

CAARA NEWS



Cape Ann Amateur Radio Association
JANUARY 2022 Edition



PRESIDENT'S COLUMN

by Brandon- NQ1W

Dear Members,

It's my honor as your CAARA president to welcome us into 2022.

I hope you have had a happy and healthy holiday. We kept ours small again this year, but hearing your voices on the net brought me joy, as always.

I'm thankful for our CAARA membership and all you did to make 2021 special for our club. I look fondly back on our 2021 events, especially in the spring and summer as we met in person. We returned to our community service with the running events, rebooted emergency communications, learned how to build vhf and hf antennas and learned how to run netlogger. And my favorite was our field day festivities at Hospital Hill in June.

Now the omicron variant of Covid, the Lucy Van Pelt to the football of in person meeting, has pulled the ball away just as we were kicking off. We decided, like many other clubs, to err on the side of caution during the holiday season and have put a pause on our in-person gatherings with food. This is a bummer, but hopefully a temporary one. We will inform you of any changes in our protocol or schedule as we have them.

With the anxiety of omicron, I suggest keeping in touch with one another via our many 2m nets. As a reminder, we regularly meet on the 2m FM repeater M-W-F at 6pm and on the weekends at 9pm Sunday. Lately we've enjoyed a fun rotation of net control operators and topics. You may even hear auditions and training of new operators. You too can try your hand at a CAARA net control operation, as both of our regular nets are offering trial slots as educational development and regular net control operation roles for any eager club members. Feel



free to contact Jeff W1XTX or Chris W1TAT, and they can get you a script and scheduled to learn!

On a much sadder note, we lost member WV1A Robert Quinn in December at 88 years old. My heart goes out to all who knew him. Please remember we are here for each other and can help, if you need. In fact, the 6pm net was originally conceived as a health and wellness check during the early days of the pandemic. It has grown as a community, lifting the spirits of the participants in the process. Related, if there is a member you haven't heard from in a while, please reach out to them, if only to let them know someone is thinking of them. Let's use the gift of this communication platform to help our community.

Hopefully 2022 will bring us all the opportunities to practice our fantastic hobby together. We have so many fun and exciting activities planned for the year, especially as the warmer weather returns and Covid cases drop again. There are going to be so many ways in which you can participate and help grow your skills and our club.

I'm looking forward to a rewarding and safe 2022 with you!

Warmest Regards,

Brandon Hockle
President CAARA

The Emcomm Minute

By Dean- KB1PGH

Well we had a good turnout for the first emergency communications meeting at the clubhouse with about a dozen members and I want to thank everyone who showed up. What we mainly covered was the material in the club's emergency communications manual. We had a discussion of what the club can and cannot do for emergency communications and how that will apply to

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 k1tp@arrl.net. 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
Clerk: Charles Herlihy- KC1JKJ

Directors:

Hank McCarl- W4RIG
Chris Winczewski- K1TAT
Larry Beaulieu AJ1Z
Jon Cunningham- K1TP
Neil Weisenfeld- KC1MYZ
Bill Poulin- WZ1L
Kevin Lyons- K1KL

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 former W1RK 443.700 repeater is now on the ATT cell tower in the Blackburn Industrial Complex with greatly enhanced performance.

The Association is one of the few amateur radio clubs that has its own clubhouse. Located at 6 Stanwood Street in Gloucester, it includes a permanent HF station with beam, vertical/wire antennas along with an operating 2 meter packet station as well as 2/440 meter voice and 220 MHz Transceivers.

Amateur radio exams are held on the second Sunday of each month at 10:00 AM at the CAARA clubhouse. Anyone who is considering a new license or an upgrade, is welcome to test with us. There is no pre-registration necessary. Contact the head of our VE team Bill Poulin 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 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.

New! 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.

The Emcomm Minute



rewriting some portions of the manual. We also had sign up sheets for the clubs emcomm email list and the emcomm phone call list. If you are interested in signing up for any of those please let me know at dburg101@aol.com . I also met with the Manchester Fire Chief and the Gloucester Police Chief and went over with them our availability and our services we can provide for emergency communications . We will have another emcomm meeting sometime in January and I will let



you know the date when it is finalized. I would encourage anyone who is interested in the club's emergency communications plan to please read it. It is in the members section on the club's website and you can also print one out if you like. If you were wondering how the club's emergency communications group would be "Called Out" during a disaster it can go a couple of ways. Either I would be contacted by the ARRL ARES section coordinator Rob Macedo KD1CY or by the district coordinator Jim Palmer.KB1KQW. I could also activate the group by being called by the

emergency management directors in each of the 4 towns on Cape Ann. Usually the emergency management directors in these towns would be the Fire Chiefs or assistant fire chiefs. I am in the process of meeting up with them all in the next couple months. Of course we could stand up our own net which has been done in the past during big snowstorms where club members have run their own "Health and Welfare" nets on the clubs 2 meter repeater. Since it is wintertime and if you are interested in learning about the ARRL Amateur Radio Emergency Service and if you are a ARRL member you can take a online course called the EC-001: Introduction Course to Emergency Communications. You can find it by going on to the public service section at www.arrl.org . There is also another set of basic training that emergency communications uses and that is the incident command system. All public service agencies follow this guide of command infrastructure during a disaster. If you would like to learn more and take the online course just Google FEMA ICS 100 and that will get you to the right place on the FEMA website. These two courses are a must at a minimum if you wish to get involved with amateur radio emergency communications. For this months emergency equipment review I'd like to talk about solar battery bank phone chargers. These devices are a must have for your home, car, or go kit. If the power goes out for any amount of time we all know that our cell phone batteries will run out of juice in no time. They won't even last a day on a full charge if you use it for internet service. Of course you can charge these devices at home but as you can see in the photo of mine I can also charge it up via the solar panels. My charger can store up to 25000 mAH of power and if I had to use the sun to charge it it would take a full day to charge the battery bank. With mine I can charge two cellphones at the same time since it has



two usb ports and I can charge a cellphone 4 times before recharge. Mine also came with a flashlight. I got mine on Amazon for about \$30. There are dozens of different models and charging capacities and price points. Some that have just one solar panel or mine that has 4 panels and there are many type of makes and model brands as well. One secret about these type of chargers is that you'll need a short charging cord to your phone. The longer cords are not as effecient to transfer power to the phone. I would highly recommend these solar powered battery banks. They are cheap and make great insurance of having cell phone power in disasters, power outages, camping and on the go. That's it for now and I'll see you next month. *Emcomm meeting photos below.*



Robert P. Quinn- WV1A, 88, of Gloucester, husband of Sheila (Gove) Quinn, passed away on Sunday evening, December 12, 2021, at his home, after a battle with cancer. He was surrounded by his family.

