

NARA Newsletter



President's Message – Randy VE7FAA

You wouldn't know it from this late winter blast as we go into March, but it will soon be spring.

Though all has been quiet for NARA since Winter Field Day, held at the club's new location, the 205 Collishaw air cadet squadron on Nanaimo Lakes Road, much is going on the background. Plans are afoot for group builds, Basic courses, tech talks, and of course this year's annual events.

One new club social function to mark on your calendar is the Ham Potluck Picnic, on July 15. It will be at the Bowen Park lower picnic shelter, off Wall Street. Details about the picnic and more are on the Upcoming Events section of the NARA webpage.

To get regular information on club happenings and notifications, check the club's Facebook page. You can also sign up to receive club emails on the website.

The last word is devoted to nets. The Saturday morning 220 net (224.040 t141.3), at 10:30, is now linked to the VA7DXH repeater on VHF (145.410 t141.3) as an experiment. A full list of nets is available on the NARA website. Please join in.

NARA Clothing

The next order for NARA clothing closes March 1, so if you want to order anything get your order in quickly. The NARA clothing line includes T-shirts, hoodies, and hats, all with the new NARA logo. You can have your own call sign added to many of the clothing items.

To view the items available go to the NARA website (www.ve7na.ca), click on 'membership' and then 'membership purchases'. Contact Lanaya VE7NAY to order (ve7nay@outlook.com).

High Altitude Balloons

In February high-altitude balloons hit the headlines, and while a large 200-foot Chinese balloon quietly sailed across parts of southern BC for the most part unnoticed, it caused quite a tizzy in the US.

High-altitude amateur radio balloons are used for experimental purposes. Most carry trackers of some type, typically APRS trackers on VHF, or WSPR on HF, with transmitters providing the balloon's QTH and altitude. Most of these amateur radio balloons reach at least 60,000 feet.

Two types of balloons are used in this amateur radio experimentation. Some that are powered by short-duration batteries carry experiments up to around 100,000 feet, the balloon bursts and the equipment lands by parachute. This type of balloon can typically travel 100 miles on the upper winds for a few hours and are then recovered by chase teams. Apart from APRS trackers, these balloon payloads may include cameras, crossband repeaters and beacons. The second type of amateur balloon, typically called pica-balloons, use low-power WSPR transmitters running on solar power. They can drift around the planet for months.

One expert estimated that around 1,000 weather balloons are launched every day around the globe. One high-altitude balloon manufacturer in Florida said, "at any given moment, thousands of balloons are above the Earth, including many used in the United States by government agencies, military forces, independent researchers and hobbyists."

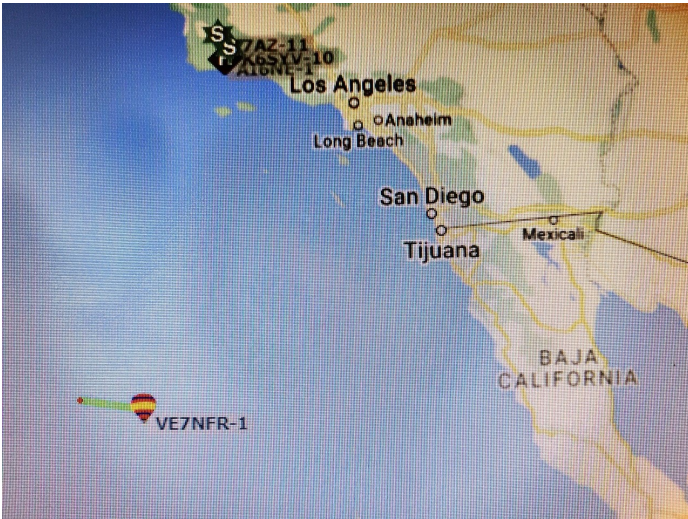


Amateur radio high altitude ham balloons as of Feb. 1, 2023

It now appears that the balloon shot down over the Yukon on Feb. 11 was an amateur radio pico-balloon owned by an amateur radio group called the Northern Illinois Bottlecap Balloon Brigade. The WSPR balloon, with

call sign K9YO-15, was in the area at the time of the shoot-down at the same height as reported by the US Air Force, and this balloon has not reappeared on the air.

