

NARA Newsletter



President's Message – Randy VE7FAA

As I have said previously, we are fortunate to have a core of dedicated volunteers who manage everything that goes on within NARA. This starts with the executive but does not end there, thanks to many other keen volunteers who support and assist the club. In addition, many more volunteers step up for events like Field Day, the bike race, the Bathtub race, work bees, and more. All of these volunteers make the club what it is, an active and dynamic organization.

So, what is the role of a volunteer? Let's start with NARA executive. Its role is to discuss NARA policy, decide on actions, and encourage those involved to support the club. The executive does not micromanage; we want members to take the initiative. Once a task has been set or a voluntary role agreed, we like that volunteers progress on their own initiative, while of course following policy and reporting back to the executive. Everyone has their own talents and we want to encourage members with different strengths to help NARA and put forward their own ideas. As members will already know, we have volunteers working on repeaters, APRS, AREDN, computers, the Newsletter, meals, the website, training, and many other projects and events. A huge thank you to everyone involved in organizing and participating. You all make NARA what it is today; you are NARA.

Later this month on Saturday, Nov. 16, (please note the date) members will elect five members to the NARA executive for the next NARA year, which starts on Dec. 1. Positions open for election are vice president, secretary and three directors. If you think that you have something to offer to NARA and would like to volunteer in any capacity, please advise the NARA executive secretary Devan VE7LSE at ve7lse@gmail.com.

As we approach the holiday season, I also want to invite all members to our Christmas dinner. The holiday season is a time for NARA to celebrate its successes during 2024 and gather as a group. Last year's Christmas dinner got rave reviews so I do hope that you will join us. Details are

to be found elsewhere in this newsletter. Please note the date for your diary and please plan to attend on Saturday, Dec. 14.

NARA AGM, Elections and Membership Dues



NARA's Annual General Meeting is on Saturday, Nov. 16, starting at 11 am at the Air Cadets building, 719 Nanaimo Lakes Road. This is a hybrid meeting (in-person but also available via Google Meet).

The regular **November General meeting** will follow the AGM after a mandated short gap.

Elections in November at the AGM are for the vice president, secretary and three directors. If you wish to nominate someone for one of these positions, please email the NARA executive secretary, Devan VE7LSE at ve7lse@gmail.com.

Membership dues for the coming year, starting on Dec. 1, 2024, need to be received no later than Nov. 30 for a member to remain in good standing. Dues are \$30 per year for an individual, \$45 per year for family membership. You can pay via e-transfer to naraetrans413@gmail.com or via PayPal from <https://ve7na/join-now/> or cash/cheque to the NARA treasurer.

Please note, there is no NARA general meeting in December.

Island Events	Date	By
NARA AGM and Nov. GM	Nov. 16 @ 11am	NARA
ARRL Sweeps. SSB Contest	Nov. 16 to 17	NARA
NARA Christmas Dinner	Dec. 14: 6 pm	NARA
Canada Winter Contest	Dec. 28 to 29	NARA
Winter Field Day	Jan. 26	NARA

ARRL Sweepstakes Contest - Nov. 16-17

No details of the NARA arrangements for this contest were available at the publication date, so watch your email for details of this contest, location and times.

Island Trunk System Extended to Victoria



The Island Trunk System became truly Island-wide in October when the repeater VE7RAA was linked into the trunk, providing full coverage throughout the capital region. West Coast Amateur Radio Association president Brent VA7RV announced what he called “the Last Spike” on the WARA website.

“On Thursday, October 10, a team from ITS made the trip to Salt Spring Island and installed the linking radio, associated cabling, two antennas as well as other equipment.” The first contact came at 5:40 pm that day when Brent VA7RV in Colwood spoke with a station in Woss, Jimmy VE7JMY. The distance between the two stations is just under 400 kilometres.

The VE7RAA repeater is on Mount McDonald near Langford, and the linking equipment connecting VE7RAA into the ITS is located on Mount Bruce on Salt Spring Island. Previous to the VE7RAA link being established, the nearest ITS repeater for those in Victoria was the Cowichan club repeater on Mount Brenton, VE7AQW, which could be hit-and-miss from the capital region. For those who want to program in the new frequency, it is 443.575 MHz with a tone of 136.5 Hz.