He was born in Gloucester MA on December 19, 1932 and was the son of the late Joseph Quinn and Josephine (Villari) Quinn.

Robert was a graduate of Gloucester High School, Class of 1951 and was a Sawyer Medal recipient. He worked at Varian Semi-conductor Associates, Microwave Associates and retired from Raytheon as an international regional sales manager.

Bob was active in the community, he volunteered for the local cable for 14 years, was a member of the



Lyceum Committee and was active with the Rose Baker Center. He belonged to the Lion's Club, Cape Ann Sportsman's Club and the local Ham Radio Club. He had a pilot's license and owned his own plane and was an avid sailor. Bob was a veteran of the United States Air Force, achieving the rank of Staff Sergeant. He loved sports and excelled in playing tennis and skiing and was very artistic and talented in arts and crafts and leather work. His biggest enjoyment was spending time with his kids, grandchildren and great grandchildren.

Bob is survived by his wife Sheila (Gove) Quinn, whom he shared 63 years of marriage; his 3 children, Sean J. Quinn and his wife Sheryl Quinn, Daniel Quinn and his wife Chrisanne Quinn and daughter, Catherine Crowley; grandchildren, Elizabeth, Chris, Amanda, Matthew, Jason, Jessica; great grandchildren Mateo, Marcos, Hunter, Olivia, Adeline, Michael, Lilyana and Landon as well as many nieces and nephews; his brother Anthony and his wife Cynthia Quinn; sister Valerie Quinn, brother Steve and his wife Nancy Quinn; brother-in-law A. Kilby Gove Jr. and his wife Beverly Gove and a daughter-in-law Cindy Quinn.

In keeping with Bob's wishes his services will be held privately. In lieu of flowers, contributions can be made in his memory to the charity or organization of your choice.

A Very Merry Christmas

By Dr. Curtis Wright-
AA3JE



Christmas is a time when husbands are sent out with lists. Lists of things they are supposed to buy. Usually simple things, but not always. Especially not this year.

“TREE. SLICED PINEAPPLE. BAKED BEANS. ORNAMENT HANGERS.” GOT THAT?

“Same as last year?”

“DON’T MENTION LAST YEAR.”

I won’t. Ever. Mention last year. The chaos you can cause when you put powdered sugar in the canister that is supposed to hold flour is amazing. And painful. Very thin sweet gravy.

So I got in the truck, engaged 4WD, (eight inches of snow), and headed for my favorite tree buying spot. True to form, there were ten to fifteen nice looking trees in stands.

“What you want?” said the man in sap stained overalls.

“Tree. Christmas tree.”

“Right over here, Squire!”

He led me to a group of bundled trees lying on the ground.

“These are all two feet high.”

“Hard to get this year. This is what I got.”

“How about those trees over there?” I pointed.

“Oh, can’t sell those. Those trees look good from the highway. Draws people in.”

“And all you have is these runts?”

“Fraid so, Sir.”

I declined, and went over to the grocery store across the way. Baked beans. Canned pineapple slices. Easy. I faced shelves with many wonderful things. Canned cat food, canned salmon, SPAM, but no pineapple.

“Excuse me, can you direct me to the pineapple slices?”

“Sold out. We will get some Monday.”

“Any pineapple at all?”

“These kid’s cups. They are pineapple. Chunks. In juice.”

“How about baked beans?”

“I got some baked red beans. No ordinary baked beans, I will....”

“Have them Monday.”

“Two cans baked red beans, six cups kids pineapple. Right.”

After checking out several other tree places, Nothing. I finally went to “HOME STUFF” to find an artificial tree. There was a lovely display of about 10 varieties. I took photos, sent them home, and got a text in reply.

“GET NUMBER 23!”

I found a clerk, using my superior tracking skills and staking out the coffee mess behind the door that said “Staff Only”.

“I would like tree number 23, please.”

“They are all piled up next to the display, Sir”

I went back. Four boxes labeled “Christmas Trees”. One number 47 and three number 17’s.

I went back.

“I see four boxes. Any in the back?”

“No sir. Selling well this year.”

“Can you sell me one off the display?”

“Oh no, Sir. They are floor samples. Without the samples, we could never sell the trees.”

“There are only four trees, and not the one I want.”

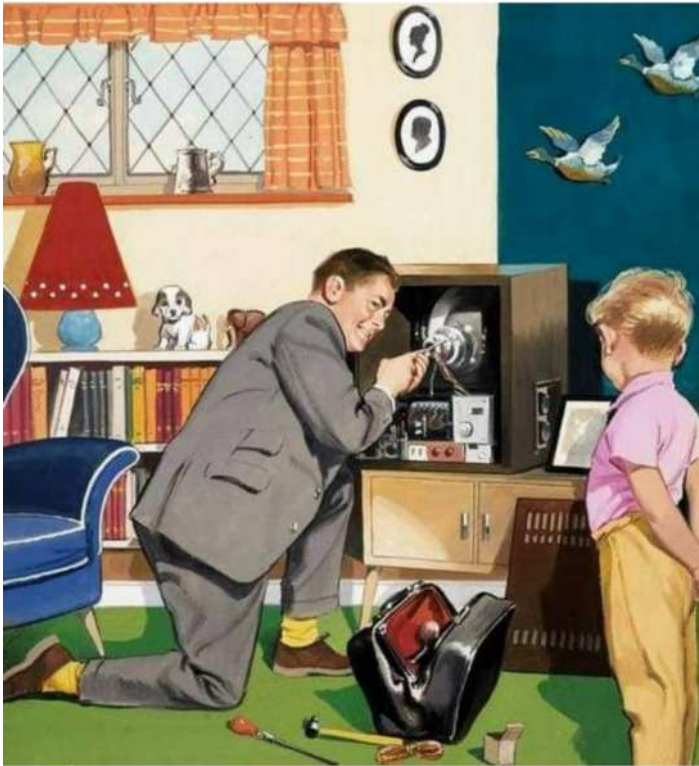
“We will get some in next week.”

I bought Number 17. It's ok.

My conclusion is to either start Christmas shopping before Thanksgiving, or be grateful for what you can find.

