

NARA Newsletter



President's Message – Randy VE7FAA

Happy New Year and the best to all for 2024. I hope you enjoyed the holidays in the company of friends and family.

In December I looked back at what NARA had achieved during 2023. We certainly had a good year, one which ended with mild weather. So, with the new year upon us, let's look forward to 2024.

As you can see from the list of upcoming Island events, NARA is on schedule to continue to be a very active amateur radio club. We have new members on the NARA executive, and coupled with input from members I look forward to our scheduled events and also any new ideas.

As you will read elsewhere, the NARA Training group has just helped seven students obtain their amateur radio call signs. As a result of this recent successful Basic course NARA now plans to make video recordings of their courses available to budding amateurs in the Nanaimo area. This expands the NARA training role to beyond a single autumn course.

I also hope that various NARA members will continue their POTA and SOTA activities which were so successful in 2023.

All members are of course welcome to join NARA activities. Please don't be shy, the club needs your support and feedback. The club meetings, coffee klatches, tech talks, projects, contests, Field Days, and public service events are yours to enjoy through 2024. Our next event is Winter Field Day in January, please come by and connect with us.

Again, the best for 2024 to a great group of radio amateurs.

NARA Coffee Klatches



Day	Frequency	Time	Location
Tuesday	Weekly	10:30 am	South end Smitty's: #50 10 th Street
Thursday	3 rd 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, in Rock City Centre

Island Events	Date	Sponsor
Winter Field Day	Jan. 27-28	NARA
Merville Flea Market	Apr. 21	Comox ARS
Field Day - ARRL	Jun. 22-23	NARA
Canada Day Contest	Jun. 30-Jul 1	NARA
NARA Picnic	Jul. TBA	NARA
Nanaimo Bathtub Race	Jul. TBA	NARA
NIARS Campout	Aug. 15-19	NIARS
Velo Unpaved Bike Race	Aug. TBA	NARA
Canada Winter Contest	Dec. TBA	NARA

Winter Field Day

NARA will hold Winter Field Day at Meadow Drive park in the Shady Mile/Jingle Pot Road area in central Nanaimo. Meadow Drive park is located West of Jingle Pot Road and coming from the North turn right onto Meadow Drive. Do come prepared for cold weather and bring a hot drink with you. NARA will take part in Winter Field Day just on the Saturday. More details will follow by email.



NARA Christmas Dinner - Dec. 14

The NARA Christmas dinner held at the 205 Collishaw Air Cadet site attracted some 35 members and guests. The overwhelming consensus of those present was that holding the event at this location as a potluck was indeed superior to going to a local restaurant.

Linda VE7JLO led a small group of volunteers (Jack and the Banman family) who prepared the room and the meal. NARA thanks all those who brought food items to share and who brought items for the food bank. The meal itself consisted of turkey and ham with a selection of roast and mashed potato, salads and vegetables. Alternatives included chili and buttered chicken, not forgetting a selection of sweets and Christmas cake.

The evening rounded off with about 20 door prize gifts. This event brought together many keen members of NARA. To those who were not able to be there, please consider attending next year. You missed a very congenial event. Thanks to Linda and all those who made this a special evening.



NARA's Christmas dinner held at the Collishaw Air Cadet site

How is DX – David VA7DXX

Nearly one hundred years ago, in December 1924, the astronomer Edwin Hubble announced that the spiral nebula Andromeda galaxy was in fact one of many galaxies in the universe, and not a part of the Milky Way as previously believed. This astounding breakthrough will be celebrated later this year and it is fitting that the first powerful spaceborne telescope bears the name Hubble.

