it down, and I could then run around with one problem circuit turned on, unplugging things and seeing what the problem devices were. Wall-worts, those little phone chargers and power supplies that are used by everything, were one common source. Some Palomar type 31 ferrites took care of a lot of them, but not all. The Plasma TV in the living room was a really bad generator of RFI that ferrites could not fix, so it became a rule that anytime I got on 75m, that TV was turned off. A paper shredder, one of those vacuum sealers for freezing food, florescent lights in the workshop and yes, in the shack, and breaker 5 in my workshop that feeds an unknown noise source, all are on the “off until used”

list. It was around this time I got rid of my noisy switching power supply and upgraded to an Astron RS-35M linear supply. Problem solved, so I thought, and had several good check-ins on the Seagull net and some good QSO's and then I decided to upgrade to the Heil Pro7-IC headset.

**RF Interference returns** - Amazed at how well I could hear with the new headset, I was anxious to try it out on the Seagull net. But, when I checked in I got more reports of RFI in my signal. Dang it! The RFI was back, and I thought it was the headset. Of course, I had rearranged several cables to get things "neat" in the shack at the same time and not sure why it came back, but the



RFI was back in spades, and always on the Seagull net. After producing an extended tirade of blue air that only a true native Mainer (aka maniac) can conjure, I set out to conquer this issue once and for all.

Someone recommended ungrounding everything, which worked, but I wasn't happy with that due to safety. The birdies are gone, where is the RFI coming from?

And then it dawned on me... spark gap transmitters. Small gaps between metal parts can re-radiate RF in the air, including my own transmitted signal, which could then be re-transmitted (like the old spark-gap transmitters) and get picked up by the mic, which is no bueno. Those sections of chain link fence cap rail have gaps which the #6 insulated copper wire on the mast is doing nothing for. Also, my ground system is OK, but maybe not great.

Meanwhile, I'm thinking about getting a K4KIO Hexbeam after an extended rag chew with a guy in Minnesota who was raving about his, and sounded really strong, but I need a second mast. So, it was time to get back to work. The original mast came down, and 2 masts went up. This time, however, for the cap rail mast I went up 60' with a better 2m antenna (Diamond X300), higher for better line of sight coverage, and added a second EFHW for 160-40m.. and bonded all sections of pipe together with a single (long) piece of 1" tinned copper braided ground strap (Figure 1). The strap is connected to each antenna ground stud and bonded at both ends of each pipe section with a hose clamp to bridge the gaps between pipe sections (before painting), and then ty-wrapped every 6" to keep the strap in continuous contact with the

pipe to avoid ground loops. There's no ground loop if there's no "loop." The Hexbeam went onto a Rohn push-up mast, also using the 1" strap. Each mast got its own ground rod with its strap tied directly to its ground rod, and the ground rods are tied together with the same type of strap, which is buried. The shield of every coax is grounded at ground level with Alpha-Delta surge arrestors mounted on the ground rod, (Figure 2) which offer a little protection from lightning, but the main purpose is to get the shield grounded outside to keep static buildup from getting into the shack, and to help shunt some of that RFI to ground. The station ground rods need to be connected to the utility service entrance ground rod using #6 bare copper, buried. (NEC Sec 250) Braided ground strap, by the way, is much more effective at rf frequencies than #6 copper wire because of skin effect and surface area; it has a much lower impedance at radio frequencies. It does a better job of getting rf interference to ground, in other words. Along with all of this, I ran a single ground strap from the station ground rod into the shack, keeping in contact with all coax cables because again, if there's no loop, there's no ground loop, and each radio got its own ground strap and they are all tied together at a single point using a split bolt. I also added common mode chokes on each coax up at the feed point, and where they enter the house as more insurance against the dreaded RFI monster.

At this point I was able to conduct QSOs and nets without complaints of RF in my audio, at least for a while.

**Audio Elmer** – This story falls under the category of "It's better to be lucky than good." After getting the station into reasonable shape, I was starting to spend more time on the air and call CQ from time to time or look for folks calling CQ. I stumbled upon KA5DOB, Jimmie in Alamogordo, NM on 20m. Jimmie asked about my station and said "excellent choice on the 7300" and asked if I would like some help on my audio. He wasn't asking because of rf issues. Rather, he is a bit of an audio Elmer and offered to help me with my settings. "Of course," I said, (I need all the help I can get, I'm thinking) and he proceeded to tell me what settings to go to in the menus on the rig... "try it again , give me a 5 count ," and "Ok, dial



that up one” or “Drop that a little” and within about 10 minutes of back and forth, we dialed my audio in specific to my voice, my mic, and I’ve gotten compliments ever since on my audio.