I never did find ornament hangers, but I made some from wire.

Merry Christmas.



I don't remember the tv man carrying a hammer!

Cuban special eventdo you need Cuba?

Members of the Radio Club of Sancti Spiritus together with the Radio Club of Trinidad will activate a SOTA (Summits on the Air) signing as T46SB between 0000z, March 8th and 0000z, March 9th, in the La Sabina-

Banao Reserve, in the center of the province Sancti Spiritus, forming part of the Mountains of Guamuhaya.

Activity is to commemorate the 99th anniversary of the 1st radio transmission from the Sancti Spiritus Province made from the town of Tuinicu. They are also celebrating International Women's Day.

Operations will be on 80/40/30/20/17/15/12/10/2 meters using CW, SSB and FM.

Operators are Emilio/CO6XE, Manuel/CO6SE and Andy/CL6WYZ.

All QSL submissions will be made digitally. Only QSLs will be sent to those who request it through the application form. The log of the contacts made will be stored and published on the following Web site: <https://frcss.cubava.cu/sota/log>

Foundations of Amateur Radio

How does your gear measure up?

When you spend some time in this hobby you're likely to find equipment with similar performance for vastly different pricing. At one end of the spectrum you might compare a cheap \$25 hand-held radio to a \$450 one. At the other end, a \$1,500 SDR or Software Defined Radio against a \$4,500 one.

Those examples are for brand name devices, which generally speaking have published specifications, come with regulatory approvals, a wide user base, reviews and a distribution network. If equipment is found to be operating out of specification, a regulator might seek a remedy or ban the sale of the equipment.

Those various sources and processes make it possible to compare those devices in a structured way to discover just how deep into your pockets you need to reach in order to acquire a shiny new gadget.

If you buy any of these devices in the used market, you have no way to determine just how far from the factory specifications the device you're contemplating has deviated. Is that waterproof radio still waterproof, or did the previous owner open up the case and put it together incorrectly? Was it dropped and did a component get damaged? Did the static electricity from a local thunderstorm leak through the circuit via the

antenna, or did the previous owner not use anti-static precautions when they looked inside?

If it actually failed, it's easy to know. If it's still working, absent a laboratory, you're essentially on your own.

If that's not challenging enough, consider hardware that's released as open source, that is, the original designer released their project, shared the design, a circuit board with component list and specifications. Another person can pick up the documentation and legally build a copy of the hardware.

How do you know how the two compare?

Aside from considering how well any design might actually match the real world, how do you know if the original design can be improved upon or not? Did the second builder use the same components, substitute with better ones, or economise on parts they thought were too expensive?

What happens if the two designers argue with each other about the performance of their respective designs? What if the second design becomes vastly more popular than the original and what if you throw in outright intellectual property theft over the top of all this?

Now consider the same physical hardware, from the same factory, but using different software. How do you know what impact the software has on the performance of the equipment? For example, one component seen more and more is a chip called an FPGA, a Field Programmable Gate Array. Think of it as a programmable circuit board where updating the software creates a different circuit.

An FPGA might be used to filter radio signals. With just a software update, you can program different filters and change the actual performance of the entire device. How do you know if the new version of the software has improved or worsened performance?

What all this lacks is a standard way of describing performance. Not only the kind of standard that's achievable in a laboratory, but one that we can test at home. There's no documentation that I've been able to find that shows how to measure some of this objectively, or even compare your own kit against itself.

It would be great if I could measure my gear against a standard and you could too and we could compare our respective equipment against each other.

Even using the laboratory standard measurements, for example the Sherwood Engineering Receiver Test Data, which allows you to compare other tested equipment in the same list, is hard, if not impossible to compare at home by the likes of you and I. Not to mention that Rob NC0B has finally retired after 45 years, so having been licensed in 1961 age 14, there is a good chance that updates are going to become a thing of the past when Rob stops volunteering his time.

I will mention that this isn't a new thing. Many years ago I spent some time as a broadcaster. One of the very first things I was taught is that you need to set levels to trigger the VU Meter just so. When you make a recording to tape, you're required to generate a 1 kHz tone at a specific level so when it's played back to air, the voice levels will be correct.

When I became licensed in 2010 I almost immediately discovered that there isn't even a standard way to test if the signal that my radio is putting into the local repeater is the same as that of other amateurs. You'll notice this because you're forever twiddling the volume on your radio when you speak with others on-air because their voice levels vary widely.

One idea I've been toying with is using a parrot repeater that can measure a signal, allowing anyone who uses the same parrot to compare their equipment.

How would you approach this increasingly complex problem in such a way that the amateur community can share their results in a way that makes comparison meaningful and useful?

I'm Onno VK6FLAB



ARRL to oppose Forest Service administrative fees for amateur facilities

The US Forest Service is proposing to implement a statutorily required annual fee for new and existing communications use authorizations to cover the costs of administering its authorization program. ARRL plans to vigorously oppose the imposition of the proposed fees on Amateur Radio.

The Forest Service proposal results from requirements set forth in the Agriculture Improvement Act of 2018 (aka “the Farm Bill”). Specifically, section 8705(c)(3)(b) of the Farm Bill directs the Forest Service to issue regulations that require fees for issuing communications use authorizations based on the cost to the Agency for maintenance or other activities to be performed by the Agency “as a result of the location or modification of a communications facility.”

The Forest Service is responsible for managing Federal lands and authorizes the use and occupancy of National Forest System (NFS) lands for communications facilities that provide communications services for adjacent rural and urban communities. The Agency said in its proposal that it administers more than 3,700 special use authorizations on NFS lands for infrastructure that supports more than 10,000 wireless communications uses at 1367 communications sites.

According to the Forest Service Notice published in the December 22, 2021 issue of the Federal Register, revenues from the proposed fee, “would provide the funds necessary to support a more modernized, efficient, and enhanced communications use program,” and will “cover the costs of administering the Agency’s communications use program.” Costs, as laid out in section 8705(f)(4) of the Farm Bill, may include expenditures for such things as “on-site reviews of communications sites, developing communications site management plans, hiring and training personnel for the communications use program, conducting internal and external outreach for and national oversight of the communications use program, and obtaining or improving access to communications sites on NFS lands.”

ARRL encourages Amateur Radio licensees to file comments opposing the imposition of the proposed administrative fee on Amateur Radio users. Comments must be received in writing by no later than February

22, 2022. Comments may be submitted online at the Federal Rulemaking Portal or via USPS mail to Director, Lands & Realty Management Staff, 201 14th Street SW, Washington, DC 20250-1124, and must include the identifier “RIN 0596-AD44.”