Along the same celestial lines, there is a tenuous link to radio DX (long distance) perhaps, or perhaps not since radio is an essential part of astronomy, cosmology, and space exploration today. I hope that I have this right, but the Voyager 1 spacecraft, launched in 1977, is still sending radio signals back to earth at a distance of some 24 billion kilometers. NASA believes it has enough fuel for the Voyager 1 instruments to function until 2025. Its

last photo of earth, taken from nearly 4 billion miles away showing just a small blue dot, was taken in February 1990. In 2017 its thrusters were still operating. According to Space.com, the following systems still function on Voyager 1: the Cosmic Ray Subsystem, the Low-Energy Charged Particles instrument, the Magnetometer and the Plasma Wave Subsystem. That sort of DX makes earthbound radio signals seem rather short range, but back to reality!

For Nanaimo-based amateurs interested in working some good DX (less than 24 billion kilometers), there is an upcoming DXpedition to Clipperton Island, located only 4,530 kilometers from Vancouver Island in the Pacific Ocean to the south of Mexico. This is a really good radio path for Nanaimo-based operators. Clipperton is number 94 on the most-wanted list from the West coast. Of course, the West coast includes California so in reality Clipperton Island is likely higher on the wanted list for the Pacific Northwest, but we don't have that data.

With band conditions currently very good, Nanaimo-based amateurs even with modest antennas should have a really good shot at the Clipperton Island DXpedition.



The dates for this major DXpedition are Jan. 18 to Feb. 1. The call sign to be used is TX2S. If you are looking for this DXpedition on SSB here are the intended frequencies of operation: 3.790, 7.090, 14.195, 18.130, 21.285, 24.955 & 28.485 MHz. This DXpedition sports a 16-member team, made up mainly of Americans.

Bouvet Island in the south Atlantic was activated in January 2023, and despite some challenges this DXpedition managed to work some 9,000 unique stations.

In a major DX news release, Ken LA7GIA, who led the 2023 DXpedition to Bouvet, has announced another DXpedition to Bouvet Island planned for January 2025. They will use the call sign 3Y0K. The group says that they have 'unfinished business' and that many of the lessons learned from the 2023 trip will be applied to this next 2025 trip, including a smaller radio team, smaller gas generators, and far less equipment. However, this time the team will use some beams and amplifiers which will give us all a better chance to hear them. More on this later in the year when further plans have been developed.

As if the announcement to activate Bouvet again by the 3Y0K team is not enough, a rival team named the Rebel DX Group has also recently announced that they too will activate Bouvet, using the call sign 3Y0I. The Rebel DX Group has not given their dates and will only announce their DXpedition at the time of sailing. We do know however that January is the best time to land on Bouvet with its surrounding inhospitable seas, and its inhospitable terrain and climate. Bouvet remains at number 16 in the most-wanted list from the West coast.

In the same news release as the 3Y0K Bouvet DXpedition, Ken LA7GIA has announced another DXpedition, this time to Peter I Island, which is also a snow-covered uninhabited island in the South Atlantic which ranks number 14 on the West coast most wanted list. My own previous Peter I Island contacts bring back some amusing memories. I was living and working in Edmonton in February 2006 when the last Peter I Island DXpedition took place. Peter I Island is essentially south, and at the start of this DXpedition my HF beam rotator, having developed a fault, was stuck pointing west. Ouch! The very cold Edmonton winters prevented any attempt to fix the beam at the start of the DXpedition, so I reverted to my rather poor 80m antenna but eventually managed to work the 2006 DXpedition on the 80m band, which was at the time a new country for me. The Edmonton weather later warmed up to a balmy -2C and the rotator was fixed thanks to a good friend Paul VE6PDD (SK). I ended up working the 3Y0X DXpedition on four bands.

The proposed Peter I Island DXpedition for February 2026 includes a team of 19 operators and a two-week stay on the island. The vessel which has already been secured is a proper Antarctica vessel equipped with two helicopters. Landing on Peter I Island by helicopter is

apparently the way to go. Ken is leading this team, and the co-leaders will be Adrian KO8SCA, Cezar VE3LYC, and Dave WD5COV.



