

CAARA NEWS



Cape Ann Amateur Radio Association
Gloucester, Massachusetts
JULY 2022 EDITION



PRESIDENT'S COLUMN

by Brandon- NQ1W

By the time this letter reaches you we will have had our Field Day 2022 event up at Hospital Hill and hopefully you will have had an opportunity to participate with us either in person or at your home stations. Our contest czar Tony Sarracino AB1XK will be managing our score submission. He has notes for contesters who wish to submit their results to be aggregated along with our other CAARA operators for field day. Make sure your logs are in Cabrillo format and you note what type of station you are operating and what kind of power you are using. For those submitting online we request that you wait until an email goes out after FD so you know how to get them up there in a way that ensures proper aggregation.

We are also gearing up for another great community service opportunity at the Gloucester Fishtown Horribles parade during the evening of July 3rd. One of you lucky event participants will get to ride in a patrol car during the parade. Hopefully no unexpected unlucky participants get to ride a patrol car during the parade. It will be the first time we have participated in this event to my knowledge and hopefully we will be able to help out with Gloucester public safety during other subsequent events in the future. Please contact Fred walesu@comcast.net for more information.

In other news we have submitted our application for a \$25,000 grant from the ARRL Foundation Grant Program. We will be using the funds for getting the clubhouse outfitted for STEM education opportunities and also enhanced audio visual capabilities for demonstrations and organizational events. We were really greatly encouraged by the creator of the grant program and ARRL New England Division Director Fred Kemmerer to take advantage of the half million in funding they have available for qualified clubs. If you



get a chance and want to send an email supporting CAARA and our STEM initiatives for seniors and students please do so. Fred's ARRL email is: ab1oc@arrl.org and as I mentioned the grant is awarded during the sixty days following the end of entries 6/30.

We have more fun activities coming up this summer so stay tuned for updates regarding additional Special Events and opportunities for community radio service over the next weeks.

Regards and as always thanks for supporting CAARA. We wouldn't exist without you our members. Thank you!

-Brandon Hockle NQ1W

THE EMCOMM MINUTE

By Dean- KB1PGH

So last month I showed you my Emcomm Go Box for my HT's which included a public safety scanner as well. Well this month I will show you my VHF/UHF Emcomm Go Box which hopefully will give you some ideas on how to set one up.



Of course you can go on to Youtube and see a bunch of them on how others did theirs. The whole thought I had for this was to create a complete portable VHF/UHF station that I can set up in a couple minutes for deployment in Emergencies or for use in other public service situations such as communications for marathons or parades and stuff like that. The whole thought behind it was so that I could set up a complete VHF/UHF station that includes the go box, a power source such as my battery or portable generator, along with my Arrow J Pole mounted on my Buddipole Mast. Totally portable off the grid communications with its own independent power source. So in the first photo you can see the APACHE 4800 waterproof storage box. I like these as a low cost version or protective storage

CAARA Newsletter
Cape Ann Amateur Radio Association
6 Stanwood Street
Gloucester, MA 01930

CAARA Newsletter is a monthly publication of the Cape Ann Amateur Radio Association (CAARA).

It is the policy of the editor to publish all material submitted by the membership provided such material is in good taste, relevant to amateur radio and of interest to CAARA members, and space is available. Material is accepted on a first come, first serve basis. Articles and other materials may be submitted by internet to Jon at jpcrockport@gmail.com . If possible, material should be in Word format. Material may also be submitted as hard copy to Jon-K1TP or any Club Officer.

All material published in the CAARA Newsletter may be reproduced for non-commercial use provided such use credits both the CAARA and the author of the article. Copyrighted material will not be accepted without accompanying written permission to publish.

The opinions expressed in the CAARA Newsletter are solely those of the editor or other contributors and do not necessarily reflect the opinions of either the Board of Directors or membership of CAARA.

Jon Cunningham- K1TP Editor
Dean Burgess- KB1PGH Reporter

Board of Directors- 2021/22

President: Brandon Hockle- NQ1W
Vice President: Jake Hurd- W1LDL
Treasurer: Tony Marks- N1JEI
Bookkeeper: Dick Ober- K1VRA
Clerk: Charles Herlihy- KC1JKJ

Directors:

Hank McCarl- W4RIG
Larry Beaulieu AJ1Z
Jon Cunningham- K1TP
Neil Weisenfeld- KC1MYZ
Bill Poulin- WZ1L
Kevin Lyons- K1KL
Chris Winczewski- W1TAT

Welcome to CAARA:

CAARA, an ARRL affiliated club, operates the 2 meter W1GLO repeater on 145.130 MHz with antennas located on the ATT cell tower in the Blackburn Industrial Complex in Gloucester Massachusetts. It has an average effective radius of 60 miles, and serves Eastern Massachusetts, Cape Cod, Rhode Island, Southern New Hampshire, and maritime mobile stations.

CAARA also operates the W1GLO repeater on 224.900 located at the CAARA clubhouse.

The 443.700 repeater is now on the ATT cell tower in the Blackburn Industrial Complex with greatly enhanced performance running in fusion mode and linked to 10 other repeaters in the New England area.

The Association is one of the few amateur radioclubs that has its own clubhouse. Located at 6 Stanwood Street in Gloucester, with a variety of HF stations with beam, vertical, or G5RV antennas.

Amateur radio exams are held on REQUEST at the CAARA clubhouse. Anyone who is considering a new license or an upgrade, is welcome to test with us. Currently pre-registration is necessary. Contact the head of our VE team Bill Poulin- WZ1L if you have any questions about monthly testing.

Monthly member meetings are held on the second Saturday of each month at noon except for July and August.

Each Sunday evening at 9:00 PM, the club operates a 2 meter fm net on 145.130. This is an open and informal net which disseminates club news and prepares operators for emergency communications work. All are invited to check into the net as club membership is not a requirement.