Foundations of Amateur Radio

What testing equipment is essential?

After discussing the notion that it's not really possible to determine how your gear is performing without measuring, several people commented that in the good old days an amateur was expected to have sufficient equipment to test performance of their gear.

I flippantly pointed out that once upon a time, computers ran on punch cards too. That's not to dismiss the notion of testing, but rather that times have changed. Testing equipment that was suitable in the 1980's is still available around the place, but expect to pay for it. Some of it is still relevant, some less so.

Even if you do acquire suitable equipment, how do you know if what you're measuring is real? How do you know if the frequency counter that you have is accurate, how do you know if 1 Volt is 1 Volt, or 1 second is 1 second? As I've said before, measurement is the act of comparing two things.

If you think that's ludicrous, consider the rulers and tape measures in your home. They all indicate the same measurement, right? Just for a laugh, pull out all the ones you can find and see what you discover. If you've not done this, you're in for a surprise.

I don't want to dissuade you from getting testing equipment, far from it, but don't expect to fork out to get the equipment and call the job done. The point being that spending lots of money on gear isn't the end of the story, it's just the beginning and in my opinion it's not the place you should start.

Based on community responses, ninety recommendations in all, so hardly scientific or representative, but still a good feel for the space we're playing in, the single most important piece of equipment you should get after sorting out your radio, antenna, coax, power supply, computer, software and other fun things we fill our shacks with is the Digital Multi Meter. You can spend anywhere from \$10 to \$500 on one, but it should be high on your list. As with the rulers, your

results will vary, so be mindful of that when you go shopping.

While the SWR meter and the Watt or Power meter appear regularly, they're not the next highest ranked testing gear. Mind you, most current radios have those built-in to some extent, so perhaps the numbers are somewhat distorted here.

The next essential piece of equipment is some form of monitoring. Either active, passive, programmable, automated, manual, what ever. Hardware like the NanoVNA, the TinySA, even using a Software Defined Radio feature high on the list. Most of these devices either generate a signal to test against, or they rely on your radio to do the heavy lifting, depending entirely on what you're testing. An antenna analyser is among these kinds of tools.

As an aside, the dummy load, either a high power one, or a more modest one, come recommended by many different people.

Together with this list of monitoring equipment comes associated accessories, adaptors, patch leads, attenuators and filters.

After that comes equipment such as variable power supplies, Watt meters, grid dip meters, oscilloscopes and frequency counters.

I will observe that from the responses I received there was a distinct flavour to the recommendations.

On the one hand there was the combination of recommending something like a station monitor, or a signal generator, an oscilloscope and a frequency counter, including things like a Bird 43 RF Watt meter. On the other hand were recommendations for spectrum analysers, NanoVNAs, SDRs and the like. It's not quite across the analogue to digital divide, but it's close.

Note at this point that I'm a software guy in the process of restoring an analogue HP 606A Signal Generator from the early 1960's, so I'm not pointing the finger anywhere.

There were other tools recommended too, an LCR meter, a tool that allows you to measure Inductance, Capacitance and Resistance, something you can buy in kit form if you want to get started, or similarly, can be purchased for varying amounts of money online.

Speaking of money, varying amounts that is, the service monitor was on the wish list for several people. Prices between that of a new radio or a new car with varying amounts of warranty.

I will make mention of a bi-directional coupler which was marked as essential by one amateur. It's a tool that allows you to sample a signal in the forward and the reflected path which comes in handy when you're trying to test and build equipment.

As mentioned before, your transceiver has some of this equipment built in, or can be set-up to do some of this, so there's no need to go out and spend thousands of dollars to set-up your testing bench on day one, but the day after, I'd add it to my birthday list.

No doubt that there's many and varied opinion on this. What is your essential testing equipment?

I'm Onno VK6FLAB

Amateur Radio Newsline

NEW IOTA ACTIVATED BY TEAM FROM INDIA

DON/ANCHOR: We begin this week's report with a group of adventurous DXpeditioners. They have succeeded in activating a new Island on the Air in the South Pacific, in a quest worthy of the 19th century science fiction masterwork, "Mysterious Island" by Jules Verne. Here's Graham Kemp VK4BB.

GRAHAM: It is not science fiction, but radio fact, that the Manic Monkeys team of radio operators made a 600 kilometre journey this month from Bangalore, India to Sao Jorge Island, designated AS-177 by IOTA, activating the remote island for the first time. They had gone in search of the fictional Lincoln Island that appears in Jules Verne's classic novels but the adventuresome hams with the callsign AT7SJ were also in search of QSOs. Between December 3rd and December 6th, they logged 1,600 such contacts on SSB, CW and FT-8, while camped in difficult terrain, according to team leader Madhu Prasad, VU3NPI. Madhu told Newsline of other discoveries: [quote] "The island had mysterious propagation conditions: the signals would go up and down like the tide and mysteriously close abruptly on all bands with S9 noise." [endquote]

Madhu said that the team had been landlocked in India for two years by the pandemic and were still grieving the loss of the team's Elmer, Dev VU2DEV, to cardiac arrest. Now they can proudly add this uninhabited, thickly forested, island to their earlier activations of St. Mary's Island AS-096 and Danushkodi Island AS-173.

Madhu told Newsline that the team unfortunately did not find mysterious Lincoln Island, nor did they locate the Aquaphone, the fictional wireless device used by Jules Verne's protagonist, Capt. Nemo. They're leaving that quest - and Lincoln Island - for 2022.

For Amateur Radio Newsline I'm Graham Kemp VK4BB.

**

NASA SOLAR PROBE 'TOUCHES' THE SUN

DON/ANCHOR: With Solar Cycle 25 upon us, who isn't even a little bit obsessed with the sun? So this news from NASA is well-timed, as we hear from Neil Rapp WB9VPG.

NEIL: NASA has announced a milestone moment in the life of the Parker Solar Probe: this year it reached the corona of the sun, a move into the solar atmosphere that is expected to yield more - and more detailed - insights into space weather. The US space agency is commenting only now on the achievement, which happened last spring, three years after the probe's launch, following the publication of a recent paper in the Physical Review Letter, which discussed the latest chapter of the Parker probe's journey. NASA said the probe's entry into the super-hot corona meant it was [quote] "flying into the eye of a storm." [endquote] Once there, it studied solar wind and examined magnetic patterns known as "switchbacks" which have their origins on the surface of the sun itself.