The ITS group working on installing the new ITS linking equipment at Salt Spring Island.

That brings to 13 the number of ITS repeaters between Port McNeil and — now — Victoria. While a link radio continues to connect to VE7TOF in Tofino, efforts continue to re-establish a repeater site there. The Port Alberni ITS repeater, VE7RPA, operates on the trunk only on demand.

NARA's Christmas Dinner



Mark Dec. 14 in your calendar. Following the success of last year's Christmas dinner, NARA will again be hosting its traditional Christmas dinner at the Air Cadets building on Nanaimo Lakes Road. Things will be a little different this year. There will be a fixed charge of \$12 for adults, which eliminates the pot luck aspect; no one will need to bring any food. The NARA team will purchase and cook everything. You can just pay at the door, but of course NARA does need to know who is coming in advance for food preparation. If you plan to attend, here are the basic details:

Date: Saturday, Dec. 14, 2024

Venue: Air Cadets building, 719 Nanaimo Lakes Road, Nanaimo

Time: Gather and mingle at 6:00 pm, dinner at 6:30 pm

Cost: \$12 adults & \$6 for children – pay at the door

Food volunteers contact: Linda VE7JLO at ve7jlo@gmail.com

Booking: Please advise Jack VE7GDE at ve7gde@gmail.com if you are attending

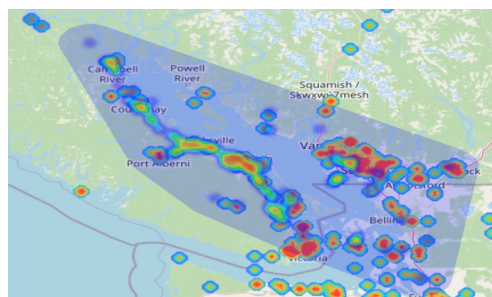
Please bring a donation for the Loaves & Fishes Community Food Bank if possible.

More on the new Mount Benson APRS

Digipeater



As reported in last month's NARA Newsletter, the club's Mount Benson APRS digipeater is now on the air and providing excellent coverage, as anticipated. This digipeater really has helped APRS coverage in the mid-Island area and beyond.



As you can see from this hotspot map the new NARA Mount Benson APRS digipeater really is providing excellent coverage on Highway 1, up and down the Island.

“The universe is significantly older than previously thought”

This was a headline on Oct. 10 in which the associated article went on to read “In a major discovery, the James Webb Space Telescope has presented data that directly challenges our current understanding of the universe.” The other headline the same day on the same topic read “Something is Seriously Wrong.” All this stems from the debate among cosmologists as to the age of the universe. Since the James Webb telescope started to provide data in 2022 its findings have led to much debate.

Those of us involved with amateur radio know how radio is an essential part of modern-day physics, radio astronomy and cosmology. Without the use of radio, scientists would not be making all these amazing discoveries. The article went on to say that in a groundbreaking discovery the James Webb Space Telescope (JWST) has presented data that directly challenges our long-held belief that the universe is some 13.8 billion years old. The article discusses galaxy formation and expansion and goes on to say that “the real game-changer in understanding redshift was the realization of the Doppler effect's role in it.” Distinct galaxies moving away from us at velocities directly proportional to their distance hinted at a universe constantly expanding.” And that “the universe's age largely hinges on its rate of expansion.”

Rajendra Gupta from the University of Ottawa says that “While previous studies have attempted to address the enigma of 'impossible galaxies' using the 'tired light' model, they've been largely unsuccessful, often falling short in explaining other cosmic phenomena like supernovae redshifts.” The article concludes; “However, combining the tired light theory with an evolving cosmological model based on the evolving coupling constants yielded better results. This new hybrid model both accounted for the JWST's observations and bumped the universe's age to a staggering 26.7 billion years.”

Jamboree on the Air

Thanks Mason VE7PMD for the following JOTA report.