The club is open every Tuesday from 5- 8PM for CAARA members to stop by and socialize, as well as use the extensive collection of ham radio gear.



over the pelican cases. You can get them at Harbor Freight for under \$50 with a coupon. In the next photo you can see how I have managed to stuff all the equipment in there. I just had

enough room. In the last photo you can see all the equipment out of the case and ready for action. It took less than 5 minutes to get it out of the box and running. So here's the list of the equipment to give you an idea of what to build.

Yaesu FTM 400D 50 watt Dual Band radio

Alinco DM330FX 35 amp power supply

Yaesu SMB 201 Fan to keep the 400D cool

MFJ 281 Extension speaker

Yaesu SMA 117 extension microphone

Nifty Brand Remote head stand for the 400D

Nifty Brand owners manual

HT antenna to operate 5 watts if need be

Spare fuses for the radio

A coax jumper and spare connectors

A couple USB charging cords for my I phone

A NEBO brand flashlight

A earpiece for privacy

So as you can see I tried to stuff everything I could think of into one box. I have a separate battery box with a MFJ battery booster in it if I need to run DC power. There are many other ways to build amateur radio go boxes and I would recommend going to Youtube and typing in "Amateur Radio Go kits" and you will see a bunch. My next mission is to build a Marine radio go kit so we will have a portable Marine station available for back up for public safety. You'll see me build that in the next few months. I'll also show you in the next few months a couple examples of emergency



back up radio power and a portable VHF/UHF antenna system. See you next month and





Dean- KB1PGH's Go-Kit



Craigslist Offering

After reading Dean's article, I ran across the photo on the left offering a CB go-kit for \$500.00

If people only knew for the same price or less they could have a 2/440 radio with 50 watts and access to repeaters. If they only knew how easy it is to get a Tech license in one day at a CAARA Tech in a Day class.

BUILDING A QUAD CUBE FOR 2 METERS

By Jim- W0ZEN

Holes were cut to the wire diameter or slightly larger for threading into the end of the stakes.

“All antennas are compromises” But the Quad

After pressing rods into the boom and centering them, the frame is complete.



The next step is the trickiest. Threading the wire through the rods, try to get the wire as straight as possible, I used clamps to hold the ends together while I soldered and shrink wrapped them. I used 14 AWG wire but this is an area where many different conductors have been used from different gauge wire to copper tubing.

Just do the best you can with this step. The wires don't have to be strung tight as a bow. Almost anything close

Cube antenna is pretty damn good. I decided to build a quad cube antenna for the June ARRL VHF contest. The ARRL holds VHF contests three times a year in June, September and January so if you start to build one now you will have leg up on the contest. This contest is done mostly on 2 and 6 meters so everyone can enter regardless of license class.

A quad cube is a type of directional wire antenna like a yagi. Our quad consists of a driven element, a reflector and two directors.

I built this antenna with materials I had mostly laying around in the garage and basement but all materials are readily available, no kit required. The boom is a garden stake. I drilled hole through the boom slightly staggered to press fit the rods which are cut fiberglass stakes commonly used for reflective markers on the edges of driveways.

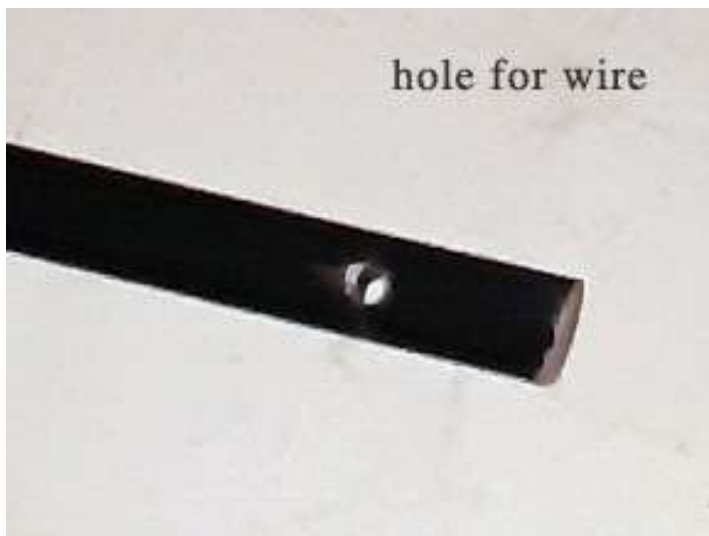
will work.

For connecting the coax I used a SO-239 flange connector mounted on a piece of plastic I picked out of the trash. Anything you can mount to the rod on the driven element that is nonconductive should do. It is best if you can



move the connection up and down the rod a bit for tuning.

The driven element is much like the delta loop I demonstrated at the November club meeting in



that it is simply a wire the starts at the center pin of the coax, makes a circle or square, and returns to the coax shield. For all intents and purposes, it is a short circuit.



The coax is then wrapped around the boom five or six times and taped in place.

For tuning you will need some kind of antenna analyzer that will cover 2 meters. VNAs are not expensive and work fine as long as you have some shade to read the screen in. I used a RigExpert AA-170. If you actually build this

project and don't have an analyzer I will be happy to lend any club member one.