The paper's lead author, Justin Kasper, was quoted by National Public Radio, as saying that entry into the corona lasted for several hours and was an expected and much-anticipated occurrence. The probe, which is built to tolerate more than 2,000 degrees Fahrenheit, is expected to re-enter the corona in January of 2022.

DON/ANCHOR: YouTube once again provides an opportunity for those who missed an amateur radio event. This one's on Open Source CubeSats. Here's Ed Durrant DD5LP.

ED: If you missed a chance to attend the Open Source CubeSat Workshop held virtually on December 9th and 10th, you can still view the two days of presentations by visiting the Libre Space Foundation Channel on YouTube. This virtual workshop held on Zoom was its fifth iteration since its launch four years ago in Germany.

The opening remarks by Artur Scholz, DO4ALS, of the Open Source CubeSat Workshop Committee, stressed the importance of open-source CubeSats as a means of conducting small space missions. Developers and mission operators attended the online sessions to collaborate, compare notes and build community. As with previous sessions, attendees participated as members of research institutes, businesses, learning institutes or as individuals.

**

NEW LICENSE LEVEL PROPOSED FOR IRELAND

DON/ANCHOR: Some changes are in the works for Ireland's amateur radio licenses. Jeremy Boot G4NJH brings us up to date.

JEREMY: ComReg, the Irish telecommunications agency, plans to introduce a new level of amateur radio licence at either a novice or entry level, targeting younger licence candidates in particular. Ireland presently has only one class of ham radio licence. The recommendation is outlined in the agency's recent statement on a Strategy for Managing the Radio Spectrum from 2022 to 2024.

ComReg describes the rationale behind the introduction of the new licence, which would not require full knowledge of HAREC – the Harmonised Amateur Radio Examination Certificate. The document further states that Ireland is interested in [quote] "nurturing, developing and deploying STEM talent and the availability of a novice licence would enable the amateur radio service to act in the national interest." [endquote]

Some clarification would still be needed with respect to CEPT, which has separate definitions and suggested syllabi relating to Entry, Novice and Full licences.

**

HAM INVOLVEMENT SOUGHT FOR MOON MISSION

DON/ANCHOR: Japan's space agency is looking for hams to participate in the mission of a very tiny, ULTRA tiny, moon lander. John Williams VK4JJW tells us what's involved.

JOHN: The JAXA Ham Radio Club JQ1ZVI has a date with the moon in February and is hoping to take the world's amateur radio community along for the ride, the Japan Aerospace Exploration Agency, or JAXA, is looking for amateur radio operators to receive telemetry from the transmitters on board its 6U CubeSat, which it is calling OMOTENASHI. The 70cm amateur band signals will be sent from both the orbiting satellite and the moon lander. Described as the world's smallest moon lander, it will transmit on UHF only. Although there is a ground station in Japan at Wakayama, hams around the world will be asked to listen for the transmissions on 437.41 MHz.

More details about the project and how to QSL the reception of transmissions can be found on the JAXA Ham Radio Club website. We are including a link to that in the text version of this week's newscast at arnewsline.org**

CONTEST UNIVERSITY ACCEPTING REGISTRATIONS

DON/ANCHOR: Are you ready for Contest University at Dayton Hamvention? Well, you still have a few months before it happens of course but don't let that stop you from registering. Contest University takes place at the Hope Hotel in Dayton, Ohio, on May 19, which is the day before Hamvention itself opens. Returnees will notice that this is a change of venue. It's closer to the Hamvention site at the fairgrounds in Xenia and will be the home of all official conte**

**

DUTCH REGULATORS CRACK DOWN ON ANTI-5G DEVICES

DON/ANCHOR: Fearing radioactive transmissions from 5G mobile networks' towers, people in the Netherlands may have placed themselves in greater danger by wearing what they believe to be protective devices. Jeremy Boot G4NJH has that story.

JEREMY: The very devices such as necklaces, bracelets and sleep masks that have made claims to shield people from what some fear is radioactivity from 5G mobile networks' towers, according to Dutch officials, have themselves been emitting ionising radiation at hazardous levels.

A report in the BBC says that the Dutch authority for nuclear safety and radiation protection (ANVS) have issued a warning about the products, telling people there could be long term hazardous effects. The agency has ordered a halt to the sale of these devices.

The BBC report quoted the World Health Organization's assertion that like amateur radio signals, 5G mobile networks make use of non-ionising radio waves that do not pose a danger, adding that they are similar to the 3G and 4G networks already in use.

Some people fear damage to their DNA from such transmissions and in extreme cases, this has led to attacks on the transmitters and towers.

**

ALL HE WANTS FOR CHRISTMAS IS SOME DX

DON/ANCHOR: A father and son in Washington State have been celebrating the holiday season, ham radio style. Ralph Squillace KK6ITB has that report.

RALPH: There's little question what might have been on Jacob Hoschar's Christmas list this year. The Washington State youngster had already celebrated having his first wish fulfilled: getting upgraded from Technician to General Class. That made KY7HAM a very happy 11-year-old indeed. Now he's ready for the world of HF and all of its adventures. The journey began a year ago when Jacob's school was shut during the pandemic. He and his father, Andrew, studied together to become hams together and got their licenses one week apart from one another. Their father-son journey is documented on the YouTube channel set up by proud father, K7OWN. One of the videos shows Jacob making his first contact via satellite. Now with his appetite sufficiently whetted for DX, he's ready to cross oceans and continents via radio and start filling that log. For this freshly minted General Class operator, the world is his, this holiday season.

WORLD OF DX

In the World of DX, members of the Welland Valley Amateur Radio Society in the UK are using the following special callsigns to celebrate Christmas in Market Harborough and saying farewell to 2021. They'll be on the air through December 31st. Be listening for GB1XMS on 30 meters using CW; GB2XMS, on HF using SSB and FT8; GB5XMS, mainly using Data as well as CW and SSB; and GB9XMS, using mainly FT8. See QRZ.com for QSL details.

Be listening throughout January for special event station OZ50Q. Danish Radio Amateurs will be marking the 50th anniversary of Her Majesty Margrethe II, the Queen of Denmark's, accession to the throne. Send QSLs to OZ1ACB, ClubLog's OQRS, eQSL or LoTW.

