



President's Message – Randy VE7FAA

December is the time to look back over the past 12 months to see what NARA has achieved.

The club celebrated its 75th anniversary year in style, including a special event call sign, VX7NA, used mainly on Field Day and the Canada Day contest. Our wide range of activities included regular meetings, Winter Field Day, ARRL Field Day, the RAC Canada Day contest, summer BBQ, NVIS tests, Ham Happenings, progress with the new VE7NA station at the 205 Collishaw Air Cadet site, the fall Basic course and many work bees to help members with antennas, and of course this Newsletter. Many NARA members also attended the popular North Island Amateur Radio Society summer camp out and work bee. NARA and its members have done well in 2023.

And we still have another upcoming celebration. This month NARA will host a Christmas dinner on Dec. 14 instead of the normal monthly meeting. Further details are included in this NARA Newsletter and more information will be circulated by email.

As we all revel in the Christmas and the New Year season I would like to thank all club members for their support and participation, and in particular those who have helped to organize club events in the past year.

I look forward to seeing all of you at club activities in 2024.

Wishing you all the compliments of the season.

NARA's 2023 AGM

NARA's Annual General Meeting took place on Thursday, Nov. 9. As of that date the new NARA executive is: President, Randy VE7FAA; vice president, Jack VE7GDE; secretary, Devan VE7LSE; treasurer, Chris VE7TOP. Directors are Darryl VA7DDU, Mason VE7PMD, and Brandon VE7TZB. Randy and Chris were acclaimed, and Darryl and Brandon are new to the executive. NARA thanks Steve VE7TTF and Ward VE7CYA for their past work as directors on the executive.

NARA Membership Renewals

A reminder that if you have not yet renewed your NARA membership, renewals for NARA are due. Membership is \$30 per individual per year, and family membership is \$45. Repeater membership is \$10. Membership dues for 2024 can be made by e-transfer to NARAETRANS413@gmail.com or by PayPal or credit/debit card. For the latter go to the club's website at ve7na.ca/join-now. You can also pay by cash or cheque to NARA via the club's treasurer, Chris VE7TOP.

Christmas Dinner - Dec. 14



This is the last call for NARA's 2023 Christmas dinner, which is on Thursday, Dec.14. It is being held at the new VE7NA station, the 205 Collishaw Air Cadet site, 719 Nanaimo Lakes Road. For full information watch your email for the latest update. Please advise NARA at nara.ve7na@gmail.com if you plan to attend.

RAC Winter Contest - Dec. 29 & 30

The Canada Winter Contest will be held either at David VA7DXX's cabin near Ladysmith or the new VE7NA club station at 205 Collishaw Air Cadet site. A decision on which venue will be used will be made a few days before the contest, depending on weather and/or progress at air cadet site. Watch your email. This year's RAC Winter Contest starts at 4 pm (Pacific) on Friday, Dec. 29 and runs for 24 hours. The RAC Winter Contest is somewhat relaxed, and so an ideal way to gain some contest experience. If you want to help out the VE7NA entry or plan to attend, please email NARA's secretary Devan VE7LSE at ve7lse@gmail.com.

Winter Field Day



Next year's Winter Field Day is being held over the weekend of Jan. 27-28. NARA has not yet selected a site for Winter Field Day so watch the January NARA Newsletter and your email for further information. Winter Field Day can be fun so warm clothing and lots of hot Tim Hortons coffee is the order of the day!

ARRL 2023 ARRL Field Day Results

Remember back to the June ARRL field Day and the glorious weather that NARA members and visitors enjoyed? In the December 2023 issue of QST, the ARRL magazine, the results from Field Day were published and NARA, operating in the 5A class, did very well. In terms of contacts it was second in BC, but first some numbers from the ARRL for those that entered in North America:

Overall number of operators involved: 31,300

Percentage of stations in the 'A' Class: 28.6%

Entries in the 'A' Class: 1,271

Entries in the 5A class: 87

In the 5A class NARA came 26th in North America. Although it is not fair to compare different clubs in BC in terms of the number of operators, equipment/antennas, and mode split, here are some results in the group of stations running no more than 100 watts:

Club	Call	QSOs	Pts	Points
CARESS/BARC/ NWARC/VECTOR	VE7SCC	1,338	30	5,382
Delta ARS	VE7SUN	750	32	4,048
Nanaimo ARA	VX7NA	1,005	24	3,448
Maple Ridge ARC	VE7CMR	316	5	1,204
Sunshine Coast ARC	VE7SCA	28	8	1,036
Comox Valley ARC	VE7CVW	329	33	1,922
Cowichan Valley ARS	VE7CVA	126	10	680

Although NARA achieved its best-ever field day performance in some decades, Field Day is not about contacts or points. It is about establishing stations in the field, using emergency power and, well, having fun and enjoying the company. Still NARA's plan to have five stations available worked out well. Next year the club really does need more members to actually operate the stations. Field day is such a great way to get your contest operating feet wet! Again, thanks to all the members who operated and to the visitors who helped to make the 2023 field day such a success (Don come back next year, you know who you are).

Woss Work Bee

Devan VE7LSE and Kevin VE7KGV travelled up to the Woss repeater site on Saturday, Nov. 11 for some

last-minute essential work on the Island Trunk System repeater there before serious winter snow settled in. They camped overnight in the Sayward area. The main work was to install four new batteries in the battery bank, check the repeater transmitter and add voltage telemetry to the APRS transmitter. Success all round!



The new batteries installed at the Woss ITS repeater site

USA data mode changes Factor 4

The US Federal Communications Commission will likely amend amateur radio service regulations in the United States to replace the baud rate limit on the amateur HF bands, with a 2.8 kHz bandwidth limit to permit greater flexibility in data communications. The change, which may happen after a public comment period, aligns more with the Canadian system of limiting transmissions by bandwidth and would also permit Factor 4 to be used on the HF Bands in the United States, where using Factor 4 is currently prohibited. The proposed change will allow higher transmission speeds for data and is especially welcomed for emergency communications.

Tech-Talk - Nov. 18

A tech-talk on connectors given by Jack and Randy was more of a relaxed and informative tech-chat than a talk. Coaxial and DC connectors were discussed at some length. Five NARA members attended this worthwhile session.

AREDN Update

Nanaimo amateurs who use AREDN will be delighted to hear that Orv W6BI, a prime mover in AREDN on the West coast, plans to visit Nanaimo in May. NARA may arrange a get-together with him during his visit.

Island Communications in Nanaimo has agreed to allow NARA to put up three sector antennas at their Cottle Hill site. When the antennas are installed this site will provide an additional 5 GHz coverage around the Nanaimo area. In addition, the Coast Emergency Communications Association (CECA) has agreed that NARA can put a couple of sector antennas on their mast at the Vancouver Island University library, which presently supports the antenna for their 70cm repeater VA7VIU. The aim is to complete most of this work in the spring of 2024.

It has also been reported that signals from the recently activated VE7KU AREDN node have been received in Courtenay. The AREDN network is certainly growing.

Worked All States On the 33 cm band

Not many imagine that the popular Worked All (US) States award can be achieved on the 33 cm band, which is 902-928 MHz. However, the first ever 33 cm WAS certificate has just been awarded to Albert W5LUA (Texas). His 33 cm station consists of a 5m dish running 400 watts.



The first ever Worked All States award for the 33 cm band

NARA Fall Basic Exam Course

The NARA fall Basic course concludes with the last session on Dec. 6, followed by exams soon after. The last session, on Interference, is being presented by Devan VE7LSE and Katherine VA7HN. Thanks also to David VA7DXX for his many training sessions and to Mike VA7WPM for his training and course coordination.

How is DX – David VA7DXX

Look for several DXpeditions on the air during December. These include: British Virgin Islands (VP2VMM), Micronesia (V6EU), St Vincent & Grenadines (J87TT) and Rodrigues Island (3B9AT).

Expect the VP2VMM DXpedition from the British Virgin Islands to be active in the ARRL 10m contest Dec. 9-10. This 48-hour ARRL 10m contest is always fun, and with conditions so good on the upper HF bands (most days) it should produce some interesting results. Full details can be found at <http://www.arrl.org/10-meter>.