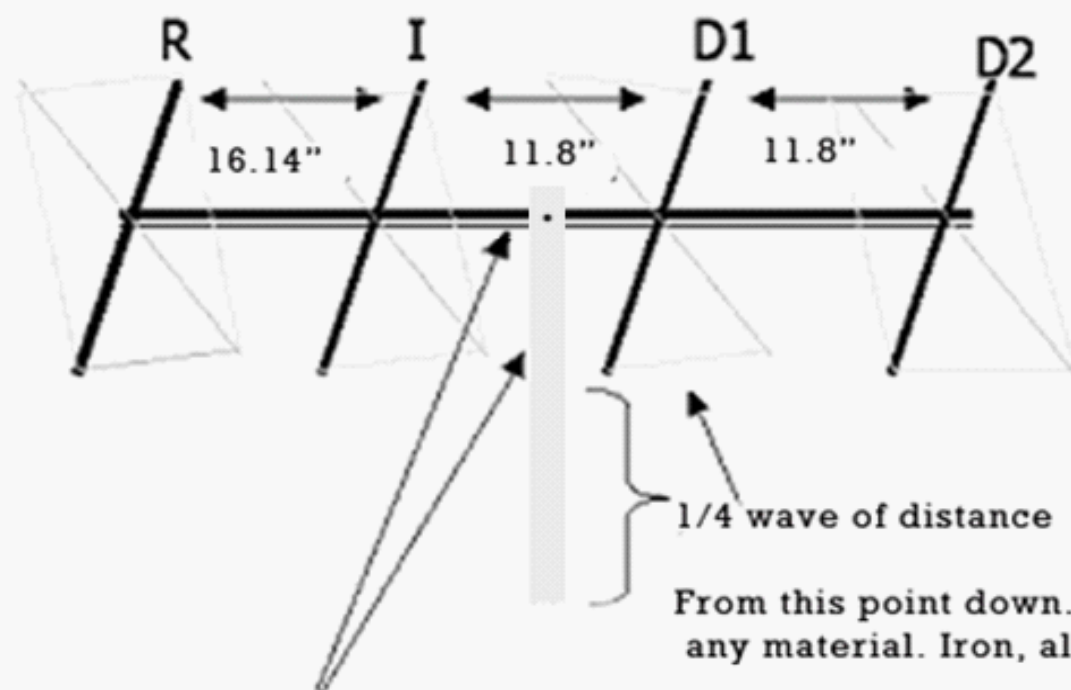
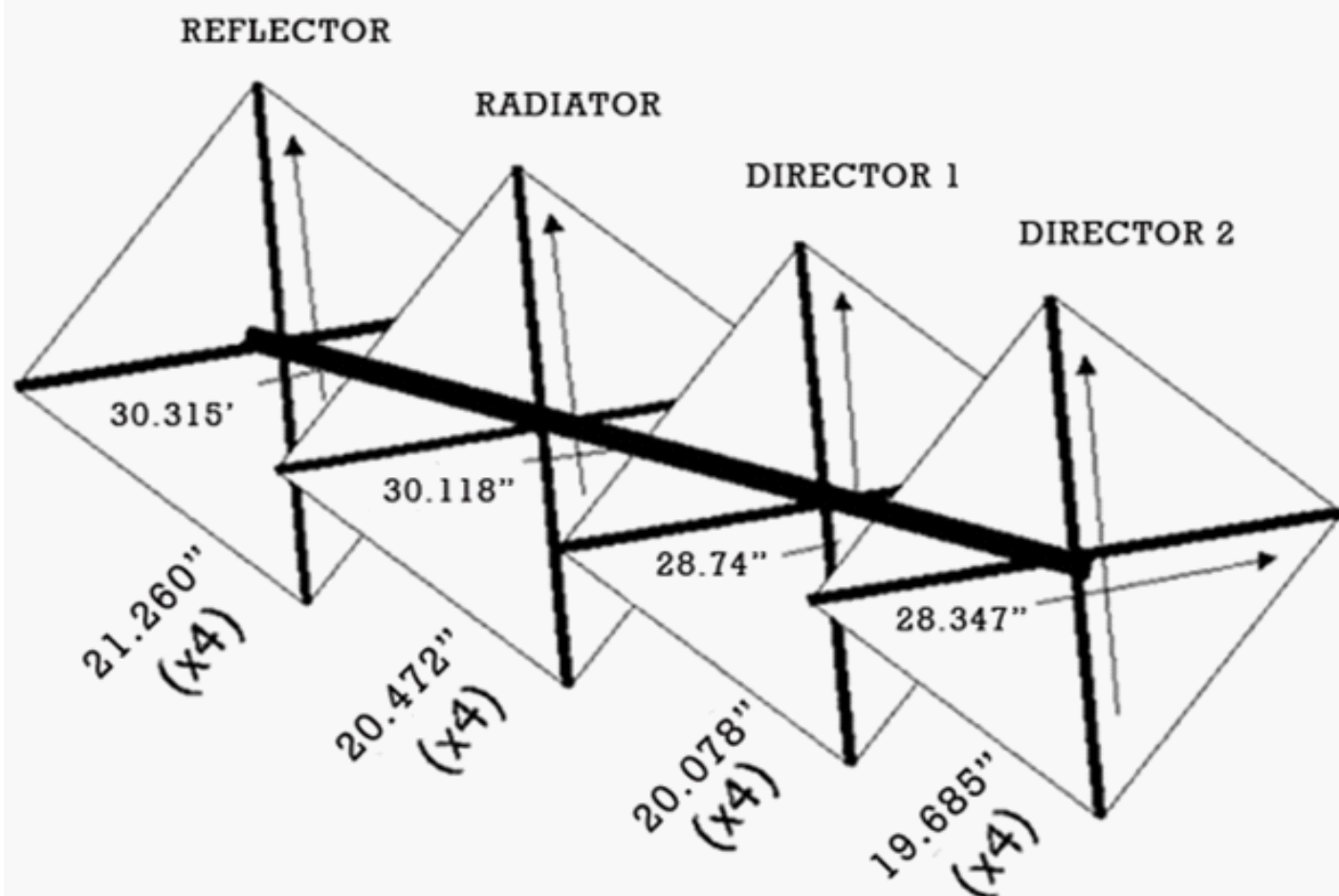
I tuned the beast by shortening the driven element wires and moving the connector up further up on the rod. I tuned for 146.600 and got it to 1.2:1. This antenna is equal to or less than 2:1 all across the two meter band.