NARA supported some 30 scouts from three troops. We had three stations set up at Camp Caillet, two HF and a VHF/UHF! We connected with the Kelowna Kamloops Scout troop over Wires-X. They were saying that they had a very cold night with snow last night. They were excited

for their pizza for lunch. We also used the island trunk system to connect with Devan who was up north Island and also Annika and Katherine who were at home. On HF we got contacts from California, Saskatchewan and Alberta. The furthest contacts we made were on digital Wires-X, which was off the VA7ANI repeater. It was a scout troop down in Australia, where their weather definitely was beautiful compared to ours. It was a very wet day, but everybody was in great spirits and a lot of the kids were tuned in. Jerry VE7BGP also demonstrated Morse code with some of the scouts. We also had a great lunch from the cooks, which were led by Randy. While using Wires-X the Kelowna group scout leaders sent photos to each other via email so both troops got to see each other.

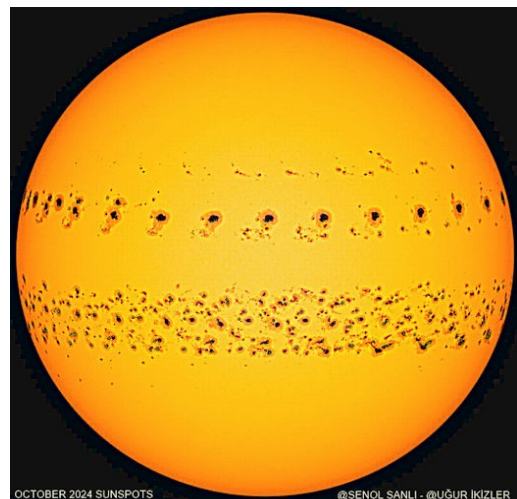


Scouts at Camp Caillet, enjoying amateur radio at JOTA.

How is DX – David VA7DXX



According to Spaceweather, solar physicists have long known that the two hemispheres of the Sun don't always operate in sync. Right now, in fact, the Sun's southern hemisphere is producing three times more sunspots than the north. This raises the possibility that only one half of the sun is fully experiencing Solar Max, with the other half yet to come.

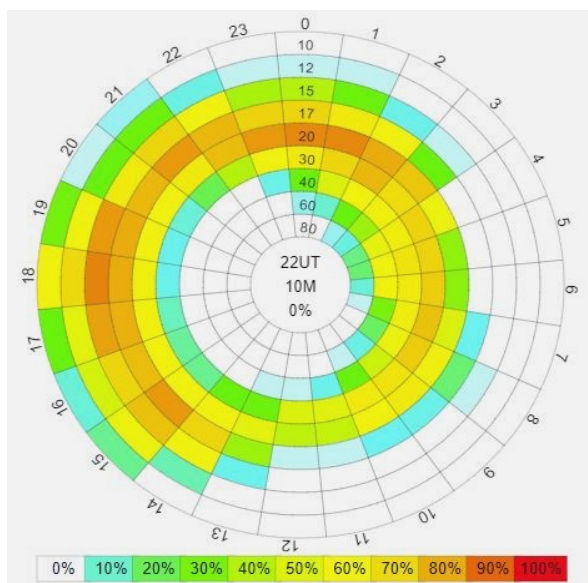


The sun's southern hemisphere is generating three times as many sunspots as the northern hemisphere.

Last month I referred to working DX stations and taking a break if the DX station is just not hearing you. I typically call DX stations in pileups for about 20-30 minutes maximum; occasionally up to an hour if it's a new country or something really special. If after say 30 minutes you are just not making it for some reason, then taking a break really does seem to be a good idea.

The prolific science fiction writer Isaac Asimov was among the first to describe the idea of 'taking a break' if ideas did not flow as expected. Asimov, when faced with so-called writer's block, would go out to the nearest cinema to watch a rubbish film. When he returned, he said, ideas would flow again. Steve Jobs of Apple did something similar.

My suggestion of taking a break is a bit different if the DX station you are trying to work is just not responding. Radio propagation is constantly changing, so waiting a while for radio conditions to change might just work. I have found that in most cases this does work for me but of course propagation between two places on the planet can also get worse, so don't expect this to work every time. Checking out the propagation predictions during the day on a specific path also helps. The other reason for waiting a while is that the longer you leave it the bigger stations – those with high power and big antenna systems – will have worked the DX station and are thus no longer in competition with you.

