2023 ARRL and TAPR Digital Communications Conference (DCC)

The officers and directors of TAPR are weighing the options fot holding a Digital Communications Conference this year. Most likely it will be an online virtual conference rather than a live in-person conference. An announcement concerning the DCC will be forthcoming soon.

###

Director Nominations

Three Director positions on the TAPR Board of Directors are now open for nomination and nominations may be submitted now.

TAPR Board members serve three-year terms and their responsibilities include:

1) Attendance at in-person board meetings each year. [Usually, one is held at the Hamvention in May, the other at the Digital Communications Conference (DCC) in September.]

2) Regular participation in the continuous board session, which is conducted over the Internet.

3) Active engagement in TAPR’s management.

To place a person in nomination, please remember that he or she must be a member of TAPR. Also, confirm that the individual is willing to have his or her name placed in nomination. By September 15, 2023, send that person’s name (or your own if you wish to nominate yourself), call sign, mailing address, e-mail address, phone number(s) and a biographical sketch (250 words maximum) via contact@tapr.org or via snail mail to TAPR, 1 Glen Ave., Wolcott, CT 06716-1442. Nominations close after the call for nominations at the TAPR Membership Meeting and an online election will be held two weeks after the closing of nominations.

###.

NEW PRODUCT:

Multiband GNSS Antenna Splitter

Dual-frequency GNSS receivers are becoming more common, and you can now buy low cost L1/L2/L5 antennas. But it's hard to find a GNSS antenna splitter that handles multiple bands; most of them have SAW filters for L1 only. I ran into that problem and designed a solution: the GUS or "GNSS Unfiltered Splitter," which is what it says it is.

It has four output ports with SMA connectors and covers L1, L2, and L5 (in fact, it's usable from 1 to about 1.7 GHz). Its LNA makes up for splitter losses and provides a net gain of about 7 dB. The outputs have equal time delays within a handful of picoseconds, but are not phase-matched.

The GUS does not have any bandpass filtering, so might not be suitable for use near high power transmitting sites. But in most applications, filtering beyond that provided by the antenna isn't necessary.

The GUS can be powered from a receive, and voltage is passed through to power an antenna LNA. In addition, it can use external power and can handle inputs from 3.3 to 15 volts. An on-board regulator is available if the antenna requires lower voltage than the power source and antenna power can be disabled. In short, the GUS tries to support just about every receiver/power/antenna combination that's out there.

It's fully assembled except for the RF connectors (which are included). A matching extruded aluminum case with endplates is available. The GUS is available from TAPR now at https://tapr.org/product/gus-gnss-antenna-splitter/

###

Miroslav "Misko" Skoric, YT7MPB, actively participated as the tutorial speaker in IEEE CITS 2023, international conference that was held in Genoa, Italy, July 10-12, 2023. Misko came to the location few days before the event to test local propagation in VHF and HF packet radio, robust packet, pactor, and APRS. A special callsign, II1CIT, was issued by Italian authorities, thankfully to initiative of Italian hams Gian Leonardo Solazzi, IW2NKE, from Milan, and Carlo Paroldi, the president of Genova ARI club. Although the two were not available for personal participation in CITS 2023, here is a photo of the speaker, together with Prof. Franco Davoli (first on the left) and his two associates, former hams, with whom Prof. Franco had researched AFSK and related ham data modes many years ago. More details on Misko's activity in Genoa will be posted soon on his QRZ.com page.

###

The Joy of Crimp-On Connectors

By Stana Horzepa, WA1LOU

I had the pleasure of installing my first crimp-on coax connector!

I purchased the crimp-on tools and connectors from Quicksilver at Hamvention, but had not needed to install any new connectors until today when I discovered a failing connector on the coax to my vertical antenna. (Funny thing about purchasing from Quicksilver – they are just a half hour down the road from here, but I have made all my purchases from them at Hamvention – just 12 hours down the road from here!)