For the 7300, Heil Pro7-IC microphone and a semi-deep voice, this is what we arrived at:

Compression: 6

Mic Gain: 55

TBW: 100-2900

TX Bass: 0

TX Treble: +5

“Place the mic element at the left side of your mouth, 2 finger-widths away from your mouth,” Jimmie said.

He explained how a bit of compression and adding treble helps drive through pile-ups, and other things. I wish I had taken better notes because Jimmie was a wealth of knowledge.

So, at this point, I was receiving consistently good reports on my signal, compliments on my audio (thank you Jimmie) and working USA and DX and local nets with a feeling of marginal success. My noise floor was almost gone at this point, where before it was near S9, it now ran about S2-S1 and varied with conditions rather than being generated by my own house interference. I could really pull out those weak signals and hear them clearly because of the low noise floor, but my shack was a mess, so it was time to re-route some cables and get things off the floor. Feeling good about not only the performance of my station, but now the appearance, I once again checked into the Seagull net.... And net control Phil N1EP had to tell me once again, “rf in my signal!” Talk about a Whiskey Tango Foxtrot moment! That time, the only thing that had changed was getting my cables straightened out. Seriously? Am I ever going to get this station in order? Quickly putting cables back, on the floor, I was able to get rid of the RF again, finished the net and took a break. By this time, the 2021 virtual hamfest was coming up, so I signed up. I really enjoyed this event, and Bob Heil was talking about the 7300 and the headset, and how good it is (he’s right, but I’m waiting for the punchline.. why

s my rf back?) and then, either in that talk or a separate YouTube video I saw, Bob got to the subject of power supplies.

**Bob heil and the power supply revelation** - Our DC power supplies sometimes have the minus side of the DC grounded. What? I grabbed my old fluke multimeter and sure enough... my Astron RS-35M linear power supply had the (DC-) grounded. Bob was recommending using a "cheater" plug to remove the ground connection between the AC outlet the rest of the station because of the GROUND LOOP it creates. Bingo! Here's the loop:

station ground rod -> utility power ground rod -> AC panelboard ground -> romex -> power outlet -> power supply chassis -> (DC-) -> radio -> station ground rod (full circle, that's a loop).

My own transmitted signal was coupling that ground loop and getting into my mic, and getting into my transmitted signal! (AKA RF in the audio!) Bob is right, the cheater plug will remove the ground loop, but I'm concerned about safety in the event of a lightning strike, so I opted to remove the (DC-) to ground connection inside the power supply chassis (remove one wire which is in an obvious location, and is not shown on the schematic, which makes you think they intend this to be optional). This keeps the chassis tied to house ground for safety and breaks the loop as Bob correctly advised us to do. I recently upgraded to an RS-70M, which did not have the (DC-) grounded, incidentally.



Since that time, I've used a pocket hole jig and some plywood to modify the desk and re-arrange the radios, amplifier, manual tuner, etc. and finally realized since I'm always tinkering that it's best for me to keep my desk away from the wall, so I have a 2' walkway behind the desk where I can rearrange cables, change out radios, or whatever. I've also added 3"x3"

Panduit wire duct for all the AC, DC and audio cables, keep it all up off the floor and separate them from the coax. Santa brought us a new TV at Christmas, so the Plasma TV is gone. Now that I'd dropped the noise floor and maximized the capabilities of the 7300, it was time to upgrade to the 7610.

I use the same audio settings, same mic and still busting pileups with only 100W barefoot with the amp in reserve but rarely needed and it's been working FT-8 QSO's down to -24dB. Is the station perfect? No. Am I an expert a year later? Heck no. But I do feel very fortunate and appreciate the help I've received and having a lot more fun in the hobby than I originally envisioned.

**Tragedy Strikes** - This winter, the Hexbeam came crashing down in a snow/ice storm, snapping the Rohn H-40 and it spent many weeks being supported by one guy line on the other mast. (The chain link fence cap rail that didn't come down). The guys never failed, and I look back, I should have refused the Rohn H-40 when it arrived because it



got whacked in shipping and had a big dent. That may be where it failed. Also, I should have used the heavier duty bracket for the Hexbeam, which had started to tilt and torqued the mast from the ice load on the day it came down. Leo K4KIO provided me with that bracket under warranty once I told him about the failure. But it's back up now (on a Rohn H-50 with 12 guys instead of 6 - belt and suspenders approach). It may have been Alan N1IEJ who said on the seagull net recently, "If your antennas all stayed up through the winter, you either don't have enough of them or they're not high enough." Mission accomplished.

I hope this is helpful and offers encouragement to new hams. Hang in there, part of the hobby is the fun of experimentation! Please check out my qrz page for more info and details.



73 de AC1KO