In more balloon news, the North Fraser ARC launched an APRS balloon VE7NFR-1 from Maple Ridge at around 2 pm on Feb. 24. Almost one day later the balloon was South of the Mexican border, southwest of San Diego.



The location of the VE7NFR-1 APRS balloon on Feb. 25, one day after its launch, next stop across the USA to Africa!

NARA is holding a balloon planning meeting on Saturday, March 11, at 4 pm by Zoom, details will follow by email.

With four balloons shot down after entering busy North American airspace one wonders if we may see drone-like federal restrictions or increased control – if not a potential ban – on future hobbyist balloon activity.

Turkey Earthquake

The 7.8 magnitude Feb. 6 earthquake which hit parts of Turkey, Syria and neighboring countries caused a shocking amount of destruction, as news photos show.

A large number of buildings collapsed with an associated unimaginable loss of life and injuries. Radio amateurs have been assisting with emergency communication mainly on the VHF bands, but HF transmissions were also heard on 28.540 MHz. Other HF frequencies which could be used in IARU Region 2 include 3.777 and 7.092 MHz.

There are also reports of amateur radio assistance being provided within Syria though not much information is known.

A tough reminder to keep our own emergency plans, for comms and otherwise, in mind and up to date.

How is DX – David VA7DXX

In March we can expect a lot more DXpeditions, many it seems focused on the Caribbean, a relatively easy shot from Nanaimo. These include Curacao (PJ2), Sint Martin (PJ7AA), Turks & Caicos (VP5), St Kitts & Nevia (V4), Martinique FM), Montserrat (VP2MEI) and Saba & St Eustatius (PJ5). Other planned Dxpeditons include Ogasawara (JD1) and the Dominical Republic (HIOLT).

The Bouvet 3Y0J Dxpediton is a rather special case since it activated one of the most challenging of DX locations on the planet. Working big DXpeditions with their large pile ups is always a challenge and Bouvet was no exception, both for those of us trying to work them and the DXpedition members.

The 3Y0J team on Bouvet, as anticipated, had problems getting their equipment onto the island due to very harsh conditions. Dangerous beach landings were accomplished by holding onto a line attached to a buoy and floating 15 meters in rough surf to the beach while dressed in survival suits. All of the equipment had to be floated onto the island this way and then carried 800 feet up to the camp. As a result, none of the heavier equipment could reach the island and the team had to rethink their activities. All that they managed to get onto the island, radio-wise, was a small Honda generator, two 100W radios and simple antennas; no beams or high power.



One of the team in their bulky survival suits

The propagation models – I looked at two different ones – suggested that propagation should have been possible from Nanaimo to Bouvet on all bands from 30m to 10m. Different bands would be open at certain times of the day and for differing periods of time. What the propagation models did not take into account was the location of the 3Y0J campsite on Bouvet Island, located on the south-east side of the island at Cape Fir. A 780-meter high mountain within four kilometers of the campsite (with the ground rising all the way from the camp) between 3Y0J and North America was clearly an issue. In practice, the 3Y0J 30m signals were audible into the southern US; but into the Pacific northwest signals on modest wire antennas were extremely low with much lower signal strengths than expected.



The location of the 3Y0J campsite on the SE side of Bouvet island, showing the difficult terrain

After several days of really hard work the Bouvet team finally got on the air on Feb. 6. At that time I could not hear them, and DXer friends in the UK I checked with could not either. Later that same day the Bouvet team

moved to 30m CW and I started to hear a very weak signal which was below my noise and difficult to read. At around 8 pm our time their signal started to build a little and at that stage I managed to complete a CW QSO. Undoubtedly one of the most difficult CW contacts I have ever made, with very low signal strengths and regrettably much deliberate QRM. At the time the 3Y0J signal was so weak that I was only able to read about 70 per cent of what was being sent. But when 3Y0J replied to me I thought I heard my complete call sign quite clearly. Imagination perhaps? About half an hour after my contact the 3Y0J signal came up in strength to 539. The strongest that I ever heard 3Y0J on 30m CW was 549 on Feb. 9, when the solar flux exceeded 300. On all other bands I never heard anything on CW at all. I know of one other station on Vancouver Island, VE7CT, who also made a 30m contact with 3Y0J.