Peter I Island in the South Atlantic

Speaking of Cezar VE3LYC, he recently returned from a somewhat arduous solo DXpedition to Federated States of Micronesia in the western Pacific. Cezar activated two new islands for me, Satawal Atoll (OC-299) as V62S and Pulap Atoll (OC-155) as V62P. Travel between the islands in Micronesia proved to be unpredictable but Cezar completed his DXpedition with a total of 6,464 contacts, of which 67% were on CW and the rest on SSB.



Cezar VE3LYC activated both the Pulap and Satawal Atolls

During November and December there were a plethora of DXpeditions. Here are a few of them in picture form:



I dabbled in the ARRL 10m contest over the weekend of Dec. 9-10. I had intended to make a hundred or so

contacts on CW but the contest was so busy that I ended up with 460 on CW, and one on SSB was with the XYL of a friend who lives in Connecticut.

In January we can expect DXpeditions from: Honduras (HR9), Barbados (8P9CB), St Kitts & Nevis (V4), Montserrat (VP2MDX), Palau (T8), Ethiopia (ET3AA), St Helena (ZD7Z), Dominica (J79), Aruba (P4), Yemen (7O2WX), and as mentioned earlier Clipperton Island (TX5S).

Finally, a reminder that this month the Clipperton Island DXpedition is scheduled to start on Jan. 18 and be operational for 16 days. The call sign to be used will be TX5S and this DXpedition should provide strong signals into the Nanaimo area. Clipperton Island is an uninhabited coral atoll in the eastern Pacific Ocean, uninhabited except by sea birds and millions of crabs.



Clipperton Island, a good path from Nanaimo

Celebrating the Birth of Marconi

The HamAward Team has announced a Worldwide Award to celebrate the 150th anniversary of the birth of Guglielmo Marconi (April 25, 1874), often called ‘the father of radio.’ This award combines activity from special event stations around the world using the suffix WWA. The rules for this award can be found at https://www.qsl.net/va3rj/uploads/world_wide_award_2024_rules.pdf

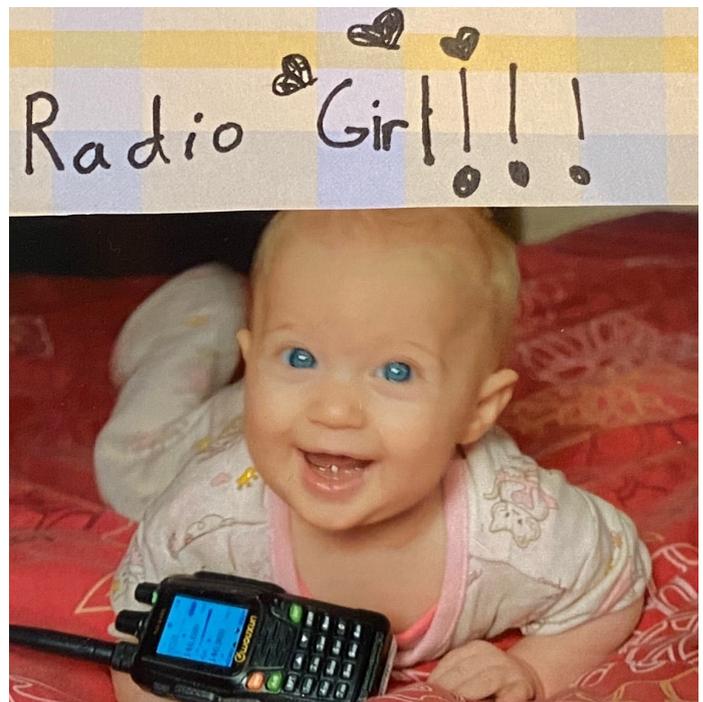


Guglielmo Marconi, 1874—1937

NARA Fall 2023 Basic Exam Course

So far, seven of the 10 students on the NARA Fall Basic course have taken the exam. All seven passed, with three intending to take the test later when time permits. Greg is now VE7GGH, Duane is VA7XDC, Dean is VA7VXT, Kim is VA7KXO, Mary-Lou is VA7LUU and Roger is now VA7TBG. Last, and by no means least, 9-year-old Annika Banman, who had her test administered at home by examiner David VA7DXX, now has the call sign VA7NNI (ANNI, get it?).