The V6EU DXpedition to the Federated States of Micronesia will take place from Dec. 4 to 16, with a group of four radio amateurs from Germany operating. They intend to operate two stations from Chuuk Island on all bands from 160 to 10m.



Chuuk Island/State is one of the four states of the Federated States of Micronesia.

J87TT will operate from the island of St. Vincent from Dec. 26 to Jan. 5. Gert van Loo PA2LO will operate on 40 to 6m using all modes.

The 3B9AT DXpedition to Rodrigues Island in the Indian Ocean is a long haul from Nanaimo but at number 90 on the most-wanted list from the West coast, still a good catch. Two Italian operators plan to operate from Dec. 27 to Jan. 6 on the 40 to 10m bands using CW, FT8, and SSB. This inhabited island is about 18 km long and eight km across at its widest point. A British group of amateurs did operate from Rodrigues Island during November. They were there primarily for the CQ WW CW contest and I did work the group on 20m CW.

In November there was a surprise DXpedition announced to Yemen with only a few days notice. Yemen is not activated very often and I have not personally worked Yemen for 23 years. Two amateurs,

Ken LA7GIA (who led the DXpedition to Bouvet earlier this year) and Shani HA5DDX operated as 8O7AD (Ken) and 7O8AE (Shani) from Socotra Island which is some 400 Km off Yemen's south coast. Because of weight restrictions on their travel, they were only running 100 watts. On their first day of operation their CW signal on 15m was 539, not strong but perfectly readable. Although I heard 8O7AD sounding weak on several bands, I did not work him but I did manage to work a subsequent Yemen operation, 7O73T, on 30m and 40m. There is yet another DXpedition to Yemen starting Jan. 25, by Vlad OK2WX, who will sign 7O2WX. Yemen is presently at number 18 on the most-wanted list from the West coast.



The operating tent for 7O73T on Socotra Island, Yemen

Breaking news is not really a thing in the DX world, but in late November Krish W4VKU announced that he was heading to the Lakshadweep Islands (prefix VU7) and would be using the call sign VU7A from Dec. 4 to about Dec. 10. This will be an SSB and FT8 DXpedition only. After the VU7 activity Krish will head for VU4 and expects to operate from the Andaman and Nicobar Islands from about Dec. 16 to 26. Both locations represent rare DX.

In solar news there was a double whammy with two CMEs (coronal mass ejections) hitting Earth on Nov. 4 and 5. This double impact caused a strong G3-class geomagnetic storm with very strong auroral activity on our morning of Nov. 4, a Saturday. The auroral activity dissipated during the day but then built again during our evening. Needless to say HF radio conditions suffered on the Saturday. Yet another CME arrived on Nov. 11, Remembrance Day, with even more expected to arrive in early December.

Most of the experts, including NOAA (National Oceanic & Atmospheric Administration), are now saying that the

latest solar data suggests that Solar cycle 25 will occur earlier, be stronger, and last longer than was previously predicted. Good news for HF enthusiasts. The upper HF bands remain in very good shape on most days, and good long distance contacts are taking place even by stations using modest antennas. Season's greetings.

NARA Work Bees - VE7NA & VE7SUM

- ◆ **Oct. 27** – More work on the access panels for the antenna, CAT6, and rotator cables by Randy & Jack.
- ◆ **Nov. 4** – Finalizing work on the last section of the Trylon tower.
- ◆ **Nov. 19** – Antenna work at Jim VE7SUM's location in Nanaimo. The work on the roof was done by Devan VE7LSE and Kevin VE7KGV, with onlookers Gerry VE7BGP, David VA7DXX, and later Mason VE7PMD. A long wire antenna will give Jim some HF band coverage in addition to the 2m/70cm vertical antenna.
- ◆ **Nov. 25** – Jack VE7GDE and David VA7DXX arranged to put up the VE7NA wire antenna which will cover the 80/40/30m bands. They were assisted by Randy VE7FAA, Chris VE7TOP, and Mason VE7PMD.