The big day comes when we can actually set it up and see how it performs. I was quite impressed. I hit all of the dozen or so repeaters I had programmed in my radio using 50 watts. I had a QSO with a guy who doing a SOTA activation from Pack Monadnock about 80 miles away. He was running 5 watts and was a solid 5-9 both ways.

I used the quad cube and the 6 meter delta loop on the contest weekend and managed 3,200 points or so. I find making my own antennas and then running them in a contest is one of the most satisfying activities of amateur radio. Perhaps you will too.

The following are the plans I used. These have been translated from the original Portuguese and converted to imperial measurements from metric. I made some minor changes to reflect how I actually did things.

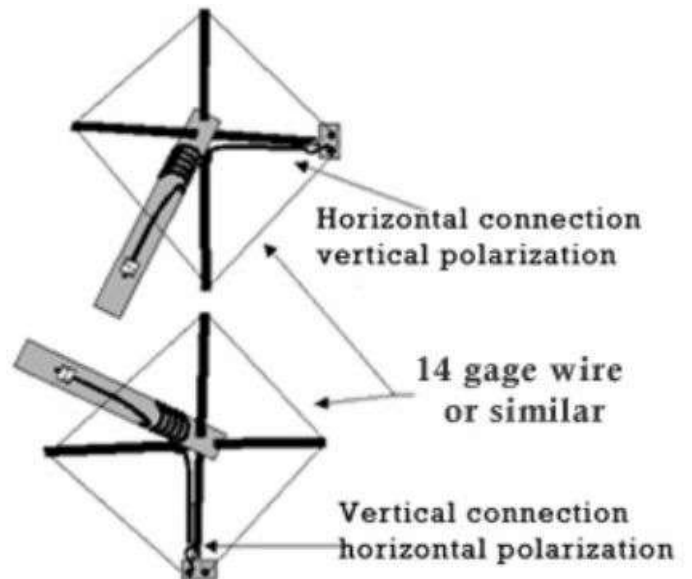
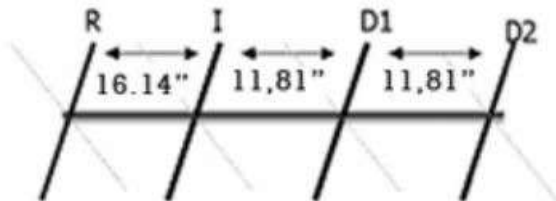


broomstick with carved notch
secured with nylon bolt and nut

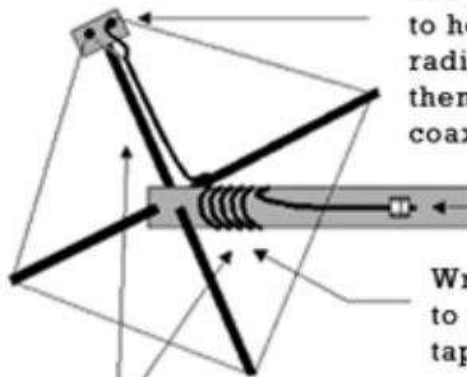
Data:

Boom: total length - 42.125"

Distance between elements (frames)



Connecting the coaxial to the radiant



Use plastic or improvise to hold the ends of the radiating element, separating them and connecting the center and coaxial mesh to each one of them

Connect to radio

Wrap the coax on the boom, making five or six turns, to make the Coupling. Secure tightly with electrical tape to prevent the cable from coming loose

Secure the coaxial cable with electrical tape

DOWNEAST'R

DENISE PAINE



Rodents Part 2

by Curtis- AA3JE



Faithful readers will remember the awful tale of the defroster. If you forgot, in upper New Hampshire, a working defroster is essential to winter driving. So last time, when my defroster began making chirping noises on “High” I assumed some plastic fan blade had come loose, and used the “Middle” setting. A few weeks later the “Low” setting, and a week after that it just made a kind of clicking sound and no air came out. I looked under the dash, had a panic attack, (it’s a mess of plastic under there) and called the dealer.

“My defroster has stopped working.”

“Oh, you needs that. You needs that up here.”

“Can you fix it?”

“If we can get the parts, I’ll call you back.”

Two hours later I had an appointment, and for \$357 plus an Environmental Disposal Fee of \$23 I picked up my truck.

“What’s this Disposal fee?”

“A family of rodents was living in your defroster. That’s the burial cost.”

“I said save the parts.”

“You didn’t want them.”

I enjoyed the new luxury of seeing out the windscreen, but worried it might happen again. So I went to the auto store and bought “MICE AWAY”. This was a packet of minty smelling stuff that mice are supposed to hate. I also would open the door and let my Labrador smell the interior.

Sure enough, despite the fact that my cab smelled like the hole in a wintergreen life saver, trusty “MAX” let me know I had rodent tenants again. So I used my second line of defense, recommended by an old car dealer, “IRISH SPRING” soap bars. My truck smelled like a mint flavored gym locker, sort of a homey, but gagging

smell, but Max insisted that rodents were still there, somewhere.

Finally, one day, a small furry rocket came out of the defroster when I turned it on, bounced off my head, and scurried off behind the seat. I got serious. I went and bought a bag of moth flakes, the lethal kind, and sprinkled the truck. It was a pain, as I had to open the doors for ten minutes to make the interior breathable and drive with the windows open, but Max lost interest, indicating my problem was solved. Sort of.