Get ready for an international radio marathon called Russian New Year 2022. The Russian Union of Radio amateurs, the Miller-DX-Club and the HAMLOG.ONLINE portal will begin the marathon starting at 0000 UTC on December 25th and finish at 2100 UTC on January 14th. Callsigns include, but are not limited to, RG22NY, RJ22NY, RK22NY, RL22NY and RM22NY. For the full list see the website mdxc.ru. The QSL manager for all the special callsigns is RQ7L.

Bob, PY6TV, and a small team of Brazilian radio operators will be using the callsign ZY6A from Friars Island, Brazil, between January 20th and the 23rd. Listen on all HF bands for all modes.

**

KICKER: NIGHT BEFORE CHRISTMAS, HAM RADIO STYLE

DON/ANCHOR: We end this newscast with a Newline holiday tradition - a ham log instead of a yule log. We again offer this much-loved adaptation of the Clement Clarke Moore classic as read by Jim Damron N8TMW.

JIM: 'Twas the night before Christmas and all through the shack

The rig was turned off and the mic cord lay slack

The antenna rotor had made its last turn, the tubes in the linear

had long ceased to burn.

I sat there relaxing and took off my specs, preparing to daydream of

Armchair DX-- When suddenly outside I heard such a sound, I dashed out the door to see what was around.

The moon shone down brightly and lighted the night. For sure propagation for the low bands was right.

I peered toward the roof where I heard all the racket and there was some guy in a red, fur-trimmed jacket!

I stood there perplexed in a manner quite giddy: Just who WAS this stranger? di di dah dah di dit?

He looked very much like an FCC guy who'd come to check up on somebad TVI.

I shouted to him: "Old man...QR-Zed?"

"Hey you by the himney all dressed up in red!"

I suddenly knew when I heard sleigh bells jingle

The guy on the rooftop was Jolly Kris Kringle

He had a big sack full of amateur gear which was a big load for his prancing reindeer.

Transmitters, receivers, for cabinets and racks

Some meters and scopes and a lot of coax.

He said not a word 'cause he'd finished his work.

He picked up his sack and he turned with a jerk.

As he leaped to his sleigh, he shouted with glee

And I knew in a moment he'd be QRT.

I heard him transmit as he flew o'er the trees

"Merry Christmas to all, and to all seventy-three."

"Ho Ho Ho"



Straight Key Night is January 1, 2022 (UTC)

The annual ARRL Straight Key Night (SKN) returns on New Year's Eve and New Year's Day, January 1, 0000 – 2359 UTC.

Many hams look forward to SKN as one of the highlights of their operating year. It's not a contest, so there's no need for quick exchanges. All you need is your favorite straight key or bug. Many participants dust off vintage radios and keys and put them back into service each year, just for SKN. However, all hand keys, regardless of age, are welcome.

The number of contacts you make is not important. The reward is meeting many new friends as you get together on the air. Send a list of stations contacted and any SKN stories and photos, along with your votes for Best Fist and Most Interesting QSO, before January 31, 2022.

Amateur Radio Club bands together during pandemic

As the pandemic picks up speed once again and people are advised to limit their in-person social interactions, a small group of people are reaching out across the airwaves from Barrie to connect with others in a much different way.

The Barrie Amateur Radio Club has been one of the few activities that has thrived during the now two-year COVID crisis.

Formed in the 1960s, its current band of roughly 60 like-minded members are armed with dependable radio technology that has been in use for over a hundred years. And they use the equipment not just for the social aspect, but also to fulfil a need if called upon in our city when disaster strikes.

Part of the club's mission statement is to "maintain radio systems suitable for providing communications for the benefit of the community and, when requested, to assist civil authorities."

An example of this assistance would be to provide emergency services in the city as a way to communicate in an event where existing critical communications and infrastructure fails.

Prior to the pandemic, the club held monthly meetings with police and fire services to discuss training scenarios and what the club's role could be in helping during an emergency.

But for most days, the main activity of the group is to just have fun.

Ed Murray, the club's public information officer, enjoyed listening to shortwave radio as a kid and waited until he retired in 2019 to learn how to become an amateur radio operator.

When asked about what his favourite part of being a member is, he says, "helping the community and the camaraderie with the 60 different members that have a wide range of talents and experiences to share."

Technical milestones are thrilling as well, he said.

"I also managed to bounce a signal off the International Space Station and receive their repeater message. It calls out the frequency, its call letters, and gives out the time in Universal Time," Murray tells BarrieToday.



To help demystify some radio jargon, a repeater is an electronic device that can receive a weaker radio signal, or a signal from a portable radio user, and re-transmit it over a much wider area so that other users can receive the signal.

"During the early days of the pandemic during isolation, in 2020, I spent a lot of time down here in my radio shack, talking. We had a wellness check where people would get on their radios at 1:30 every afternoon and we would all take our turns to say what is going on and

how we were doing," Murray says.

"Clubs would reach out to other clubs as well. We've been able to take a situation and turn it around and put it into a positive light," he adds. **Doing Your First Parks On The Air (POTA) Activation by K1KL**

News Item: CAARA Members' Meeting Workshop Series Continues

During the December 11 Members' Meeting the CAARA Workshop Series continued with Chris, W1TAT, providing an overview of *Netlogger*, the popular application used to log CAARA and 6 O'Clock Nets and used around the world to log VHF, UHF, and HF nets.

A dozen CAARA members are now regularly using *Netlogger* to follow along on nets and to keep the official net logs. This workshop increased the number of users in our club.

Chris demonstrated how to download the Netlogger app onto a PC, how to create a net, and how to work through the logging process. The workshop was well-attended and plenty of questions followed the presentation. Chris did a simulated net and those present "checked-in" as Chris logged in real time.

The Workshop Series has been a hit, and some exciting ones are planned for the new year. Stay tuned for details.

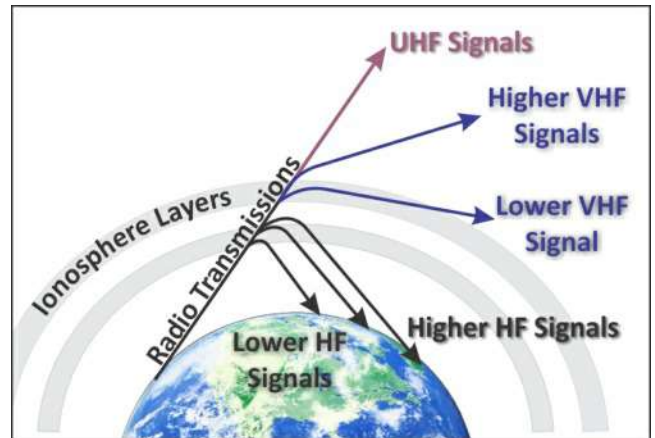


WHAT IS NVIS?