The 3Y0J operating tent. Notice that the group were not able to get tables or chairs onto the island.

The 3Y0J operation from Bouvet presented the team with a dangerous beach landing plus weather and terrain issues. The DXpedition closed down on Feb. 13, an earlier date than had been planned. At that time the DXpedition had made some 2,073 CW contacts with North America, of which 1,438 were on the 30m band, largely in the Southern US. In all only 13.9 per cent of 3Y0J's contacts were with North America.

Those of us who have been on serious DXpeditions to much easier island locations know the effort that goes into planning, logistics and operations. Full marks for a stunning effort by the 3Y0J team for organizing this DXpedition, and for their ingenuity in rethinking their options for this highly sought after DX location. Some 9,500 stations around the globe made contacts.



On Friday Feb. 24 the team made it safely back to Cape Town and were greeted by a number of South African amateurs

There is another group, the Intrepid DX group, considering another Bouvet Island DXpedition. It will be interesting indeed to hear their plans.

Comox Valley ARS – Swap Meet

The Comox Valley Amateur Radio Society is holding a swap meet on April 16. The location is the Merville Hall at 1245 Fenwick Road, off Highway 19A, where it was held previously. Sellers wanting tables should contact sells795@telus.net, cost is \$20 per table. Setup is at 8:30 am and the doors open to the public at 10 am.

Ham Radio Operators, We Need Your Help During Solar Eclipses

NASA - Ham Radio operators, we're calling you! Members of the Ham Radio Science Citizen Investigation (HamSCI) will be making radio contacts during the 2023 and 2024 North American eclipses, probing the Earth's ionosphere. It will be a fun, friendly event with a competitive element—and you're invited to participate.

Both amateur and professional broadcasters have been sending and receiving radio signals around the Earth for over a century. Such communication is possible due to interactions between our Sun and the ionosphere, the ionized region of the Earth's atmosphere located roughly 80 to 1000 km overhead.

The upcoming eclipses (October 14, 2023, and April 8, 2024) provide unique opportunities to study these interactions. As you and other HamSCI members transmit, receive, and record signals across the radio spectrum during the eclipse, you will create valuable data to test computer models of the ionosphere. (Taken from <https://science.nasa.gov/science-news/citizenscience/>

ham-radio-operators-we-need-your-help-during-solar-eclipses).

For more detail, go to <https://hamsci.org/festivals-eclipse-ionospheric-science>

Getting Started with Satellite Operations (Part 4): Gearing Up by Bruce VE7PTN

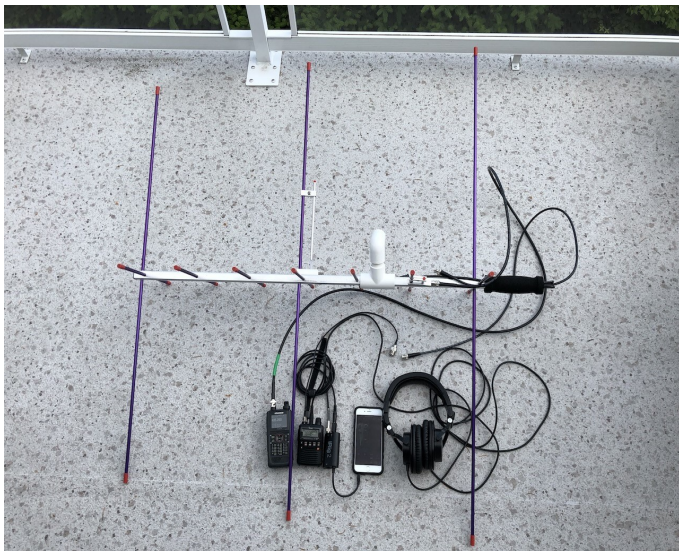
Welcome to the fourth article in my series on operating amateur radio satellites. I sincerely hope that you have had some success with satellite operation using the information from the previous articles. And if you tried but have not been successful, hang in there! In the previous articles I assumed that you did not have any gear that was specific to operating satellites. In this month's article I will cover some options for satellite-specific gear, antennas in particular. So, if you have not been successful some gear acquisition might be in order to improve your setup.