Happy I had solved the problem, I awaited spring. When it came, there was a slight, but definite odor when I turned on the vents. It would come and go. When the weather turned really warm, it came. It smelled like the refrigerator in the basement when the power went out. Nauseating, gagging odor of death. Evidently I had dispatched a whole colony who had moved in. I tried every odor product in the store, to no avail. I called the dealer.

“Dead rodents in the heater again. How much to clean them out?”

“Don’t work. Got to replace the unit. You got \$375?”

“I’ll get back to you.”

The day I found the local turkey buzzards circling my driveway, I knew I had to do something.

That was when inspiration struck. Years before, I had faithfully listened to CAR TALK on NPR, and I remembered a product called FRIGI FRESH. Wondering if it was still made, I ordered some.

It came, and following the directions of faithful CLICK AND CLACK, I started the truck, put the heater on high, and through a crack in the door sprayed half a can of the stuff, closing the door. I let the truck run for an hour, opened it up, and despite it being 110 degrees in there, the odor was gone.

I have found a battery powered ultrasonic gadget to put in there. As I stopped hearing frequencies above 2000 HZ years ago, we will see if that keeps the little buggers out.

Wish me luck!

Oh Dear, Modern Times

by Curtis- AA3JE

I bought a home that used to be a farm in New Hampshire. As with many such farms, it has about 9 apple trees on the property. I thought this would mean a lovely harvest in the fall, apple butter, apple cider, apple pies, all kinds of apple products. What I did not know was that in the 4 acres of forest, behind the orchard, lies a hoard of ravenous moths that live to lay eggs on apple trees, causing wormy apples. Very wormy apples. I asked the locals what to do, and got a schedule for annual spraying, that resulted in perfect apples.

So far, so good. But I had to buy a sprayer. Now sprayers come in two grades. Industrial grade, that work flawlessly, are amazingly convenient, have perfect controls, come with a pump rebuild kit, and cost \$10,000. Sprayers also come in “home farm” grade, that cost \$250, have a plastic pump, and give trouble. Mostly, this is leaky seals on the intake side that make it difficult to prime the pump.

Now here is a really important safety tip. Do not, I repeat, DO NOT! suck on the end of the hose to prime the pump. Especially when it is full of apple tree spray. Use a vacuum plunger, available at the auto parts store. Very useful and cost effective. Really!

Of course, I ended up using plan “A” (suck on hose), and ended up with a mouthful of apple tree spray. I spit it out, rinsed my mouth out (many times), but soon began to notice my mouth was numb and I was feeling kind of woozy. So I went inside, and called the local medical center.

“We don’t give any medical advice over the phone, sir. You need to come in.”

“Its probably nothing. I got some tree spray in my mouth.”

“You need to contact the poison control center. Right away! I will connect you.”

“Poison center. How may I help?”

“I ended up with a mouthful of apple tree spray.”

“How did that happen?”

“I would rather not say.”

“Just a second, I will transfer you.”

“Suicide Hotline. We are here to help.”

“I wasn’t trying to commit suicide.”

“Many people say that. Just know we are your friends, here.”

“I really wasn’t. It was an accident.”

“Most people say that. If they survive. We are glad you are still here.”

Time to admit my errors.

“I was working on the tree sprayer and got a mouthful of apple spray.”

“Why did you call us? You need poison control.”

“They sent me to you.”

“Get off the line, we have people who really need us.”

After a few other unhelpful calls, I gave up on professional help.

I finally called Joe, who has apple trees.

“What did you do now?” he said.

“Mouthful of apple spray.”

“Priming that junk sprayer. Don’t do that.”

“I GOT THAT PART ALREADY. Will I be OK?”

“It will probably de-worm you. Otherwise, not real dangerous. You probably need de-worming anyway. I use the stuff the vet gives me for my dog. Works great!”



“My mouth is numb.”

“It will wear off. You bought the cheapest sprayer, right?”

“Yeah.”

“Get a sucker gun from the auto store. Don’t use your mouth.”

“I got that.”

“I’ll spray your trees for \$20 plus the cost of the spray.”

“I’ll get back to you.”

Note to self. Do not buy agricultural equipment in big box stores. If you must, buy the more expensive one.

MAN DIES TAKING DOWN ANTENNA

TAUNTON -- A man removing an old metal antenna from a home in Taunton was electrocuted and died Thursday morning.

Friends of the unidentified man told WBZ-TV he was a landlord working on the third floor of the house on Danforth Street around 7:30 a.m.

Investigators said he was taking down an antenna when it touched a nearby power line, killing him and setting the outside of the house on fire.