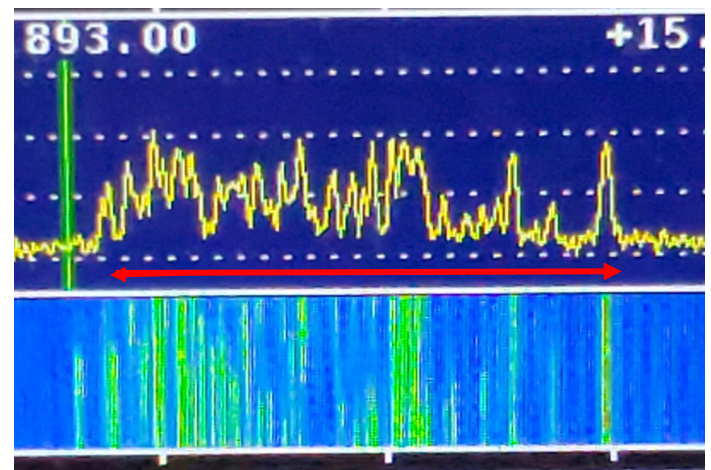


The VOACAP website is a great source for propagation predictions. There are several displays which will provide predictions between any two places on the globe. This so called 'Propagation Wheel' shows the propagation prediction between Nanaimo and the UK with both stations using dipoles. See the bands and time of day in GMT.

There are lots of things going on when you consider wanting to work a DX station in a pile up. Your station is in competition with all the other stations trying to work the DX station. In a pile up, you of course want to maximize your chances of working the DX station sooner rather than later. I describe some of the techniques in my talk on DXing and there are well-established techniques to try to give your station an advantage.

I'll start by saying that almost all DXpeditions do not listen on their own transmitting frequency. On CW they typically listen a kHz or more up from their own transmitting frequency. If a DXpedition operated simplex you would never be able to hear the DX station because they would be drowned out by callers; you would likely never hear the DX station reply to you even if they managed to hear you. So operating split frequency makes sense.

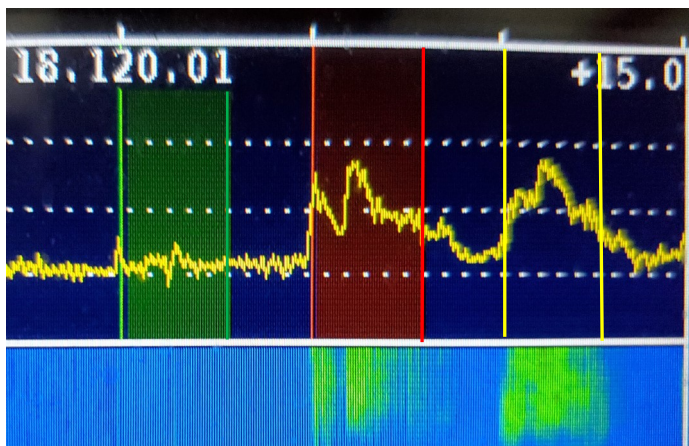
As an analogy, consider a 2m repeater. You know the frequency to listen on and you know that the frequency split is (say) 600 KHz up. Set the split and you know that the repeater will hear you.



Here is the rather wide CW pileup for PX0FF. The green vertical line is where the DXpedition is transmitting and the red horizontal line represents the extent of the pile up. The DXpedition is listening somewhere in this pileup but to work the DXpedition we need to find out where they are listening.

A DX pile up is rather like trying to work a repeater but not knowing the frequency the repeater is listening on! If there were such a repeater, how would you find out where to transmit, where is the repeater input? Well, you would tune around and find out where the station using the repeater was transmitting! So how do you know where the DX station is listening? It's exactly the same, you need to tune around inside the pile up to find out who the DX station has just worked.

SSB pileups are a bit different than CW. With SSB you will often hear the DX stations saying something like “listening 5 to 10 up.” That normally means they are listening either 5 KHz up the band or 10 KHz up the band. If you watch your radio display you will likely see stations 5 KHz or 10 KHz up transmitting to the DX station. That will give you the clue, set your transmitter to 5 KHz up (say) and start calling. On SSB the station with the strongest signal normally wins, so you may well have to wait your turn. Even if the DX station is S9 with you, there are going to be others in other parts of the world where the DX station is S9 plus 20 dB, so these other stations are going to work the DX station first.