Having never installed a crimp-on, I searched YouTube for a how-to video and found an excellent one, "How To Attach Crimped Coax Connectors" by Dave Casler, KE0OG. Dave had the same Quicksilver tools I had and he was installing connectors on RG8X coax, which was what I was trying to do, so the video was a perfect match for my task.

I watched the video one time, began to do it myself, fast-forwarding and rewinding the video as needed and I was amazed how easy it was to install the crimp-on!

Welcome to the 21st Century!

###

Amateur Radio Moonshots
My Presentation for MicroHAMS Digital Conference 2023

By Steve Stroh, N8GNJ (Source: Zero Retries)

I was invited to be a presenter at the MicroHAMS Digital Conference (MHDC) 2023, that was to occur in May, 2023. MHDC 2023 was canceled - this article is the essence of the presentation I would have given.

MHDC Chairperson Scott Honaker N7SS got my attention with this intriguing email:

In 2015, Fareed Zakaria created a show called "Moonshots". The premise was pointing out that going to the moon wasn't our last big accomplishment. He featured a number of emerging technologies that had the potential to be the next revolutionary accomplishment. I don't remember them all but they were fantastic; 3D printing organs, curing cancer, CRISPR, etc. I subscribed to the CNN streaming service just in the hope I could see this again, then they pulled it a day before it went live.

You are in a unique position to see these events unfold in the amateur radio community. I think an MHDC talk like this could be very inspirational. What are the 5 things that show the most promise to revolutionize amateur radio? Are you willing to tell us?

My Thanks to N7SS for the thought-provoking suggestion. I devoted an entire issue of Zero Retries to a number of ideas, including some Moonshots - Zero Retries 0079 - 2022-12-30 - A Vision for Zero Retries Interesting Amateur Radio in 2029. In that issue I explored more than five things, and some things were linear extrapolations of current trends, not (what I would consider Moonshots), so what follows is a distillation and update from that issue.

Moonshot 1 - A New Amateur Radio Organization for the 21st Century

This is easily the most ambitious Amateur Radio Moonshot. By comparison, the other Moonshots are straightforward funding / development / management challenges. The creation of a "C21 ARO" requires an entirely new way of thinking within Amateur Radio.

Current US Amateur Radio organizations were created in the 20th century, and their culture, operations, outlook, and membership reflects that heritage… and baggage. My sober assessment is that those organizations cannot overhaul their legacies to scale / morph into organizations that can rise to the challenges confronting Amateur Radio in the 21st century.

Here are some aspects of a C21 ARO:

- Focus on appealing to younger generations, including a

comprehensive Code of Conduct1. How can Amateur Radio be presented to be interesting to them?

- Focus on appealing to technologists (techies), and highly technically capable because being affiliated with the organization is attractive to high-level technologists.
- Geographically inclusive over all of North and South America and all countries.
- Internet-based organization (entirely virtual).
- Open source - all information, resources, etc. are publicly available.
- New funding models - instead of "rent extraction" (membership fees), develop funding sources such as donations and endowments from tech billionaires, foundations, etc.
- Local chapters based on standardized resources - branding, operations, available resources, etc.
- Well-developed training - standardized, well-produced video tutorials, classes, conferences, etc. Modules and support are developed to easily integrate Amateur Radio into STEAM curriculums.
- Effective marketing to youth and the general public.
- It's feasible for the FCC and other national spectrum regulators to "outsource" spectrum management, including operator licensing for Amateur Radio.

The conventional wisdom is that such a radical change within Amateur Radio, with more than a century of tradition, is impossible. But in my lifetime I've seen ample "impossibilities" - the original Moonshot, the end of endemic diseases like polio, effective solar power, personal computers, and ubiquitous (ambient) broadband Internet access to name just a few.

Each of those began in someone's imagination, and they worked to make it a reality until it became a reality. To accomplish any of the following Moonshots, in my opinion, requires a new Amateur Radio Organization for the 21st Century.