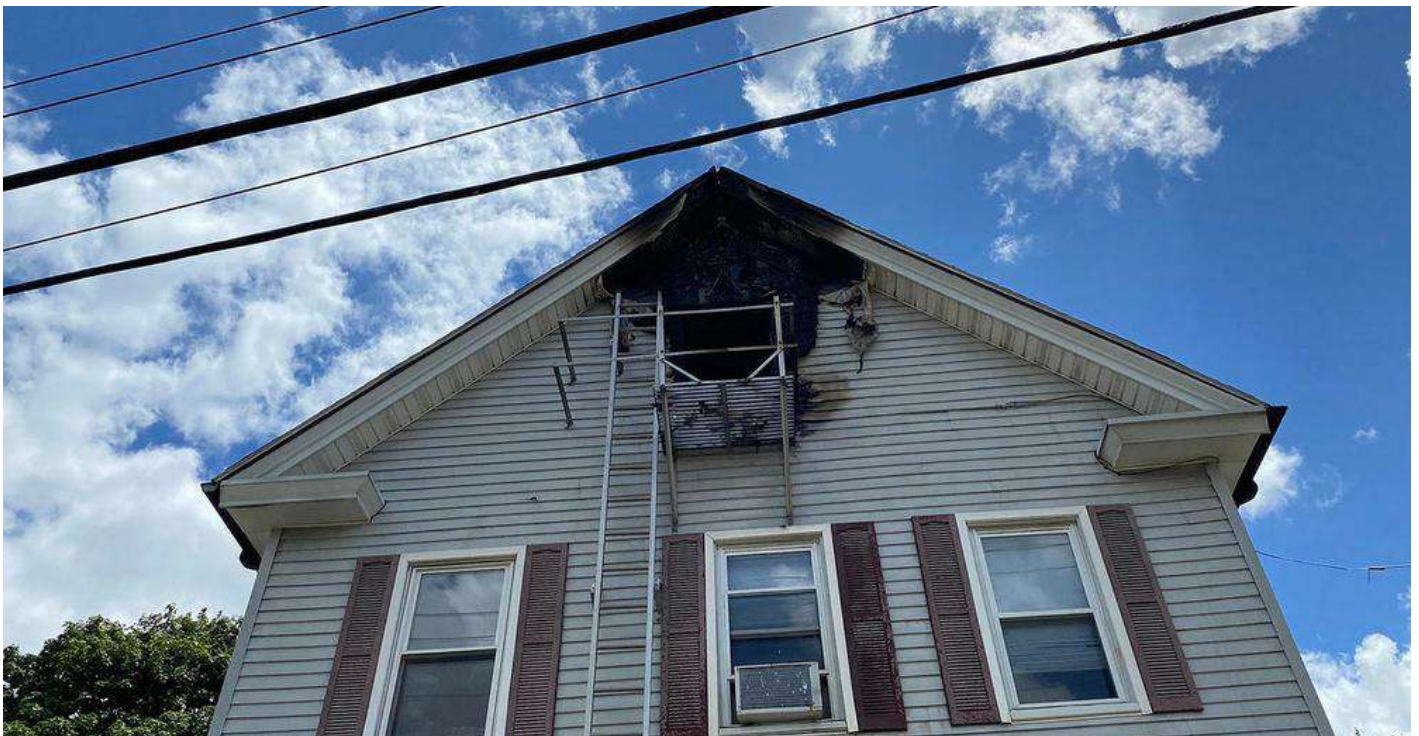
"I guess the guy was trying to bring it down a drop. Checking and looking at the scene he hit a wire, a live wire," said witness Jimmy McDonald. "Heartbreaking, I don't know what to say it's just heartbreaking I feel bad for the family."

Witnesses said the fire started quickly on the top floor, with flames coming out of the window.

"This has got to be the worst I've seen 100%. I pray to God for his family," said witness Isaac Nave.

The fire was quickly put out. Taunton Police and Fire Department were still at the home Thursday afternoon.

No other information has been released at this point in the investigation.



Foundations of Amateur Radio

How to isolate and by how much?

If you connect the antenna ports of two radios together and transmit from one into the other, that would be bad, right? Just how bad would it be and what could you do differently?

Before I dig in, you might ask yourself why on Earth this question even arises.

Consider having two radios and one antenna. You couldn't use a T-piece to connect two radios to the antenna unless both were receivers. So, after connecting and disconnecting coax for a decade, you might decide to use a two position coaxial switch instead. Set the switch to one port and the first radio is connected to the antenna, flick it to the other port and you've just avoided swapping coax between radios.

I'll point out that in most cases a coaxial switch can be used to connect multiple antennas to one radio, or in reverse, connect multiple radios to one antenna.

When you do start looking for a switch it would be good to test that at no point it connected any two switching ports together, potentially causing the magic smoke to escape from your radio.

A less obvious issue is that a coaxial switch has a property called isolation. It's a measure of what part of a signal leaks between ports and you'll see the isolation or cross-talk of a switch described in decibels or dB.

If you recall, a dB is a relative measure. It means that it's something in comparison with something else, in our case, the amount of signal going into one port compared with the amount of signal leaking through to a disconnected port.

You'd think that in a perfect switch none of the signal would leak through, but it turns out that under different frequencies a switch responds differently, even one specifically designed for switching radio frequencies. It might be that a 1 kHz signal is completely isolated, but a 1 GHz signal is not, which is why when you look at the specifications of a coax switch, you'll see something like "greater than 70 dB isolation at 200 MHz". It's worth noting that the lower the frequency, the higher the isolation, indicating that in the worst case, at 200 MHz, there's 70 dB isolation,

but at lower frequencies it has higher isolation, sometimes much higher.

If you were to transmit into this switch with 5 Watts at 200 MHz, the amount of signal that can leak through would be 70 dB less than 5 Watts.

You might recall that you can convert Watts to dBm to allow you to do some interesting calculations. As with other dB scales, it's in comparison to something else, in this case a dBm is in reference to 1 milliwatt and 5 Watts is the equivalent of 37 dBm. This means that if you had a switch with 70 dB isolation, you'd start with a 37 dBm transmission, take 70 dB isolation and end up with a -33 dBm signal leaking through. That's the same as 0.0005 milliwatts. In other words your 5 Watt transmission leaks through your coax switch to the tune of 0.0005 milliwatts.

Is that enough to damage your radio?

Well, that depends on the radio, but let's put some numbers against it.

S9 on VHF and UHF was defined in 1981 as -93 dBm assuming a 50 Ohm impedance of your radio.

So, our leaking signal, -33 dBm, is 60 dB higher than S9. You'd report it as a 60 over 9 contact, a tad excessive, but not unheard of. So by that metric, you should be fine.



Many, but not all, radios specify the maximum radio frequency or RF power that they can handle. For example, according to the documentation, both the NanoVNA and a Icom IC-706 can each handle a 20 dBm or 200 milliwatt signal without doing damage. That means that your -33 dBm signal shouldn't do any damage to those two devices.