This shows a classic SSB pileup. Again, the green lines show where the DX station is transmitting and the red and yellow lines show where stations are calling both 5 and 10 KHz up.

On CW, things are a bit different. It’s not necessarily the strongest signal that wins in the pile up, though of course having a good signal always helps. Being in the right place to call the DX station is more important on CW. So, how do you know where the DX station is listening in a CW pile up? You have to hear another caller working the DXpedition to know where the DX station has just been listening. This takes some practice, experience and skill. So, you have to listen inside the pile up to hear another caller actually working the DX station. You have to be quick. Sometimes you can see the other caller on your display but the best way is to listen inside the pile up. Having a second receiver makes this task easier. I put the headphones output audio of the DX station into only my left ear and the pileup into my right ear. I can always hear the DX station and on my right ear I listen around inside the pile up.

Having discovered where the DX station is listening, then you have to consider other things. Is the DX station tuning up the band on each contact, or down the band,

or maybe up and down at random. Just calling the DX station on the same frequency that they last worked a station on may not work on CW because there maybe 50 other stations all doing the same thing. You get the picture! Trying to anticipate what the DX station operator will do next is a part of the fun. You have to anticipate what the DX operator will do next and even then others are doing the same so there is always an element of luck involved. Sometimes of course all this strategy just does not work!

One very important part of successfully working DX in a pileup is confidence. You need to have the confidence in your station to know that if you happen to call the DX station at the right time and on the right frequency that they will hear you. If you have the confidence and know the techniques then with practice you will work DX stations in a pile up more quickly.

The two pileup diagrams earlier are from the October DXpedition PX0FF to Fernando de Nora. I have now worked this DXCC entity on six bands with PX0FF having given me three new bands. Fernando de Nora is an archipelago in the Atlantic Ocean some 375 kilometers from the Brazilian coast. It consists of 21 islands and islets and is administered by Brazil.



This is the PX0FF shack on Fernando de Nora.

C21MM from the Pacific Island of Nauru also made a splash on the bands in October. This all-German crew were very active on CW which made a pleasant change for me.



Here is a list of many of the DXpeditions this month on which you can practice your pile up techniques! We can expect the following DXpeditions to be on the air: Cocos Keeling (VK9CV), Maldives (8Q7TR), Cayman Is (ZF2KM), South Cook Is (E51SGC), Fiji (3D2TP & 3D2NB), French Polynesia (FO), Sao Tome & Principe (S9Z), Palau (T8), French Guiana (FY), Rotuma (3D2Y), Wallis & Futuna (FW7AA), Chatham Is (ZL7YL), St Martin (FS and TO9W), Gambia (C5T) and Tonga (A35GC).

Also, in November the CW leg of the CQ WW DX Contest takes place over the weekend of Nov. 23-24.

MUD 2024

This year's Microwave Update Conference, nicknamed MUD, took place in Vancouver over the weekend of Oct. 5-6. The venue was the Cascades Casino conference center in Delta. Some 70 of the leading amateur radio microwave experts from around the world attended this specialized annual conference. Narrowband microwave activity is increasing in the Vancouver area on 10 GHz and already there are two known 10 GHz stations active on Vancouver Island using narrow band modes. Next year's conference will be in Tucson, Arizona.



AREDN Update

On Sunday, Oct. 5, the two Rocket 10 GHz transmitter/receiver units at the NARA Mount Benson AREDN equipment site were replaced. The brand new Rocket AC Lite 5 units mean that both the SE and NE AREDN nodes are active again.

Unfortunately there remained an issue between the two Rocket devices. However, a further visit later in the month resolved the issue. Presently, the SE sector is set to a 5 MHz bandwidth and the NE sector is set to 10 MHz. The reason for the change to a 10 MHz bandwidth is because the new Mikrotik XL LHG AC dishes which have just been purchased no longer offer the 5 MHz option. In due course the SE sector will be changing to a 10 GHz bandwidth.



Two new Rocket transceiver units being fitted to the NARA 10 GHz AREDN node at Mount Benson.