As far as transceivers go, most decent quality VHF/UHF dual-band units are more than capable of working FM satellites. If you have access to one or two such dual-banders, then there is probably not much needed in this department (sorry to say). But do pay attention to how your radio is interfaced with your antenna. If it is necessary to adapt your transceiver antenna connection to your satellite antenna, make sure to use good quality and reliable adaptors. It may sound obvious, but the satellite downlinks are very low power so any weak link in your transmission line will degrade your results. I am speaking from experience here; my earliest attempts were thwarted by what turned out to be an intermittent adaptor. What might work fine when sitting on the test bench may not work when you are waving your handheld antenna at the sky!

If you are itching to buy a satellite-specific transceiver or two, consider getting units that support all modes (not just FM) and that have a waterfall display. These features will be useful when you move onto linear satellites as they require single-sideband and some frequency hunting. When it comes to satellite operation, there is really no better radio than the Icom IC-9700 with its dedicated satellite mode (supporting full duplex). It is small enough to be used portable and has the higher power capability needed to work linear satellites from horizon to horizon for those DX contacts. Other popular options are two all-mode Yaesu FT-818s (one for TX, one

for RX) or two Icom IC-705s (a little more power than the Yaesu though double the price).

If you are into the do-it-yourself route, check out this article on cheap home-built antennas for satellites by Kent Britain, WA5VJB (<https://www.wa5vjb.com/references/Cheap%20Antennas-LEOs.pdf>). I don't have personal experience with these, but they come highly recommended by NARA member John Corlett, VE7JAC. If you already have an Icom IC-9700 and would like to add a dedicated base station satellite antenna, a great option is the LEO-Pack antenna system by M2 Antenna Systems (<https://www.m2inc.com/FGLEOPACK>). This is a great antenna system and, unlike handheld antennas, it can handle the full transmit power of the IC-9700. Note that if you join AMSAT you can purchase the LEO-Pack at reduced price and provide AMSAT with support at the same time. See this link for details: <https://www.amsat.org/product/m2-leo-pack-antenna-system/>. Sadly, the free shipping offer is not available outside the USA, so budget an additional \$200 for shipping, brokerage, and duty. It does come unassembled so also be prepared for a challenging and technical assembly procedure.



The Arrow II handheld antenna with a two-radio and recording setup.

To take full advantage of your base station antenna you will need to be able to point it. There are a couple of options here: an azimuth/elevation rotator (Az/EI) or an azimuth-only rotator with fixed antenna elevation. The Az/EI option is the deluxe one for sure as it allows you to point your antenna directly at a passing satellite for best signal strength. The Yaesu G-5500 is the most popular choice (<https://www.yaesu.com/indexVS.cfm?cmd=DisplayProducts&ProdCatID=104&encProdID=79A8>

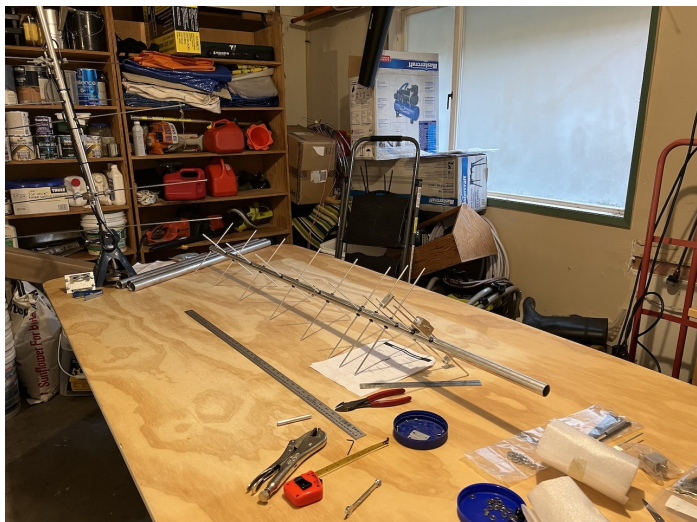
9CEC477AA3B819EE02831F3FD5B8). The G-5500 requires a separate interface unit for the controller. The best option for this is the S.A.T. Controller by CSN Technologies: <http://www.csntechnologies.net/sat>. My preferred Az/EI rotator is the Alfa Radio RAS (<http://www.alfaradio.ca>) for its solid design and included computer interfacing with the controller. If you already have an azimuth-only rotator, then using this with a fixed elevation of about 30 degrees will allow you to work most satellite passes. For coax I recommend using LMR 400 or equivalent to maintain good transmission from the antenna to your shack, especially for the UHF side. (There are antenna-mounted pre-amps available that will allow you to compensate for lossy coax.)