Well done to all who have passed and especially to Annika who is the youngest to pass the NARA course to date. With two keen radio amateur parents Annika was destined to get her call sign early. It is also fitting that Annika obtained her call sign during December, the month of YOTA (Youth on the Air).



Annika at 6 months, she was clearly destined to get her amateur radio call sign at an early age! Well done VA7NNI.

NARA Balloon Project

NARA is looking for a member to take charge of the balloon project this year on behalf of the club. If you are interested in managing this project please email NARA’s Executive Secretary, Devan VE7LSE, at ve7lse@gmail.com. Please provide any experience you might have which would help the project or with any questions.

Pactor 4 in the USA

New FCC rules for using Pactor 4 in the U.S. take effect next week, on Jan. 8. The American FCC has in effect eliminated the limitations on symbol rate or baud rate. In its place the commission has set a 2.8 KHz bandwidth for data transmissions, thus allowing the use of Pactor 4 on the HF bands for American operators. The emergency community in the U.S. has certainly welcomed this change. Use of Pactor 4 in Canada has never been an issue.

FEDERAL COMMUNICATIONS COMMISSION
47 CFR Part 97
[WT Docket No. 16–239; FCC 23–93; FR ID 188673]

Amateur Radio Service Rules To Permit Greater Flexibility in Data Communications

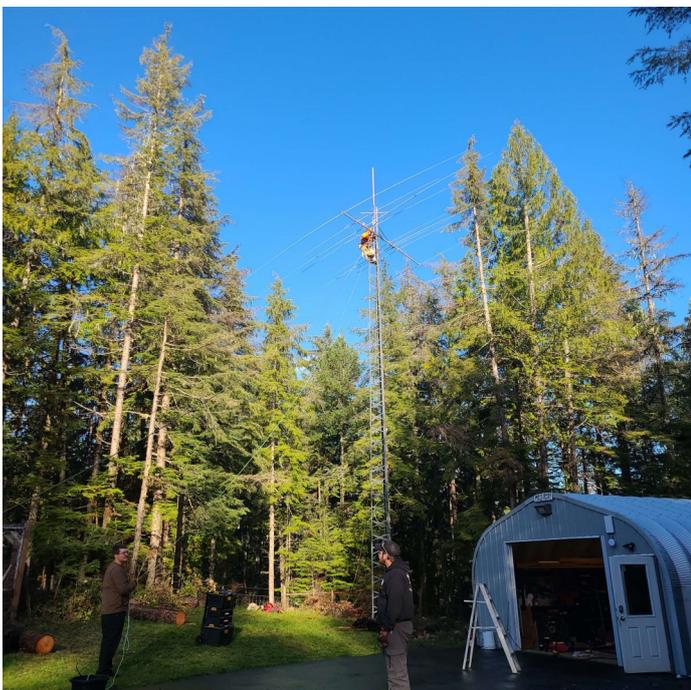
AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: In this document,

NARA Work Bees

Dec. 3 – Work bee at Mark VE7RMJ's QTH in Port Alberni for his HF beam and AREDN work. Thanks to Devan and Kevin.