Putting in the grounding rods at VE7NA and finalizing the antenna, rotator cables and CAT 5 entry boxes

VE7SUM's new VHF/UHF antenna, plus the house mounting pole for the long wire HF antenna

QSL Matters - OQRS

This month we will look at how you can obtain a physical QSL card from most DXpeditions using the online OQRS system.

Once a DXpedition is over you can of course complete your own QSL card and mail it off to the assigned QSL manager for the DXpedition, along with a reply envelope with say \$5 US dollars. In the past IRCs (International Reply Coupons) were all the rage. You could buy IRCs from your local post office and send these to other parts of the world to pay for the return postage. Because IRCs are no longer available, the American dollar (USD) is now used as international currency between radio amateurs. Of course, to obtain US dollars you likely need to go to your local bank. There is, however, a much easier way to request a QSL card on-line. The system is called OQRS which stands for 'Online QSL Request.'

Some DXpeditions set up their own OQRS system but most DXpeditions use systems set up by two organizations from the UK. One is called 'Clublog', operated by G7VJR, and the other is 'OQRS' operated by M0URX. Both systems work much the same way. They are both web-based systems but for this description we will use the ClubLog system, which seems to be the most popular.

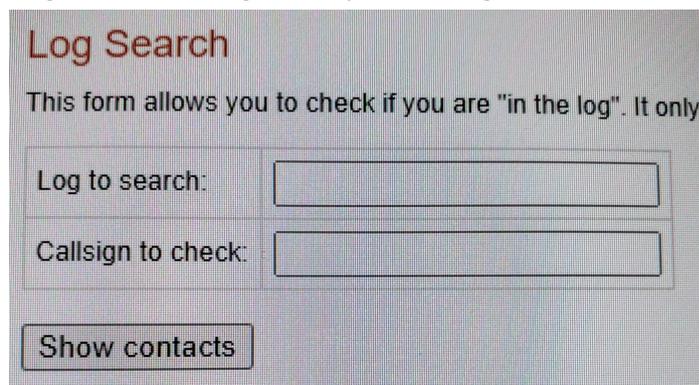
To use Clublog you first need to register on the system to obtain a username, typically your own call sign or email address and set a password. In any web browser type in <https://clublog.org/loginform.php> and on that page look for "Register new account," which is in red lettering, and click on those words. When you have read a few lines of advice simply click on the box which starts off "I have read the messages above," etc., which is under the heading "Ready to sign up."

You will be asked for your name, email address, a password, and to verify that you are not a robot. The rest is plain sailing. Once you have registered your Clublog account you can use that OQRS system.

It's worth saying now that Clublog is not just for DXpeditions. Many stations in rare DX locations also use Clublog; it is easier to use Clublog to obtain a QSL card than sending one off yourself.

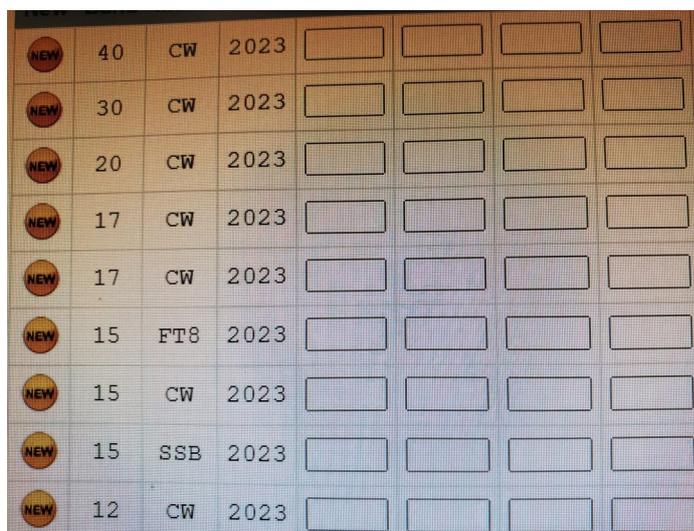
Let's say you have worked a DXpedition, the DXpedition is over and the designated QSL manager for the DXpedition has activated the OQRS system on Clublog.