Moonshot 2 - Western Hemisphere GEO Satellite / Payload

(Reference - AmGEO-200 - Western Hemisphere GEO Payload)

In my opinion, an Amateur Radio payload (using Amateur Radio frequencies, likely 5 GHz uplink, 10 GHz downlink) in geosynchronous / geostationary orbit (GEO) would be a huge boon for Amateur Radio in the Americas. It would accelerate interest in microwave technology within Amateur Radio, it would make it feasible to link widely separated Amateur Radio data networks without using Internet, and it would put microwave communications in Amateur Radio on a par with

the utility of HF operations to work between widely separated Amateur Radio operators.

A recent article in Ars Technica - Internet from a small satellite in geostationary orbit? Sure, why not ? has given me hope that a Western hemisphere GEO Satellite / Payload might… now be feasible!

A startup space company says it has successfully deployed and tested a kitchen-stove-sized satellite in geostationary orbit and begun delivering Internet service to Alaska.

Earlier this month, the 'Arcturus' satellite, built by a company named Astranis, launched as a rideshare payload on a Falcon Heavy rocket, separating a few hours after liftoff and successfully deploying its solar arrays, boom, and a subreflector.

In my rudimentary "understanding" of GEO satellite operations, I had always assumed that the GEO orbital slots above the Western hemisphere were so valuable that only large satellites, engineered for long lifetimes and maximizing commutations capability (many spot beams with corresponding complex antennas), requiring a dedicated launch, were feasible for GEO operations.

But Astranis has apparently figured out how to manufacture, launch, and operate GEO satellites "on the cheap" (at least, cheaper, compared to traditional GEO satellites). Thus, perhaps an Amateur Radio version of the Arcturus satellite, engineered by Amateur Radio technology (already developed based on the previous attempt at an Amateur Radio GEO payload), funded by ARDC, built by Astranis, and launched via (less expensive) SpaceX Rideshare might be within the ragged edge of feasibility.

Another "cheap GEO" concept seems to be PRECURSOR (though I don't understand how it can be said to be Geosynchronous at 460 km when an orbit that orbits at the same speed as Earth's rotation is 35786 km). Unlike Astranis, PRECUROR seems amenable, even eager to provide Amateur Radio satellite communications.2

There is a dormant discussion group for this concept - https://groups.io/g/GEO that I will be "stirring up" in coming weeks. (Update - apparently this group is effectively dead; I posted to it, and nothing happened.)

Moonshot 3 - An Open Source, Software-defined, New Paradigm for Amateur Radio VHF / UHF Operations

In the 2020s, with Software Defined Radio (SDR) a reality for more than two decades now, it's… insane that Amateur Radio VHF / UHF spectrum is technologically divided by incompatible modes. A radio built for Digital Mobile Radio (DMR) cannot operate using digital voice on a repeater built for D-Star. And only D-Star (partially) makes an accommodation for

data over D-Star repeaters.

Collectively, Amateur Radio has an incredible capability in the thousands of VHF / UHF repeaters. The problem is that such repeaters are almost exclusively reserved for voice use, and silo'd, proprietary digital voice systems, thus Amateur Radio repeaters are now often almost entirely unused, and regarded as a technological anachronism.

In the 2020s, it's past time to rethink the vision of Amateur Radio VHF / UHF repeaters for the 21st century. Some features of a "Century 21" (C21) repeater:

- Based on Open Source and SDR technology - the operational parameters of the repeater can be updated with software.
- While the reality of repeater operations in high-density sites probably preclude easily changing transmit frequencies, an SDR receiver(s) are a normal part of a C21 repeater. Thus repeaters can be linked, perhaps even dynamically, by listening to another repeater's transmissions. One example of using this capability is a "flood protocol" where a bulletin could be broadcast by one repeater, and when appropriate, rebroadcast by other repeaters.
- Single-frequency repeaters - now feasible using Time Division Multiple Access (TDMA) protocols. This has already been demonstrated by modifying DMR's two time slots (normally used for two independent channels) for simultaneous receive and transmit on a single channel.
- C21 repeaters can be aggregated. For example, digital video requires a minimum bandwidth which isn't available on a single repeater (using conventional 25 kHz channels). C21 repeaters can, on demand, aggregate together to provide a minimum bandwidth such as 4 repeaters on a single site aggregating into a 100 kHz channel. If this seems like fantasy, keep in mind that an SDR "just handles" these sorts of complexities - merely bits to be received, or transmitted in a specified pattern / frequency(ies).
- C21 repeaters can transfer data as easily as voice - "bits are bits" - voice is just a bitstream with a "voice" tag. C21 repeaters are also considered to be usable not just for human use, but for Amateur Radio computers to "file sync". In the wee hours when there is no human usage, C21 user radios use otherwise wasted airtime to transmit Amateur Radio callsign database updates, bulletins, low-priority email messages, satellite predictions, tutorials, etc. The airtime costs nothing, and it demonstrates a capability unique to Amateur Radio.
- User radios for C21 repeaters are inexpensive because they're based on open source designs that are largely software - basically big Digital to Analog (D/A) and Analog to Digital (A/D) converters, a Field Programmable Gate Array (FPGA), a processor3, and a power amplifier… all of which are getting

cheaper and cheaper. The rest is software. An early example of such a radio is the RPX-100.

- Experimentation is encouraged. C21 repeaters, and user radios, are software defined, and based on Open Source, thus the barrier to changing something about the operation of a repeater or a radio is low; if something doesn't work, the base level of software can easily be reloaded.

Moonshot 4 - Amateur Radio Megaconference

One of the largest technical conferences is DEFCON, held annually at a major conference facility in Las Vegas, Nevada. Everyone involved in Information Technology is aware of DEFCON, and I'll guess that most technical personnel in the IT industry aspire to attend DEFCON at least once.

In Amateur Radio, Hamvention is the largest Amateur Radio conference in the world, held annually in Dayton and now Xenia, Ohio at a county fairground.

Attendance at both events is ~ 30,000 people. Both conferences attract those who are "hands-on", directly involved in IT and Amateur Radio4.

DEFCON attracts major corporate sponsors to underwrite the event, attendance is often paid for by employers, the event lasts 4+ days, has many specialty meetings, and takes place in the resort city of Las Vegas in a huge convention venue.

In my opinion, one of the primary differences between DEFCON and Hamvention is the perceived value of attending the conference. At DEFCON, IT personnel are exposed to valuable information that equips one to better do their job within IT.

Hamvention attracts many who are involved professionally in radio technology, but information presented at Hamvention is largely "hobbyist" information.

A C21 ARO could rethink an annual conference for Amateur Radio and expend the funds to start an Amateur Radio / Radio Techology Megaconference. Such a conference could also be held in Las Vegas (one of the few places that can accommodate at conference with attendance of 30,000). It could advertise the new conference heavily (not just to those already involved in Amateur Radio). A C21 ARO could recruit vendors deeply involved with radio technology to recruit new personnel for positions requiring knowledge of radio technology. Here's just a few such vendors that come readily to mind, from a variety of industries for whom innovative radio technology is critical:

- Qualcomm and Qorvo - radio chipsets;
- Tektronix and Rohde & Schwarz - radio systems test equipment;
- Boeing and Honeywell Aerospace - commercial aircraft radio

communications;

- L3Harris and US Army Signal Corps - military radio communications;
- Tarana Wireless and Cambium Networks - Wireless Internet Service Provider infrastructure;
- Mimosa Networks and HXI - Point-to-Point and Point - Multipoint microwave infrastructure;
- AT&T, T-Mobile, and Verizon - radio-based telecommunciations carriers
- Ericsson and Nokia Networks - radio-based telecommunications infrastrucure.

An Amateur Radio / Radio Techology Megaconference would be expensive and discouraging in the first few years, which is why a C21 ARO would have to be prepared to invest for the long view, but I think it would pay off as the attendance grows.