VE7RMJ's new HF beam at Port Alberni

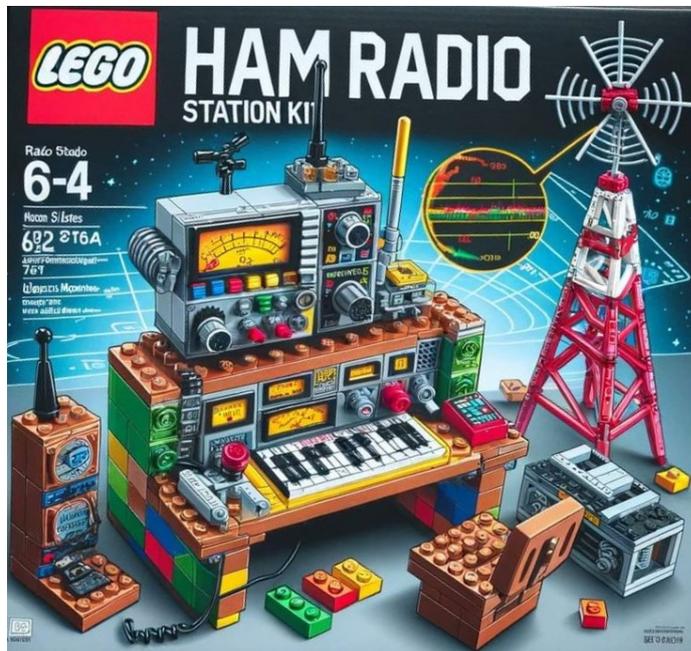
NARA's website is:

<http://www.ve7na.ca>

[Nanaimo Amateur Radio Association](http://www.ve7na.ca)

Lego – Who Knew?

LEGO, the Danish Company which makes those interlocking plastic bricks popular with children and adults, is well known for a variety of kits. But who knew that they made an amateur radio kit, pictured below. And when the NARA Newsletter team looked at this, we discovered that LEGO also had a Field Day setup. What we want to know is where is the LEGO NARA Newsletter crew kit?



The LEGO ham radio station kit



The LEGO field day

ITU World Radio Conference 2023 (WRC23) Dubai, UAE

The following report on the amateur radio outcome of WRC23 was written by the IARU Secretary Joel W5ZN and is reproduced below. Thanks to the IARU and Joel.

After four hectic weeks of the 2023 World Radiocommunication Conference (WRC-23), and a preceding week of Radiocommunication Assembly meetings, WRC-23 concluded on Friday, December 15. Amateur radio fared very well overall, despite the enormous pressures across the radio spectrum from LF to terahertz. This is a tribute to the effort of the International Amateur Radio Union (IARU) team, who at times had to work from 8:00 AM to as late as 2:00 AM the next morning, as well as on the weekends.

At the top of the amateur radio priority list was Agenda Item (AI) 9.1b, regarding the coexistence of the secondary amateur and amateur-satellite allocation with the primary radionavigation satellite service in the 1240 - 1300 MHz band. This had seen four years of strenuous effort prior to WRC and resulted in a recommendation being agreed upon at the Radiocommunication Assembly, followed by WRC-23 participants agreeing to mention the recommendation in a new footnote for the allocation. Both the recommendation and the footnote are an excellent outcome for the amateur services.

Other items were relevant to the amateur service and were prioritized beforehand:

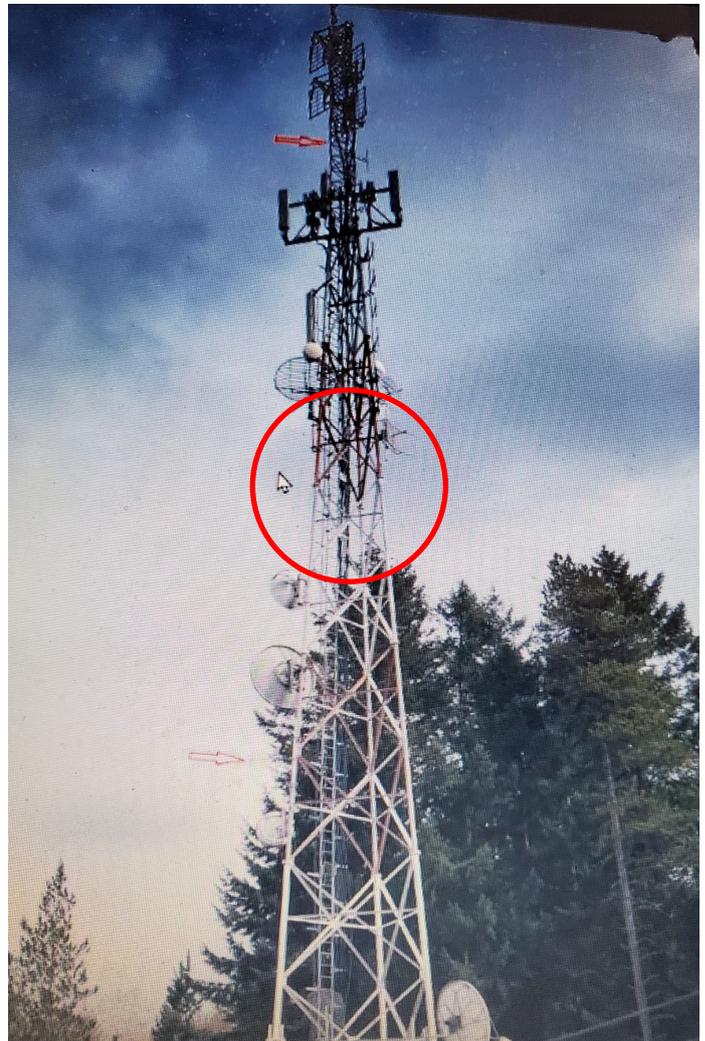
- ◆ **AI 1.12:** 40 - 50 MHz radar sounders. These are now largely limited to the polar area.
- ◆ **AI 1.14:** 231.5 - 252 GHz re-allocations for Earth sensing. Fortunately, our secondary 241 - 248 GHz allocation is unchanged, and the primary allocation of 248 - 250 GHz is unaffected.
- ◆ **AI 9.1a:** Space weather sensors was an item of major interest. A clear definition for such sensors was confirmed, with frequency protection being agreed upon as an agenda item for WRC-27.
- ◆ **AI 1.2:** More broadband in the 3.3 GHz and 10 GHz bands (in Region 2). This is a difficult challenge, as the amateur services are secondary with numerous (mainly South American) countries allocating mobile broadband by way of footnotes. Instead of a region-wide designation for IMT at 10.0 - 10.5 GHz in Region 2, there is a footnote limited to a dozen countries.

Every WRC agreed to an agenda for the next conference under AI 10. This AI had an unprecedented number of proposals for WRC-27 and preliminary ones for WRC-31. Following the relatively quick agreement on AI 9.1b, the IARU team switched most of its efforts to the following future proposals to reduce the impact on the amateur

services, as numerous amateur bands were under consideration.

AREDN Update

NARA has been working with Island Communications (located on Bowen Road in Nanaimo) to put up three 120-degree 5 GHz sector antennas at its Cottle Hill location. Which tower is to be used for the NARA antennas and the location on the towers has been decided. The next steps will happen when the weather improves in the spring.



The NARA 5 GHz sector antennas at Cottle Hill will be located at around the height shown by the red circle

The Satellite Downlink: Improving My Satellite Home Station with External Preamplifiers Bruce VE7PTN

Happy New Year all. This month I will discuss some options for improving a satellite home station (i.e., not a portable station). I will detail my results with applying one of the options at my QTH.

My home station is already very good as satellite setups go, but who doesn't want better? My station consists of an ICOM IC-9700 and M2 LEO (Low Earth Orbit) Pack antenna system (Figure 1) with an AlfaSpid RAS azimuth and elevation rotator. All my coax is LMR400 equivalent, with a run of about 75 feet between the antennas and rig. The 9700 produces plenty of transmit power for satellites, so no need to improve my output. Since my coax is already very good for the application, I decided to explore a few other options for improving my station's receive performance. Downlink readability is almost always the limiting factor for satellite operations. The options that I considered were:

- ◆ higher gain antennas
- ◆ polarity switches
- ◆ low noise amplifier (LNA) external preamplifiers



VE7PTN home station satellite antenna consisting of an M2 LEO Pack antenna system with an AlfaSpid RAS azimuth and elevation rotator. View is looking east towards Vancouver.