Near Vertical Incidence Skywave (NVIS) is an ionospheric skip operating technique that directs the strongest signals from a station vertically, or upward, rather than toward the horizon. Signals propagating nearly vertically approach the ionosphere with steep incidence angles and may be bent back to earth with similarly small angles. The operational result is skip communications effective within a radius of a few hundred miles. The NVIS technique can help to bridge the communications gap between the local range of VHF/UHF repeater or simplex communications and the longer distance skip of low-to-the-horizon HF signal propagation.

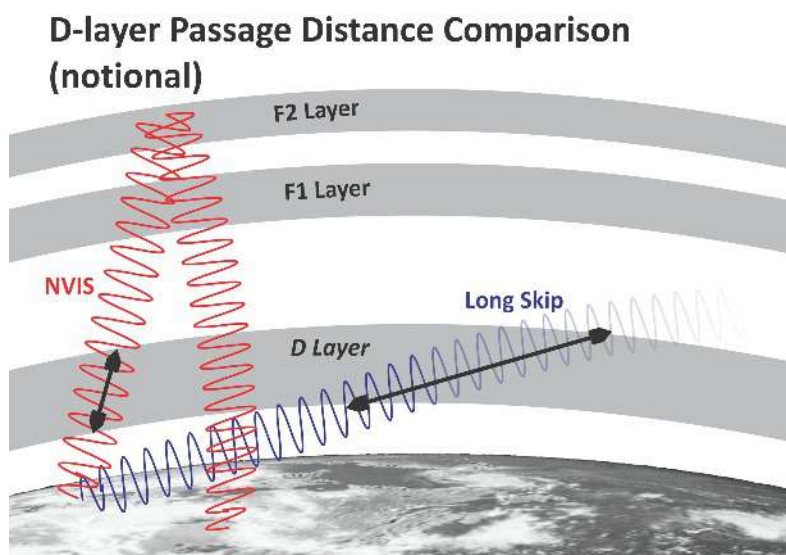
The NVIS technique relies upon a combination of station factors, most importantly the frequency used, the power of transmissions, and the antenna configuration. Let's consider each of these three factors in the context of the NVIS technique.

Frequency: The refractive effects of the ionosphere vary with frequency. The bending effect on signals is reduced as frequency increases. This is why the 2-meter band (144 – 148 MHz) and higher frequencies are almost never received via skip propagation. The HF bands of 10-meters (28 MHz) to 30-meters (10 MHz) are often effectively refracted back to earth's surface when directed toward the horizon where incidence angles into the ionosphere are closer to the horizontal, and this propagation geometry provides long skip distances with single skips up to 2500 miles. However, the ionosphere usually does not have sufficient bending strength to return these upper HF band frequencies to earth with the steep take-off angles necessary for the NVIS technique.



NVIS ionosphere effects 1

The bending effect of the ionosphere is greater for lower frequencies.



The ionosphere's bending effect is sufficient, even at steep "near vertical" angles of incidence, to bend back to earth the lower HF frequencies, particularly the 40-meter band (7 MHz), 60-meter band (5.3 MHz), and 80-meter band (3.5 MHz) signals. These bands are most suitable for the NVIS technique, even during daylight hours when more distant skip propagation on these bands is ineffective due to D-layer absorption.

Transmitting Power: Transmitting power with the NVIS technique does not need to be great. Very effective NVIS communication can be completed with the typical 100 watts of many HF transceivers "running barefoot." In good ionospheric conditions much lower power may

be quite sufficient for effective QSOs. When atmospheric conditions are less favorable, increasing transmitting power with the use of an RF power amplifier can help to keep NVIS communications reliable. It is common for amplifiers to be employed by NVIS operators in the high daylight part of the day when the D-layer absorption attenuates signals more severely.

Doing Your First Parks On The Air (POTA) Activation by K1KL

Last month, I presented the idea of participating in the POTA program as a “HUNTER”, seeking to find parks activated on the air and competing against yourself and others to increase contacts, the number of parks contacted, number of states, countries, etc. This is all done from the comfort of your own shack and it is really fun! See <https://pota.app/#/> for loads of information, maps, stations, awards, and more.

I hunted for several weeks and got my first “Award” and it was a thrill. By hunting, I also acquired the routine for running an activation. This was an intimidating thought at first, but practice hunting got me ready to activate! My first activation was K-2656, Hampton Beach State Park on November 13, 2021 and I have done over 20 activations in 3 states since. I still “hunt” every day, but I try to activate 2 to 3 times per week.

What do you need to activate?

- A. You must be registered with Parks on the Air <https://parksontheair.com/parks-air-home/>
- B. A plan, including the park, its reference number, and directions to get there, and the following things in your plan: (and, make yourself a check-list)
- C. Radio with microphone or CW key, and knowing what bands you want to operate on.
- D. A power source. Could use your car battery, but not ideal. Generator? Not ideal.
- E. Antenna and needed cables to connect (antenna tuner if antenna not resonant)
- F. A place to sit and place equipment (picnic tables there?, camp chair and camp table?)
- G. Paper and pencil to log contacts, or a phone or tablet or laptop armed with logging software.
- H. CQ,CQ,CQ, Parks on the Air, POTA this is CALLSIGN.

Get ready for the action, and maybe a pileup!

Here is how I addressed the above necessities for my first activation. I did spend some money, but not a lot.

Radio – I bought a \$10 Home Depot container and found some foam padding around the house, so I lug my HF rig (Kenwood 590) with me every activation. It takes me 2 minutes to disconnect it in the shack and the same time to reconnect it after an activation. I pack my microphone and headphones (optional) with the radio.

Power Source – Purchased a Miady 20Ah LiFePO4 battery from Amazon for \$70.00 (Way more amp hours than I need. I have operated at 100W for 2+ hours and used only 35% of the battery capacity.) A 12AH is half the price.

Antenna – I purchased a Par EndFedz® EF-20 14 MHz standard antenna from Vibroplex for \$70 and a SpiderBeam® fiberglass 12m push-up pole for \$100. It is much higher than needed for the 33ft end-fed dipole. To support the antenna in the field I use a 4' piece of 4" PVC and drilled 3 holes in the top for 3 carabiners, each feeding a 10' piece of paracord. 3 Tent stakes complete the support. Total cost \$180. If you string a wire in the trees, you could spend less that \$30 for a vey adequate antenna or make your own. The end-fed works fantastic.