Moonshot 5 - Four Mini Moonshots

This fifth Moonshot is a minor cheat of the original premise. While these aren't quite Moonshots (comparable in magnitude to the first four), they do require a "heavy lift" to implement. IE, these aren't achievable without considerable organization, sustained effort, and significant funding.

Moonshot 5A - Custom AREDN Radios

AREDN Mesh Networks are an under-utilized capability in Amateur Radio, especially in the semi-exclusive Amateur Radio portion of the 2.4 GHz band. Use of AREDN is handicapped by the hardware used for AREDN built for license-exempt (Part 15 and other country's equivalent regulations) operations. Amateur Radio would benefit from being able to use built-for-purpose Amateur Radio units with larger memory (improved mesh network functionality), higher transmit power, and native 12 volts DC operation.

Moonshot 5B - GNU Radio for Amateur Radio (GR4AR)

GR4AR is a concept that makes the versatile and powerful GNU Radio and "localizes" it for Amateur Radio. Some features of GR4AR might include built-in knowledge of Amateur Radio bands and operational characteristics, built-in modes that are popular with Amateur Radio, Software Defined Radio hardware that is used in Amateur Radio (such as the ADALM PLUTO) and a "friendlier" user interface for Amateur Radio Operators. For example, GR4AR would ask for country, and license class, and allow transmission only on frequencies and modes that are legal for that license class in that country.

Moonshot 5C - Power Amplifier for VHF / UHF Software Defined Transceivers

Amateur Radio now has numerous Software Defined Transceivers (SDT) for VHF / UHF, such as the aforementioned ADALM PLUTO, that are sufficiently capable for Amateur Radio use, and the enabling software is getting better by the week.

Amateur Radio has long used external power amplifiers such as the MFJ / Mirage B-34 to amplify a low power signal (2 watts) to a higher power (35 watts). But such amplifiers are unsuitable for SDTs. One deficiency is that the transmit power of the SDT is considerably below the minimum input power for such amplifiers. A second deficiency is that SDTs are all-mode, but conventional amplifiers are designed only for FM signals. Thus a new class of power amplifiers, specially made for SDT's (low input power, capable of all-mode operation) is needed. Designing such an amplifier isn't rocket science, but it's not trivial either, especially given the shortage of parts that are easy to design with. One early example is the LimeRFE, but its transmit power on VHF / UHF is approximately 0.5 watts - not very effective in the real world. Thus, such an amplifier will require significant design skill and capital to get such systems into production. Perhaps, given the trend of open source designs to be widely copied by Chinese vendors, that will be enough to drive prices down and availability up.

Moonshot 5D - Amateur Radio Focused ChatGPT

ChatGPT is a capable Artificial Intelligence system, but it has trouble with context. Imagine if a ChatGPT could be focused on Amateur Radio's vast (more than a century now) pool of information? It would be, in effect, a virtual mentor5. As in ingests all the Amateur Radio magazines… all the Amateur Radio books… all the Amateur Radio videos, podcasts, blogs, newsletters, etc. I've had moments like the above talking to people that are the equivalent of such a focused AI - those who are subject matter experts on Amateur Radio data communications, Amateur Radio satellites, Amateur Radio antennas, etc. It's a transcendental moment when you can ask a poorly formed question and get a tailored response from deep knowledge and experience.

Like the other Mini Moonshots, how to accomplish this is straightforward - ChatGPT (and equivalent open source AI systems) is available for use, and a good start of the source material is now publicly available thanks to Internet Archive's Digital Library of Amateur Radio & Communications (DLARC). Getting to an Amateur Radio Focused ChatGPT is largely a matter of organizing a team, building it, and sustainable funding and maintenance.

###

News briefs from the JNOS 2.0 world ...

Native IPV6 Code

IP Version 6 (IPV6) is now part of the JNOS 2.0 IP stack.

```
# telnet ve4klm.ampr.org
Trying 2600:3c03:e003:3700::3...
Connected to ve4klm.ampr.org.
Escape character is '^]'.
JNOS (ve4klm.ampr.org)
   * for access, email (Mike) - maiko@pcsinternet.ca
login:
```

A big thanks to Bob Tenty, VE3TOK, for pushing me on this, and spending lots of his time testing.