Deliberate QRM

Most of you will know by now that for the past few weeks there has been deliberate QRM on the Island Trunk.

The single most important fact for ITS users to keep in mind is not to engage with such interference, no matter how offensive or outrageous. Ignoring it is the best and most effective response, proven time and time again across the world. Keep in mind also that another good way to counter this sort of QRM is to make good use of the repeaters.

Those who administer the various ITS repeater sites are aware of the problem and action is being taken.

Throughout the history of the Amateur Radio Service wherever there have been repeaters there has been interference. And DXers on HF for years on voice, CW and data have had to cope with hoax stations, swearing and yelling, and rogue operators. Just one single person can cause significant problems, so deliberate QRM (DQRM) in amateur radio bands is not exactly new.

Some of the earliest radio regulations in the United States were enacted after an incident involving the US Navy in 1915. As they experimented with using ship-to-ship radio, a rogue operator on shore started to give bogus instructions.

We all hope this issue on the ITS is resolved soon, but it's also a reality of the times in which we live.

Patron Saint of Amateur Radio

According to the Catholic church, St. Maximilian Kolbe is the patron saint of amateur radio operators. He is also considered the patron saint of political prisoners, families, drug addicts and journalists.

Maximilian Maria Kolbe was born in Poland in 1894 and ordained as a priest in the Franciscan order in 1918. He strongly opposed Communism and preached that 'hatred is not a creative force.' He founded a religious publishing house and a radio station, hence the connection to amateur radio. Between 1930 and 1936 he founded friaries in Japan and India, and returning to Poland in 1936 he was appointed superior at the Niepokalanów monastery, just west of the capital of Warsaw.

His friary was shut down by the Germans during the Second World War in 1941 and Fr. Kolbe was arrested by the Gestapo and taken to the Auschwitz concentration camp. Continuing to serve there as a priest he was subjected to harassment, beatings and lashings. In July of 1941 a prisoner escaped from Auschwitz. In response the deputy commander of the camp picked 10 men who would be starved to death. Fr. Kolbe volunteered to take the place of one of the 10 men, who had a wife and family. He died on August 14, 1941. The man whose life Fr. Kolbe saved survived the Holocaust and was present at St Maximilian's Kolbe's beatification in Rome by Pope John Paul II in 1982.



Fr. Kolbe, the Catholic Church's Patron Saint of Amateur Radio.

The Day after Hurricane Milton Hit Florida 'When all else fails'



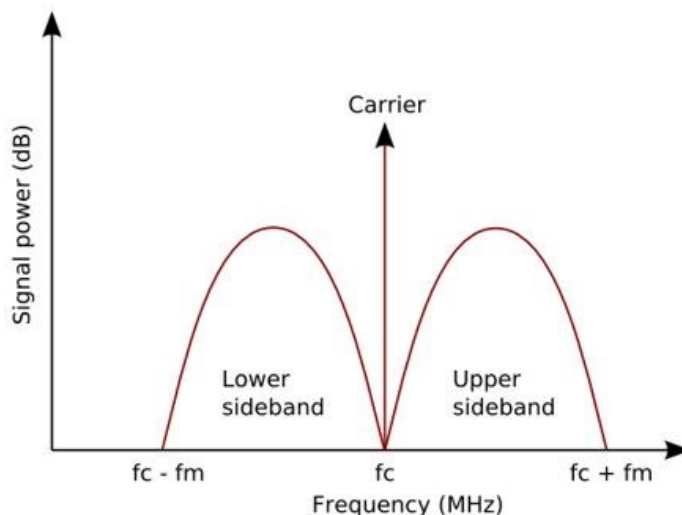
This is what the ARRL reported the day after devastating hurricane Milton hit Florida on Oct. 9.

"As Hurricane Milton moved across Florida, amateur radio operators volunteering through the Amateur Radio Emergency Service (ARES) were stationed in the State Emergency Operations Centre, in county EOCs, and at designated shelters in local communities. The volunteers utilized the Amateur Radio Service to provide a communications link that works when all else fails."