I could replace my antennas with their big brother units from M2. This would double the boom length and number of elements on each antenna. But the turning radius would be the same so they could fit my location. For UHF, according to the manufacturer ratings, my UHF gain should go from 11.16 dB to 13.36 dB. For VHF it would be from 7.06 to 10.2 dB. Modest increases, but at

a cost of around \$2,000 CAD it is the most expensive option. Although my wife has been extremely supportive of my radio hobby, including the installation of my satellite antennas in line-of-sight of our ocean view, doubling the size of the antennas would not be welcome.

My satellite antennas are a circularly polarized design. When assembling, the user must decide whether to connect the cables with righthand or lefthand polarization. Signal strength will be best when the ground-station polarization matches the satellite polarization. As the satellite transits the pass and tumbles, the polarization varies with respect to the ground station. So there is no way to predict what the optimal polarization will be. The result is that the ground-station experiences fading of the downlink for a period, usually less than a minute. Not a long time but given that a pass is only about 10 minutes for most satellites, and fading can occur at a critical moment for a QSO, the ability to change polarization quickly could be helpful. M2 sells remote-controllable polarity switches for both their VHF and UHF LEO antennas for about \$500 CAD each. I would need two, so the cost would be \$1,000. However, I would need to run additional coax for the control circuits. And the performance improvement would only occur during the brief fade periods where polarization is the cause. There are other causes for downlink fading so I am not sure how much of an issue this is for my station. Also, they would be unlikely to improve receive-performance when the signals are the weakest, the beginning and the ending of passes when the satellite is farthest away.

The third option, LNA external preamplifiers, seems to be a common approach for other operators. Club member Ward VE7CYA has installed a UHF external preamplifier at his station and says it is a game-changer for him on RS-44. So, I decided to take this approach to improve my station. The cost is similar to the polarization switches. The 9700 can power external amplifiers via the antenna coax so no additional cable is required for control. On UHF (usually the weakest downlink), such LNA units can provide about 20 dB of gain, a lot more than the 9700's internal preamps. For best results, the LNA should be installed close to the antenna, which means that they need to be weatherproof. To simplify switching between VHF-up/UHF-down satellites, and UHF-up/VHF-down, without having to power down the LNA on the transmit side, "VOX" models are available. These units will detect

the transmit signal and automatically switch the amplifier out of the signal path to protect its circuitry. The modest extra cost for this feature will save you the cost to replace a non-VOX LNA completely for that one time you forget to manually switch it off when it becomes the transmit side and it cooks. And for simplex satellites such as Greencube, it is essential to have the VOX model as you are transmitting and receiving on the same frequency.

There are several manufacturers for satellite optimized LNAs available. I went with a popular choice of JG HITECHNOLOGY of Italy (<https://www.ighitechnology.com/waterproof?lang=en>). I decided to get both UHF (JG-ULNA70VOX-E) and VHF (JG-ULNA2VOX-E) units from Italy for a cost of €450.00 (Euros), including shipping (\$700 CAD). In a few weeks they arrived from Italy without any additional duty or taxes owing, perhaps because the shipper listed them as “video game parts,” worth €20 (Euros) on the export documents! Before I cut into my nice coax at the antenna mast to install the necessary N-connectors to receive the units, I decided to do a test installation in the junction box just outside my shack space. I have lightning arrestors here, so it was a simple procedure to disconnect them and install the LNAs in their place.



VE7PTN home station antenna coax junction box (cover removed) showing temporary installation of LNA external preamplifiers and mode J filter (on LNA on right side)

With the units temporarily installed, it was time for some testing. I first tested the UHF unit on the Greencube packet satellite, which experiences prolonged fades during every pass. I am impressed with how the unit eliminates the fades. I can decode the digipeats almost 100% of the time on all the passes. I next tried RS-44, a linear SSB voice repeater. The LNA drastically increases the volume of the downlink making it much more readable, especially at the lower elevations. Unfortunately, when I transmitted, the VHF uplink signal completely overloads the UHF downlink. I had heard from other operators that this might be an issue. The third harmonic of the VHF uplink falls within the UHF downlink frequency band. So even though the third harmonic is relatively weak, it is much stronger than the satellite downlink, obliterating it within the LNA circuitry. I experimented with switching off the LNA manually during transmits and had some successful QSOs this way.