Go to <https://clublog.org/logsearch.php> and enter the 'Log to search' and (your) 'callsign to check.'



Here you enter the call sign of the station you worked together with your own call sign to check

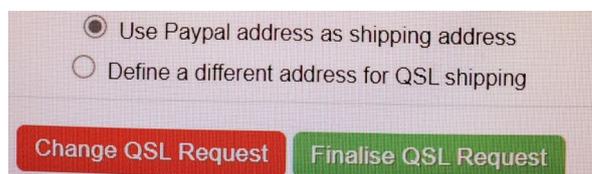
When you have entered the call sign of the DX station and your own callsign, click on the button which says 'Show contacts', and a list of the contacts in the DX stations log will appear.



An example of the type of grid which appears for the contacts you have made with the DX station

Now is the time to check your logbook and in Clublog type in the month, day, hours and minutes that you worked the DX station by each band/mode to confirm your contacts.

Once you have entered all of the QSO details you will be able to select card delivery via either the QSL bureau or a direct card to your address. You will be asked to pay in US dollars for this service. You can use PayPal if you have an account. This is typically a rather less expensive and a quicker way to get a QSL card than by sending your own card via airmail and enclosing some US dollars.

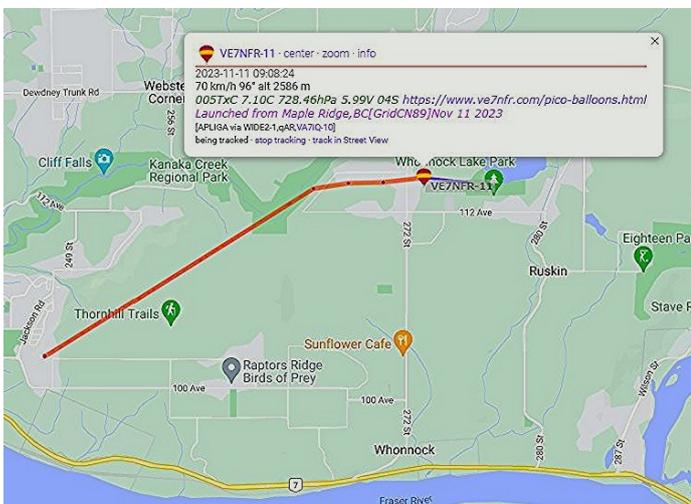


NFARC Balloon Launch

Saturday, Nov. 11, saw the launch of a hydrogen balloon with call sign VE7NFR-11 from Maple Ridge by the North Fraser ARC. This was a straight up-and-down balloon carrying an APRS beacon with a cross-band FM repeater with 70cms input and 2m output.

The flight time was expected to be about 1.5 hours, with the balloon landing in the Okanagan. While the cross-band FM repeater worked perfectly, the APRS beacon unfortunately failed during the ascent, so further tracking was not possible. The balloon chase team reported that the repeater was a strong signal after the balloon landed but unfortunately the batteries gave out and the balloon and equipment could not be located.

For those interested in supporting the launch of further balloons by the North Fraser ARC there is a GoFundMe link at www.ve7nfr.com/pico-balloons.



The location of VE7NFR-11 shortly after launch

Mount Benson APRS Digipeater

NARA has obtained permission to set up an APRS digipeater at the top of Mount Benson. From the top of Mount Benson, at some 1,023m above sea level, the range of the digipeater will be considerable and around 150 km to sea level. For that reason NARA will only be using a few watts of power from this elevated site. The main reason for using Mount Benson for APRS is to provide better coverage in the back country to the west of Nanaimo. NARA thanks Sulo VE7SUL and Island Communications, which will multi-couple NARA's APRS digipeater transmitter/receiver into an existing 2m antenna. At present the transmitter is soak testing at a location in Nanaimo. Once NARA has completed the station testing it will be moved to Mount Benson,

probably in the spring of 2024. Thanks also to NARA director Mason VE7PMD for spearheading this project.