Getting started on the M2 LEO Antenna System assembly; the VHF array is half built, the remaining parts are on the right.

It is possible to manually steer your antenna rotator during a pass. But if you have gone to the trouble of getting an Icom IC-9700, M2 LEO-Pack and an Az/EI rotator, adding computer control is a no-brainer. Since most operators already have one or more computers in their shack, you likely only need satellite-tracking software. This software will look after tracking satellite position, tuning you radio to the specific uplink and downlink frequencies – including Doppler correction – and aiming your antenna via the rotator. If you use a PC, then the popular choice is SatPC32 (<http://www.dk1tb.de/indexeng.htm>). If you use a Mac then it's MacDoppler (<https://www.dogparksoftware.com/MacDoppler.html>). Licences for either of these are available via the AMSAT store as with the M2 antenna. If you get the S.A.T. Controller, it includes built-in satellite tracking software that will work with both PC and Mac computer platforms.

In researching antenna options, you may come across satellite “eggbeater” antennas. They may sound tempting as they can be hidden in your attic and do not require a rotator. Again, I do not have personal experience with these but from what I hear from other operators they are not worth the price – the performance is too poor to be useful



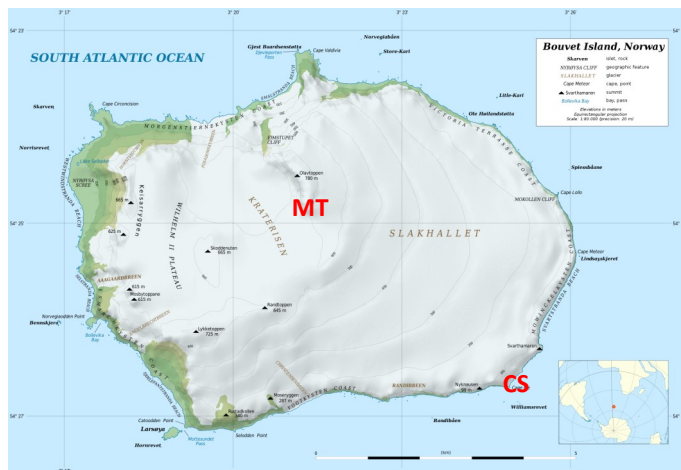
Completing assembly of the M2 LEO Antenna System; the VHF array is in a holder on the left and the mostly complete UHF array is in the center.

Time to wrap things up for another month. I hope you now have some ideas for gearing up. The best investment will be an Arrow II or a home-built Yagi. Even if you eventually outgrow these and want a base station, they will still be useful for portable operation. Good luck operating. Next month’s article will introduce linear satellite operation.

2023 Vancouver Island Amateur Radio Events

Event	Date	NARA Coordinator
Merville Flea market	April 16	Comox ARS
Field Day	June 25/26	
Canada Day	June 30 to July 1	
NARA picnic	July 15	VE7PMD
Bathtub Race	July 23	
NIARS Campout	August 17-22	NIARS
V I E	August 25	
Velo Unpaved Bike Race	August 26	VA7DXX
Ham Happenings	September 16	
Sweepstakes contest	November 18	
Canada Winter	December	

Some additional 3Y0J pictures from this extraordinary DXpedition



The 3Y0J Campsite at Cape Fir was located on the SE side of the island is shown by the letters CS. Towards North America the site was screened by a 780m mountain (MT) which clearly reduced signal strengths on most bands. It seemed that only the 30m band gave reasonable propagation into the Pacific North West



Members of the 3Y0J team in their survival suits having just come ashore from the difficult beach landings. All the equipment which the team were able to get onto the island was floated ashore inside survival suits for safety

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

The NARA newsletter is normally published on the last Friday of the month preceding the month of issue.

News items and comments should be mailed to:

news@ve7na.ca