AM Jamboree



If, like many, you are a fan of Amplitude Modulation, that is using a carrier and both sidebands, then this year's Amplitude Modulation International (AMI) Jamboree 2024, which starts at dusk Nov. 29 and ends at dawn on Dec. 1, is for you! While Single Sideband is still an amplitude modulated transmission, the so-called AM transmissions use a carrier and both sidebands. In contrast single sideband – now the most popular speech mode on HF – has the carrier suppressed along with one of the sidebands to reduce the bandwidth of your transmitted signal.



This diagram shows a so-called AM transmission, complete with carrier and two sidebands. In a single sideband transmission the carrier is suppressed together with one of the sidebands thus reducing the bandwidth of the signal.

This AM event is not a contest but more of an opportunity to promote the use of AM modulation (double sideband plus carrier), camaraderie and friendship. Further information can be obtained from the AMI website at <https://www.aminternational.club/>.

NARA's Website:

<https://ve7na.ca/>



NARA Fall Basic Course



The NARA Fall Basic course is now in session. The course ends in early December with the option of an exam for attendees soon after. Information on NARA's training can be obtained from training@ve7na.ca.

Battery Technology



Almost every other day we read about how battery technology is improving. Panasonic has recently announced that its new 4,680 cylindrical automotive lithium-ion batteries offer substantial improvements over the more conventional 2,170 cells. The company claims that the new 4,680 cells possess five times the energy capacity of the 2,170 cell. This not only extends the driving range of EVs, but also reduces the number of cells required for the same battery pack capacity.



Panasonic's recently announced lithium-ion batteries.

The Satellite Downlink: ARISS SSTV Event and FT-4 via Linear Satellite - Bruce VE7PTN



In October there was a Slow Scan Television (SSTV) experiment that was broadcast from the International Space Station (ISS). SSTV events are transmitted from the ISS about three times per year. These can be a fun way to interact with the space station. Since a licence is not required to receive the transmissions, it can even be a great way for non-licensed people to benefit from amateur radio. Most of the SSTV events are transmitted from the Kenwood D710GA radio in the ISS Service Module. The transmission frequency is always 145.800 MHz (+/- 3.5 kHz Doppler shift) FM, using SSTV mode PD120. The ISS Service Module is one of the Russian-operated modules, so the SSTV events are usually Russian-themed. An operator who receives at least one image (even a partial or poor-quality image) may apply for a QSL certificate.

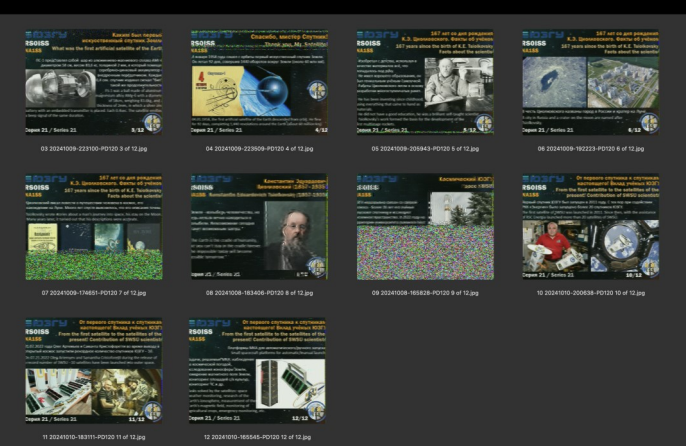
The October SSTV event was designated as "Series 21 SSTV Experiment", consisted of 12 images, and ran for one week. In PD120 mode, each SSTV image takes two minutes to transmit, then there is a two-minute break between the transmissions. So, on any given high elevation pass, three or four images may be received. At my QTH, my horizon to the southwest is restricted meaning that I could only get two or three images per pass. Also, I was only available to work the event for three of the seven days. However, over those three days I worked 13 passes. My equipment for tracking the space station, tuning the radio and decoding the SSTV was fully automated. So, I did not have to be at my station during every pass to receive images. In all I was able to receive 10 of the 12 images in the series, at least partially. Sadly, when I started working the passes, I had inadvertently left my radio in the noise reduction (NR) mode. I usually turn it off when working FM satellites and only use it for SSB satellites. When I am operating FM voice, the tin-can tonality of the NR setting is obvious, and I will switch it off quickly if I have left it on by mistake. But the NR impact on the SSTV signal was not obvious to my ear so I left it on for the first few passes. The images decoded when the NR was active were noticeably more blurry than usual. It was when I was trying to debug the cause of the poor images that I noticed the NR setting and disabled it. The images improved after that change.