To fix the harmonic issue, I ordered the “Mode J” notch filter from PAR Electronics (<http://www.parelectronics.com/sat-amateur.php>) for \$235 CAD including shipping (plus another \$30 for duty and GST). Rather than a UHF band-pass filter, PAR recommends notch filters to exclude specific VHF frequency that is the problem. Each of these units is custom built for the buyer. I supplied them with the satellite frequencies that I most frequently use, and they optimized the configuration to null the most problematic VHF frequency range. When installed on the antenna side of the preamp, the issue was eliminated completely.

With the harmonic issue resolved on the UHF downlink, I did some further testing. RS-44 performance was great as expected. What did surprise me was how beneficial the external preamp was on the VHF-up/UHF-down FM satellite SO-50. With the more capable preamp I was able to hear the bird at the horizons much better. What would be an unreadable static signal with the internal preamp became a full quieting signal using the external preamp. For some reason I had assumed that the performance boost would only be useful for SSB, so was pleasantly surprised when it benefited FM satellites.

Most of the satellites that I work are VHF-up/UHF-down. This configuration performs better for manual Doppler correction. VHF is not very impacted by the Doppler effect so one may use a fixed uplink frequency. It is easy

to adjust the UHF frequency manually on the downlink guided by the audio cue of the drifting signal quality – just tune until the signal cleans up. Perhaps for this reason, the choice of the VHF-up/UHF-down configuration is popular with satellite builders. When I tested the external VHF preamp on a satellite with the opposite configuration, AO-91, I found that the UHF uplink caused a similar signal degradation on the VHF downlink that I had experienced on UHF downlink satellites. So I will need to chat with PAR Electronics again for a notch filter for the VHF RX side!

Now that I am confident with the performance improvements from the external preamps, my next step is to move them out of my junction box. When the weather dries up a bit, I will mount them at my antenna mast and cut into my coax to add the necessary N-connectors. Even though the preamps are weather-proof, I think I will enclose them in a box to keep the filter a bit protected from the elements.

In other news: I finally received a QSL card from NA1SS for my June 2022 QSO with astronaut Kjell Lindgren aboard the International Space Station (Figure 3). A keeper for sure! QSL cards for astronaut QSOs may be requested via the Radio Amateurs of Canada office in Ottawa. More details at the ARISS website: <https://www.ariss.org/qsl-cards.html>.

Well, that's all for another month. 73.



QSL card received by VE7PTN for contact with NA1SS, for his June 2022 QSO with astronaut Kjell Lindgren aboard the International Space Station

Mount Benson APRS Digipeater

The NARA APRS digipeater is presently on the air at Mason VE7PMD's location in Nanaimo. It is destined to be installed at the summit of Mount Benson when the weather permits later this year.

RAC Winter Contest — Dec. 29 & 30

The surprisingly clement winter weather in the mid-Island area in late December meant that VA7DXX's cabin was free of snow. Ease of access therefore made it the venue for NARA's RAC Winter Contest using the club call sign VE7NA.

There was a limited operation of some 11 hours, with one station, spread over the Friday evening and Saturday. Operators were Jack VE7GDE, Gerry VE7BGP, Burnie VE7IAD, with David VA7DXX making some contacts on 2m. Most of the contacts this year were on CW. The group had a visit from Chris VE7TOP on Saturday, but two other members who intended to operate were down with colds so could not make it. Despite conditions not being the best the contest was good fun as well as being a useful learning experience.



Burnie and Gerry operating on 20m CW

NARA Events for January

January 4 - NARA Executive Meeting (Zoom)

January 15 - NARA General Meeting (Zoom)

January 27 - Winter Field Day



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 February 2024 issue of the NARA Newsletter will be noon on Friday January 26 with an intended publication date of January 30.

News items and comments should be sent to:

news@ve7na.ca