I'm off to see what the isolation is for cheap 12V relays to see if I can construct a cost effective, modular, remote control antenna switch with lightning detection.

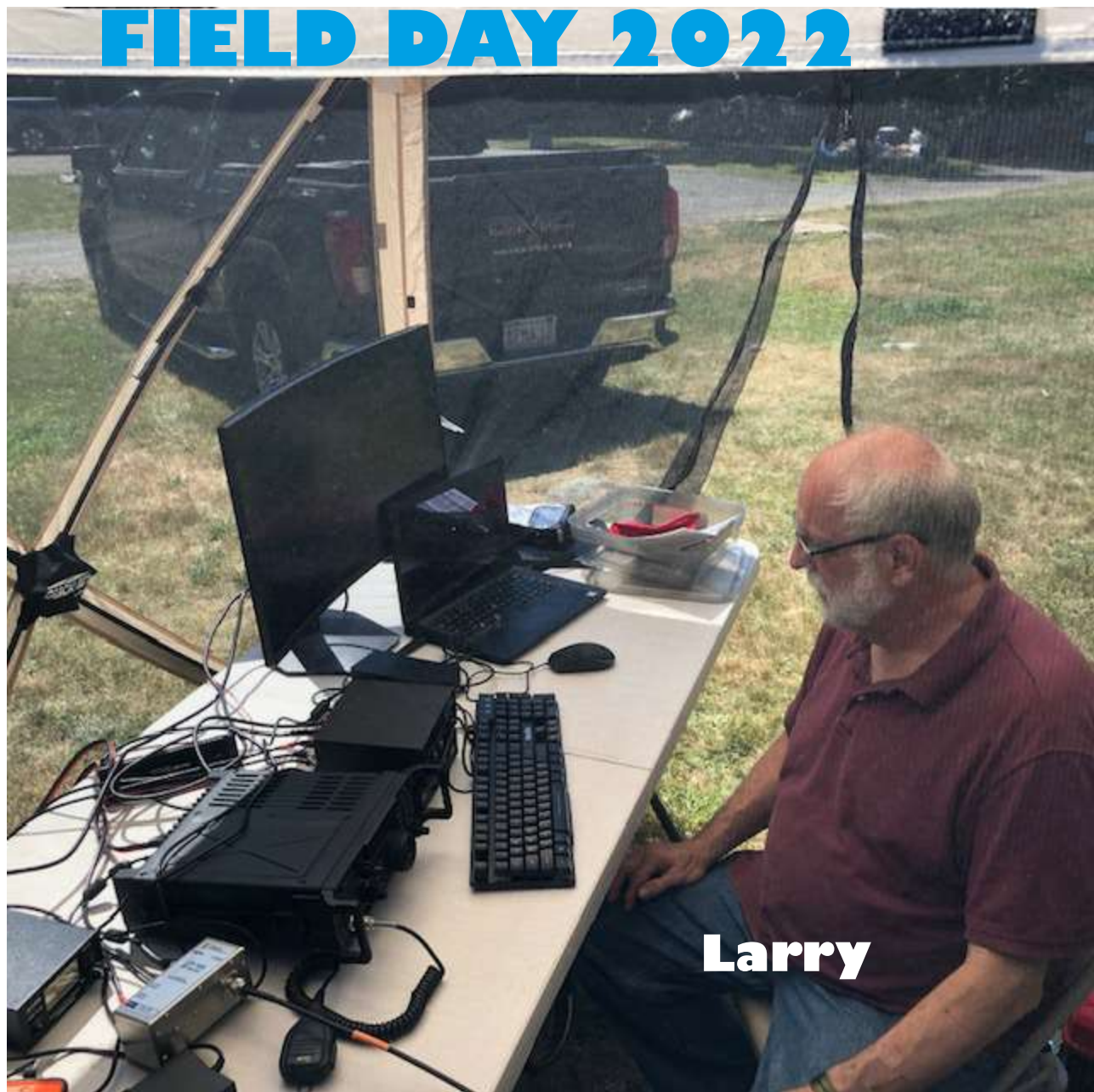
What are you building next?

FIELD DAY AT Ruth's- WW 1 N in Utah

Happy Field Day. Here's my setup in my back yard in Utah. CW on 20 meters. I didn't make a lot of contacts but enough to confirm that in CW I can get them.