Place to Sit and Table – I have used a camp chair and folding table I have for camping. In these colder days, I operate in my car and put the radio on the Home Depot crate next to me.

Logging – I started with a paper log. The only required log info is callsign, time UTC, and band. I also record the signal report (RS(T)) sent and received. I quickly switched to a great app called HAMRS <https://www.hamrs.app/> a great free app for PC and I paid \$3.99 for my Fire Tablet version. I set the Fire tablet on a stand or on my steering wheel in cold WX. After the activation I export the log from HAMRS to my computer and then I send it to the POTA regional coordinator for upload. If you log by hand, you need to then type into a logging program from which you can export a .adi file. An app saves loads of time, but logging for yourself in an app takes some getting used to.

Call CQ – After getting your equipment set up and your log stuff ready, its time to spot yourself on the POTA website. Do that with your phone and if there is no internet where you are, no worries. Others will spot you. The POTA “spot page” is where we hunters go to see who is where, and their operating frequency.

Let the fun begin! In summary, this was my approach, and I did spend some money, but I could have spent much less and been on the air. I love getting out in the parks, smelling the air, and making contacts on the order of 50 every hour, sometimes more, sometimes fewer. Weekends are the best because that’s when the hunters are in full force.

I am finding that POTA is a community. Many contacts want to exchange emails and QSL cards. One added piece of advice – I have a one-page printed explanation of POTA I copied from the POTA web site. So many people want to ask you questions, including park rangers, that it helps to have a handout. Always remember, we represent amateur radio to the community, and we need to do that well.



Resources:

[POTA Activator Course \(YouTube\)](https://www.youtube.com/watch?v=eSdd9SFGtIU&list=PLd_DTq1stJKvZC3rjLncxB0TM72fvZ1n&index=3)

https://www.youtube.com/watch?v=eSdd9SFGtIU&list=PLd_DTq1stJKvZC3rjLncxB0TM72fvZ1n&index=3

[POTA Activator Guide \(PDF\)](https://stats.parksontheair.com/info/activator_guide.pdf) https://stats.parksontheair.com/info/activator_guide.pdf

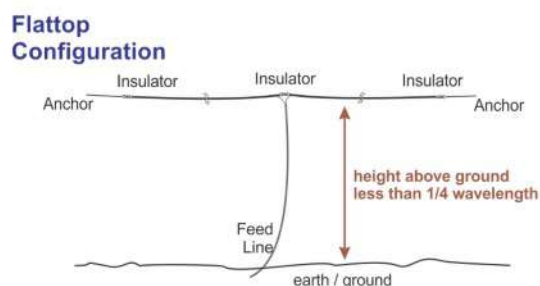
NVIS skip comparison

NVIS propagation minimizes transit through the D-layer with steep angles.

The D-layer of the ionosphere normally absorbs skip signals below the 30-meter band during daylight hours, so long distance skip is not effective on the low bands during the day. These bands open for long distance skip at night when the D-layer dissipates and the F-layer refracts these frequencies. However, since NVIS signals travel through the D-layer at very steep angles, the transit distance through the layer is minimized, as compared to the long skip signals traveling low to the horizon. As a result, D-layer absorption of NVIS signals is minimized, and NVIS is usually a viable technique throughout the daylight hours, with performance variations for ionospheric conditions.

Antenna Configuration: Perhaps the most critical factor, and certainly the most controversial among ham discussions, is the antenna configuration for NVIS that produces the best vertically directed signals. Let's consider the basics first, and then we will address some details that are not universally agreed upon.

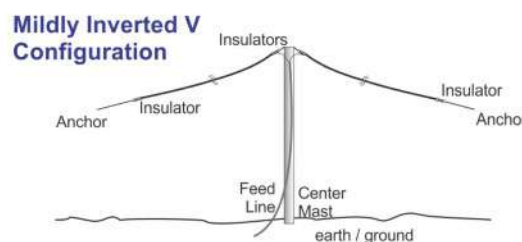
A horizontally polarized antenna provides the best NVIS propagation. A wire half-wave dipole trimmed for the frequency of use is very effective and also the most common type of antenna used for NVIS. Horizontal full-wave loop antennas are also very effective. In the half-wave dipole case, a flattop configuration or mildly down-sloped inverted V configuration works well. But, regardless of the specific type of horizontally polarized antenna used, the key factor in configuration is the antenna's height above ground.



NVIS dipoles

Half-wave dipole antennas are great for NVIS, positioned a fraction of a wavelength above the ground.

To direct the greatest portion of the transmitted signal vertically, the antenna must be positioned relatively low to the ground. The interaction of directly radiated signals with ground reflections results in more signal strength radiated in the vertical direction when the horizontal antenna is much less than $\frac{1}{2}$ wavelength above the ground. Height above ground is usually less than $\frac{1}{4}$ wavelength for the NVIS technique, and much lower heights are preferred by many operators due to reported performance improvement. A height of $\frac{1}{8}$ to $\frac{1}{10}$ wavelength is often used for effective NVIS. On the 40-meter band a dipole elevated just 4-meters (13 feet) above ground can provide very effective NVIS propagation in a radius of several hundred miles.



The precise height above ground for the very best NVIS performance is not a well-agreed value. Antenna models reported by Jack Swinden W5JCK (and based on work of L.B. Cebik W4RLN) seem to point to best performance on 40-meters at 0.175 wavelength (7 meters, ~21.7 feet) above ground, and on 80-meters a height of 0.165 wavelength (13 meters, ~41 feet). Pat Lambert WØIPL has conducted extensive objective data collection in Colorado and reports an experience of better coverage with a height of only $\frac{1}{20}$ wavelength above ground. He notes that noise is significantly reduced as the antenna is lowered below $\frac{1}{8}$ wavelength, and that communications with close stations (up to 300 miles away) was greatly enhanced with such low antenna height, particularly using the 80-meter band.

Other Factors: Beyond the antenna height, power, and frequency, other factors will impact performance. The height above ground effects the dipole feed point impedance. As the dipole is lowered below $\frac{1}{4}$ wavelength the feed point impedance will be significantly reduced in value, and SWR may rise. For best performance, trim the dipole antenna while at the height at which you intend to use it.