A comparison of SSTV decoded with noise reduction enabled (on left) and disabled (on right) on the receiver. The image without noise reduction applied to the FM signal results in a clearer SSTV decode.

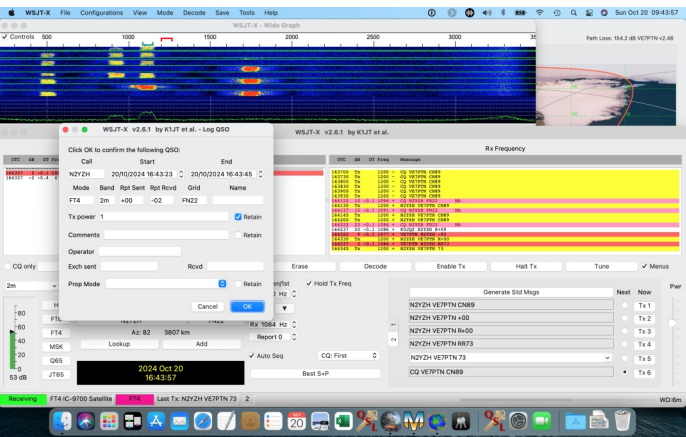
To participate in this SSTV experiment, I used my typical home satellite station which consists of a computer-controlled elevation/azimuth antenna system and ICOM IC-9700. I used Black Cat SSTV for Mac computers to decode and save the images (<https://www.blackcatsystems.com/software/sstv.html>). However, it is possible to receive ISS SSTV using a VHF handheld radio with the stock antenna SSTV using a VHF

handheld radio with the stock antenna. So, this activity is accessible to most amateur operators using existing equipment.



The best versions of each of the ten SSV images decoded by Bruce VE7PTN during the October ISS SSV experiment. Two of the images in the middle row appear to be cropped at the bottom. This is the result of the space station passing below the horizon.

There is a good how-to on the AMSAT UK website (<https://amsat-uk.org/beginners/iss-sstv/>). Because the SSV events are few and far between, it is helpful to follow the Facebook page “ARISS – Amateur Radio on the International Space Station” to have announcements appear in your Facebook feed. Alternatively, you can sign up for AMSAT News Service emails at <https://mailman.amsat.org/postorius/lists/ans.amsat.org/>. You do not have to be an AMSAT member to receive the News Service emails.



A screenshot of WSJT-X software showing Bruce VE7PTN’s first FT-4 QSO via satellite.

NARA Coffee Klatches ☕

Day	Frequency	Time	Location
Tuesday	Weekly	10:30 am	South end Smitty’s: #50 10 the Street
Thursday	3rd Thursday of the month	7:00 pm	Tim Hortons: 2320 Northfield Road
Saturday	Weekly	9:00 am	North end Smitty’s: 2980 North Island Hwy, the Rock City Centre

To wrap things up for this month, I have had success using the FT-4 digital mode for a QSO on a linear (SSB) satellite – on my first attempt even! As I mentioned last month, any SSB-capable satellite could allow for digital QSOs via WSJT-X and FT-4 seems to be the mode of choice for this. The configuration of software and gear to make this work was tricky but doable using online resources. I am still learning and experimenting with this mode on satellite. I plan to make this the topic of next month’s article. That’s all for this month. 73.

Region 3 IARU Meeting

Bangkok, Thailand, is the venue for the 19th International Amateur Radio Conference, which is being hosted by RAST (Radio Amateur Society of Thailand). The conference took place from Nov. 4 to 8 and had royal patronage from His Majesty the King of Thailand. The special event station HS19IARU will be on the air until Nov. 10.



The volunteer group of NARA members producing this newsletter would like to thank all those who provided material for this month’s issue.

The deadline for the **December** issue of the NARA Newsletter is noon on Wednesday November 27 with an intended publication date of November 30.

News items and comments should be mailed to:

news@ve7na.ca