We have not forgot how much you did for the club-
Jon- K1TP





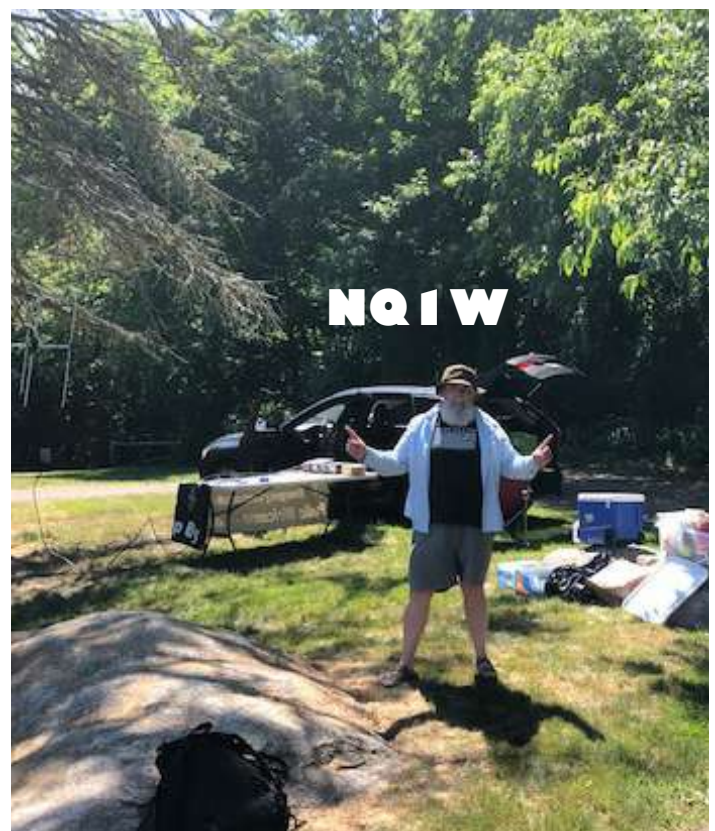
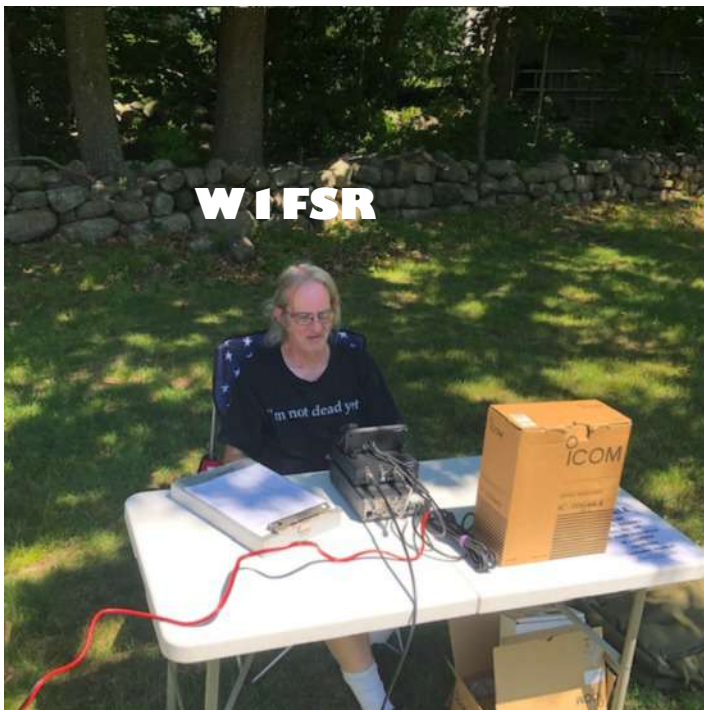
CAARA held the annual Field Day on Saturday from noon until about 4pm on the top of Summit Avenue in Rockport. The area is called Hospital Hill by locals , a former hospital location.

We cooked out in the afternoon and I would guess we had about a dozen participants on a perfect weather day.

I believe we had 4 HF stations and 1 vhf/uhf station in operation.

Larry- AJ1Z had the most elaborate setup complete with internet, computers, solar panels charging the battery, nice work.

FIELD DAY 2022



Photos on the left show Rick- FSR operating his new Icom 7100 running battery power, it was so nice not hearing a generator droning in the background.

Top right is Jon- K1TP running a Icom 706MKII, LDG tuner in to a end fed dipole. It was te first time I had tried this antenna and it worked pretty good.

Borrom right is Brandon, our prez, guarding the food area. Brandon used his Icom 9700 on VHF with small beam hanaging from a tree.

CAARA FIELD DAY



**UNTIL
NEXT
YEAR!**



Ron- N1RJB was working a YUKAN road race for CAARA and shot this photo. Ron's scooter in the background. If you can help, we are looking for volunteers for future races.

FCC Proposes Record \$34,000 Fine for Alleged Interference and Unauthorized Transmissions During Idaho Wildfire

The Federal Communications Commission (FCC) has proposed a \$34,000 fine against Jason Frawley of Lewiston, Idaho, for allegedly interfering with radio operations of the U.S. Forest Service during firefighting activities for the Johnson Creek Fire near Elk River in July 2021. The FCC issued a Notice of Apparent Liability for Forfeiture (NAL) on June 8, 2022 to Frawley. The FCC states in the NAL that Frawley holds an Extra-class Amateur Radio Service license, WA7CQ, and is the owner/operator of Leader Communications LLC, licensee of eight microwave licenses and one business license.

The FCC alleged in the NAL that "On July 17, 2021, using his amateur hand-held radio, Frawley transmitted five (5) times, and on July 18, 2021, Frawley transmitted three (3) times on frequencies allocated and authorized for government use, apparently causing harmful interference with his apparently unlawful transmissions."

The frequencies with which Frawley is alleged to have interfered were being used to coordinate firefighting crews from the U.S. Forest Service and Idaho Department of Land to fight the 1,000-acre Johnson Creek Fire, including the communications between fire suppressant aircraft and ground crews.

The NAL includes details of the Forest Service's complaint and the FCC's investigation. On July 18, 2021, the Johnson Creek fire operations section chief drove to the Elk River airstrip and hanger where Frawley, who had disclosed his location, was found holding a radio next to a banner that read, "Leader Communications." Frawley admitted to transmitting on government frequencies and identifying himself as "comm tech." He argued that he was not trying to cause interference but instead was transmitting to provide information to the fire fighters.

"[A]t no time was I trying to disturb any other communications or air traffic. I was honestly just giving them information I had since I have been working on the butte since the early 90's . . ." wrote Frawley in his October 15, 2021 response to a Letter of Inquiry from FCC Special Counsel Laura Smith.

The FCC however concluded that "Frawley's admitted unauthorized transmissions on frequencies for which he did not have a license had the potential to cause substantial harm to life and property."

A news release from the FCC states that the fine is the largest of its kind proposed. "The Communications Act prohibits such interference with authorized radio communications and the Commission takes very seriously any interference with public safety communications," said the FCC. In a separate statement, FCC Chairwoman Jessica Rosenworcel added, "You can't interfere with public safety communications. Full stop. So today we propose the largest fine of its type for this interference that put fire suppression and public safety itself at risk."