This iteration of IPV6 sees JNOS solely as a service, an end point. There is no routing table, no routing to other interfaces, interfaces themselves don't have IPV6 addresses (yet). There is only one IPV6 interface at this time, and that's to JNOS itself. The following services are now IPV6 capable - ping, telnet, dns lookups, axip, axudp, smtp, and BBS forwarding. A new TAP interface had to be written for this.

Teensy and Robust Packet

In April of 2022, I switched from WinRPR to an actual teensy board for robust packet. For reasons I will never know (a mystery really), my instance of WinRPR stopped working for me. I needed a working solution, and had heard about these teensy boards, so I decided to order one, and got it working. It's a great little board, works real nice with JNOS, and ideal for my HF needs.

QtSoundModem and AGWPE / Direwolf

In February of 2022, Neils, PD9Q, demonstrated he could use the JNOS attach winrpr command with the QtSoundModem software modem (kiss over tcp/ip). This was very cool, but unfortunately I had forgot about it, so a year later I finally had JNOS able to use all available kiss ports with QtSoundModem. At the same time, more changes were made so that JNOS could attach to multiple AGWPE / Direwolf modems.

Multiple TUN Interfaces

Got an email from Mark Herson, N2MH, in September of 2022, asking for multiple TUN interfaces to provide dual AMPR and AREDN Mesh connectivity. The existing code only supported a single TUN interface, so got that fixed up real quick, and he confirms it's working well on both of his JNOS systems; one in New Jersey and one in North Carolina. Mark has been busy with his mesh stuff. In particular, he has been working with a software package called PiWxRx, written by Martin Alcock, VE6VH, which listens to NOAA WX Radio Broadcasts and Environment Canada broadcasts in the 162 Mhz range. PiWxRx decodes WX alert messages and sends the alerts out as SMTP messages, which Mark says works very nicely into JNOS.

NINOtnc

Nino Carrillo, KK4HEJ, emailed me in January of 2023, interested in using his NINOtnc with JNOS, and he was kind enough to send me an actual NINOtnc to experiment with. So then, Mark Phillips, G7LTT/NI2O, joined in, lots of bench work, loads of back and forth emails, after which he was able to confirm a working configuration. Big thanks to both of them, so one can now use NINOtnc in JNOS.

VARA HF

More big news, Michael Ford, WZ0C, with a major revamp of the VARA code. This is nicely done, and quite slick. He is in Massachusetts, and is actively forwarding in both directions with WE1H in New Hampshire (who runs BPQ) on 6 meters. They are also able to manually connect to each other's BBS.

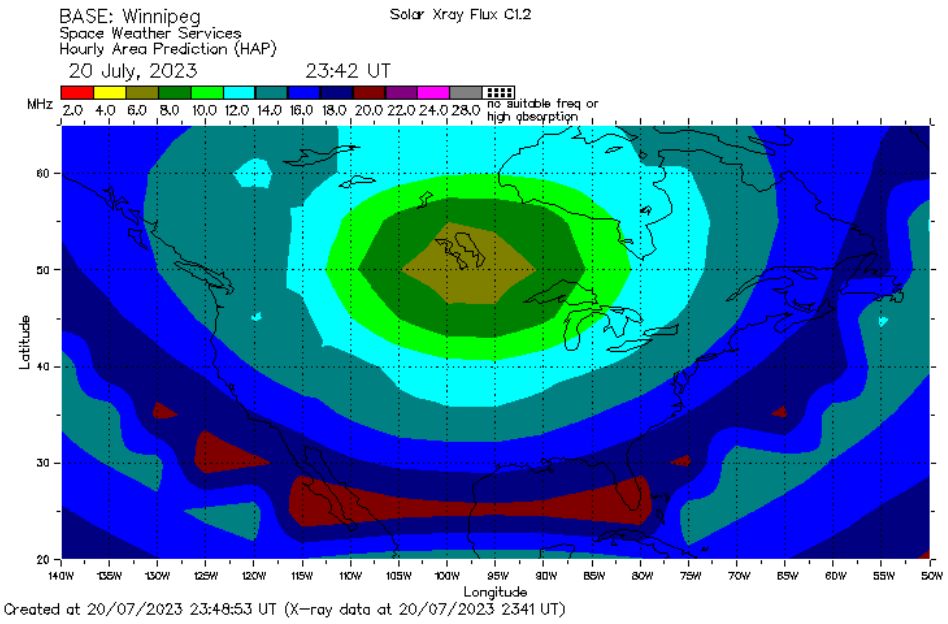
He tells me they are trying to get people onboard to build out a 6m backbone in New England.