ITU World Radio Conference 2023 (WRC23) Dubai, UAE 50 MHz & 23cm

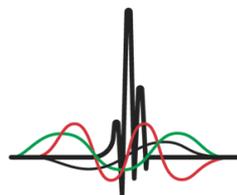
WRCs are held every three to four years to review, amend, and potentially update the International Radio Regulations, the treaty which governs the use of the radio spectrum on a worldwide basis. The 2023 WRC started Nov. 20 and runs to Dec. 15 in Dubai in the United Arab Emirates. The UAE amateur radio prefix is A6.

Two topics at this WRC are of particular interest to the amateur radio community, the protection of radio-navigation satellites (RNSS) in 1240-1300MHz band and the use of space-borne radar sounders in the 40-50 MHz band. With respect to the space-borne radar devices the IARU is concerned that these wideband transmissions could cause issues in the adjacent 50MHz weak-signal DX segment of the 6m band.

It is worth noting that the IARU (International Amateur Radio Union) has been preparing for this WRC 2023 conference for four years through its involvement with working parties, study groups and papers, a considerable amount of work by dedicated volunteers. Exactly how these two issues will develop for the Amateur Radio Service will be known at the end of the WRC23.

The IARU, which links all of the national radio societies together and interfaces with the ITU, is an essential organization which helps to protect our amateur radio bands. IARU President Tim Ellen VE6SH has been at WRC23 to head up and support the IARU team, which includes RAC, which is in attendance.

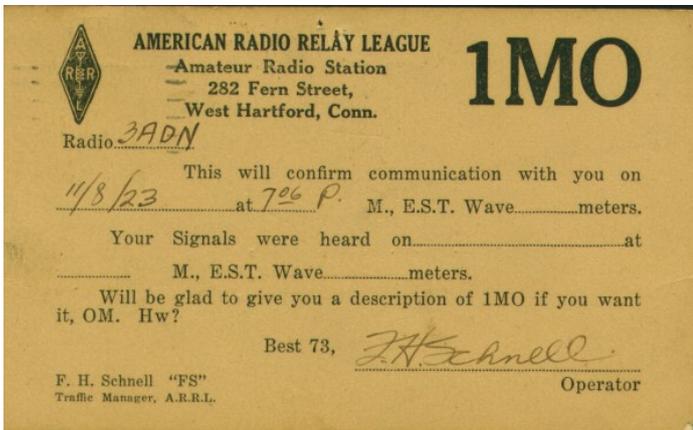
If you want to support this essential work of the IARU please join your national radio association, in our case Radio Amateurs of Canada. Without our radio bands and the work to protect them there would either be no amateur radio or it would be so compromised as to be nearly futile.



ITUWRC
DUBAI 2023

100th Anniversary - First Transatlantic Amateur Radio Contact

On Nov. 27 we celebrated the first ever two-way transatlantic amateur radio contact, which took place in 1923. The contact took place between American amateur Fred Schnell 1MO and French amateur Leon Deloy 8AB. The French station TM6AL is presently on the air to celebrate this milestone.



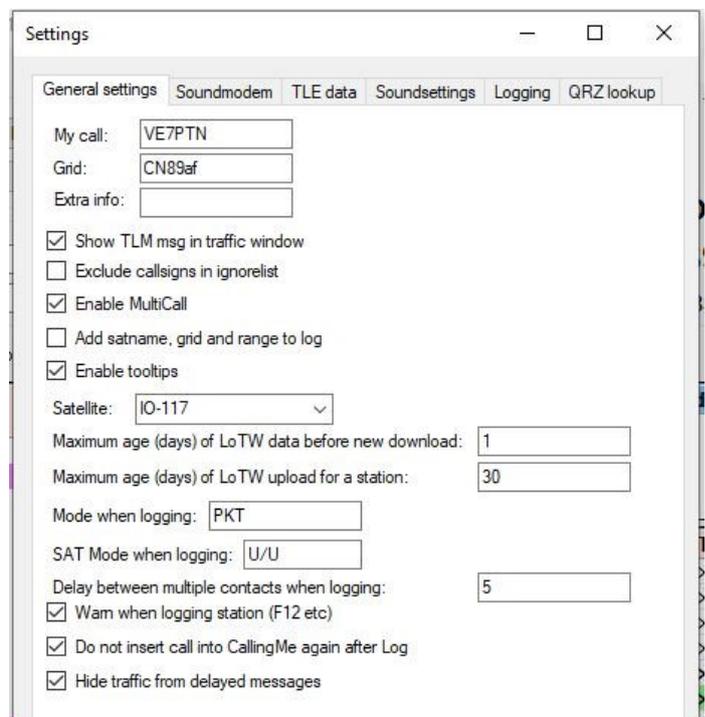
Fred Schnell's QSL card confirming the first amateur radio transatlantic contact