On that note, my antennas have been down for over a year, since June of 2022, but this latest revamp of the VARA code has motivated me to climb the tower, and run a few wires over the house, just so I can get back on HF again. I did a bit of testing on CW over the course of a few days, using the RBN system to confirm my signal was most certainly getting out (see below)

N6TV	VE4KLM	1496 mi	18107.3	CW	15 dB	0150z 15 Jul
TI7W	VE4KLM	2795 mi	18107.4	CW	13 dB	0146z 15 Jul
W1NT-6	VE4KLM	1334 mi	18108.0	CW	17 dB	0226z 14 Jul

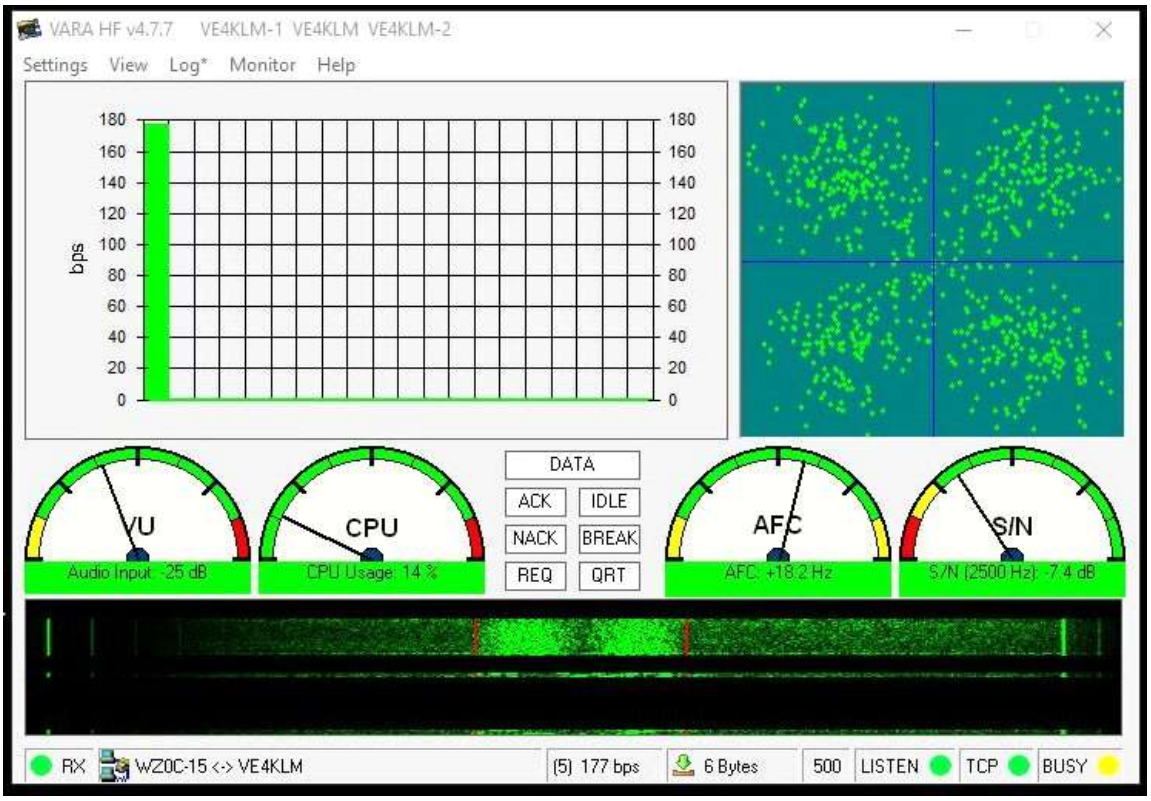
credit -> https://www.reversebeacon.net/main.php