The Satellite Downlink: Configuring for and Operating the Greencube (IO-117) Satellite – Part 3 Bruce VE7PTN

This month I will continue the series on how to get set up and work the Greencube (IO-117) packet satellite. I hope you have been successful with all the technical details so far. There is only one more piece of software to install and then you will be ready to operate.

The last piece of software to install is the user terminal one. There are a couple options for this and, as I mentioned in the October article, I recommend the excellent software written by Carsten OZ9AAR. It is loaded with helpful features that will make your Greencube sessions very productive. He updates the software frequently so new features are being added all the time. You can get the software from his website: <https://moonbounce.dk/hamradio/greencube-terminal-program.html>. He has recently added some YouTube videos on setup and features. He does a great job of covering Soundmodem and Greencube Terminal initial setup, with some explanation about the reasons for his selections. The first video is quite long so you might want to scrub to 19:30, the start of the settings details.

Once you have downloaded and installed Carsten's terminal software, there is a little configuration to do. With the program running, select Settings then Program Settings. On the General Settings tab, enter your call sign and six-character Maidenhead grid locator. The rest of the default settings are OK for now but check out Figure 1 for a shot of my settings. On the Logging tab, you can setup how the logging of contacts should go. This is well covered in Carsten's first video (starting at 28:00). I have ADIF file logging enabled and selected for the call sign lookup. I find this handy because I often operate portable and POTA so I can create a new ADIF file for each logging session (e.g. each POTA entity and UTC Day). The program lets me know which is a new call sign and which is a dupe that I have already worked in that file. I also have ALog logging enabled but not used for lookup. I use ALog to create a handy ADIF export for importing in my main logging software on my Mac. ALog adds some fields to the ADIF export that are useful. This workflow works better for me than just importing a section of the sparse ADIF created by Greencube Terminal.



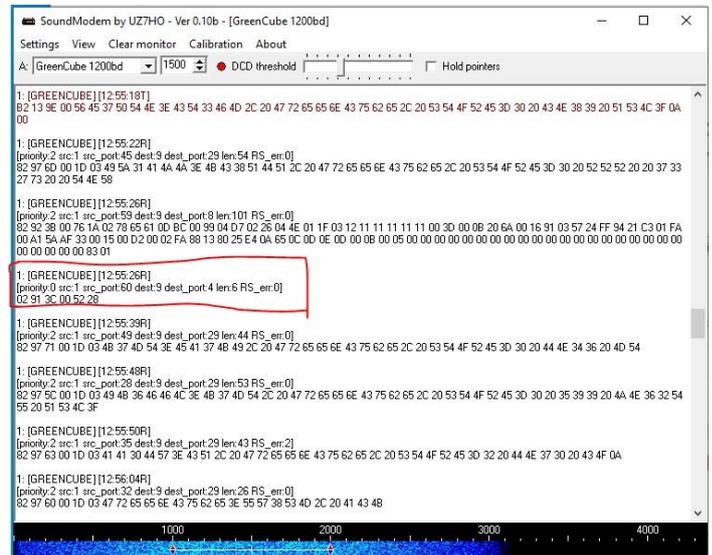
My Greencube Terminal Settings / General Settings tab. Most settings are the defaults except for "Show TLM msg..." and "Enable Multicall".