The Australian HAP charts I find useful - the one below is typical of evenings around here.



credit -> https://www.sws.bom.gov.au/Images/HF%20Systems/Global%20HF/HAP%20Charts/Winnipeg.gif

So on the evening of July 20, 2023, WZ0C successfully connected to my system VE4KLM, on 17 meters, the radio dial set to 18.107 USB – very happy with the results, and this being my first ever VARA on RF !



18:59:47 - vara: received connection from WZ0C-15
18:59:47 WZ0C-15 on port vara - MBOX (wz0c) open
19:03:40 WZ0C-15 on port vara - User wz0c - Michael (AX.25 - WZ0C.#MIDD.MA.USA.NOAM) (Internet - wz0c@arrl.net) has registered.
19:05:00 WZ0C-15 on port vara - MBOX (wz0c) CONVERS
19:05:59 127.0.0.1:1028 - MBOX (ve4klm) CONVERS

TCP/IP over VARA

Last November I did another VARA demo to illustrate 'full blast TCP/IP' using VARA with JNOS, the link is on my JNOS page, if you are curious. As usual, it was more of a concept project, but with a bit of work, this could be made more practical (more user friendly) for the sysop.

Trees and Antennas

One last thing ... I know ... Terrible of me ... But seriously (MP) ... You have to find yourself some fast growing trees to put back onto the property ... Hope to see you on HF sometime, and Zoom (ha) !

Maiko Langelaar - VE4KLM
http://www.langelaar.net/jnos2

Write Here!

Your *PSR* editor is working on the next issue of *PSR* and hopes to find a few good writers, particularly ham radio operators working on the digital side of our hobby, who would like to write about their activities and have them published here in *PSR*.

You don't have to be Hiram Percy Maxim to contribute to *PSR* and you don't have to use *Microsoft Word* to compose your thoughts.

Your *PSR* editor can handle just about any text and graphic format, so don't be afraid to submit whatever you have to wa1lou@tapr.org --- she can handle it!

The deadline for the next issue of *PSR* is November 1, so write early and write often.

###

On the Net

By Mark Thompson, WB9QZB

Facebook

As you may know, TAPR has a Facebook page, www.facebook.com/TAPRDigitalHam.

However, I also created a TAPR Facebook Group, www.facebook.com/groups/TAPRDigital/.

If you have a Facebook account, "Like" the TAPR Facebook page and join the TAPR Facebook Group.

If you join the group click on the Events link and indicate you're Going to the events.

On Twitter, Too

Access the TAPR Twitter account at www.twitter.com/taprdigital.

Also on YouTube

TAPR now has its own channel on YouTube: the TAPR Digital Videos Channel: www.youtube.com/user/TAPRDigitalVideo.

At this time, there are a slew of videos on our channel including many from the TAPR-ARRL Digital Communications Conference (DCC) that you may view at no cost, so have at it!

###

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TAPR is always interested in receiving information and articles for publication. If you have an idea for an article you would like to see, or you or someone you know is doing something that would interest TAPR, please contact the editor (wa1lou@tapr.org) so that your work can be shared with the Amateur Radio community. If you feel uncomfortable or otherwise unable to write an article yourself, please contact the editor for assistance. Preferred format for articles is plain ASCII text (OpenOffice or *Microsoft Word* is acceptable). Preferred graphic formats are PS/EPS/TIFF (diagrams, black and white photographs), or TIFF/JPEG/GIF (color photographs). Please submit graphics at a minimum of 300 DPI.

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