There are more Greencube Terminal settings that you can customize. But for now I recommend that you get operating and adjust them later. As with any new satellite operation you should start by listening. I'll say it again: unless you are receiving (and in this case, also

decoding) there is no point in transmitting. A nice thing about Greencube is that the passes are long, giving lots of time to experiment. Do check the AMSAT status page (<https://www.amsat.org/status/>) before operating to confirm that Greencube (listed as IO-117) is operational at the time (blue markers). Look for a pass with good visibility from your QTH to ensure a strong downlink for getting started. When you are ready to operate, start your tracking software, then Soundmodem, then Greencube Terminal, and finally, any logging software that you will be using. Confirm that "IO-117" is selected as the active satellite in Terminal. Once everything is configured correctly, and as soon as Greencube is visible to your station, you should hear packages being digipeated. Look at the Soundmodem waterfall display and confirm that the downlink signal is centered around the 1500 mark. If not, you will need to adjust your downlink frequency. You can do this via your tracking software or via the RIT adjustment on your radio. Once the downlink is strong enough, you should see the packages being decoded in the Terminal traffic window. If you don't see any decodes but you are hearing the downlink strongly, you will need to review the Soundmodem and Greencube Terminal settings to make sure that you have everything correct. Check the Soundmodem monitor display to confirm that decodes are happening there. The Soundmodem decodes are not very human-readable. But these are handed over to Terminal for interpretation and display in its traffic window. If there are no decodes in Soundmodem then there will be nothing for Terminal to interpret. If there are decodes in Soundmodem but not Terminal, check the IP Address, KISS Port and AGWPE Port settings in both programs to make sure that they are appropriate for your setup. (If you have a typical setup then the default settings will be fine.) You can confirm that Terminal is communicating with Soundmodem by looking in Terminal at the status bar below the traffic window. It will display "Soundmodem connected" here when the connection is established.

See Figure 2 for a shot of the Soundmodem monitor window with packet message examples. The short one is an incomplete message that was interrupted by something. If you are not seeing any "full" decodes in Soundmodem (like the longer ones in Figure 2) there may be a problem with the CAT settings in your tracking software. If the tracking software is changing your radio's

receive frequency too often, then it will be disrupting the digipeats. For successful decoding the radio must not change frequency during a digipeat reception in order for the tone to remain stable for Soundmodem. The frequency should change about every 10 seconds when the satellite is at its peak. More frequent than this will mean lots of disrupted digipeats. Your tracking software will have a setting where you can adjust what change in Doppler adjustment will trigger a CAT update to the radio frequency. In SatPC32ISS, this setting is on the SAT Tuning screen. An interval of 50 Hz is good. This is within Soundmodem's tolerance for off-frequency decoding.



The Soundmodem monitor window with packet message examples. The top message in the brown text is an outgoing transmission, the rest are received packets. Note the abbreviated packet in the middle (outlined in red); this packet was interrupted and not fully decoded. This might have been caused by my radio adjusting receive frequency at that moment.

While the decodes are happening in Terminal, watch the traffic to get a feel for the QSO exchange. On a pass that is **not** overloaded with too many stations, you will see a digipeat every few seconds. On a pass that is overloaded (e.g., Europe in the footprint), the digipeats will occur **less** often. This is because the satellite is overwhelmed by all the doubled transmissions and cannot understand any single transmission well enough to digipeat. So you will see the digipeat interval drop to about 10 seconds or longer. Also note the signal quality percentage that is displayed in the Delay column of the traffic window. The higher the percentage, the better the signal strength of the downlink. You may see some significant fading of the downlink every few minutes where the signal quality

percentage that is displayed in the Delay column of the traffic window. The higher the percentage, the better the signal strength of the downlink. You may see some significant fading of the downlink every few minutes where the signal quality drops to zero. This is normal and when operating you will just need to wait these out. With a poor antenna setup, these fades will be more frequent and severe. If you have "Show TLM msg in traffic window" enabled in General Settings, you will see telemetry messages from the satellite every 40 seconds (more frequently on some passes). Even if the satellite pass is overloaded, you will still see these messages.

Initially, Terminal will probably be quite "chatty" as it has lots of new stations and grids to tell you about. If you find the voice feedback a bit overwhelming at this stage (I did), you may want to disable it temporarily. You can do this in Terminal via Settings/Program Settings on the Soundsettings tab; clear the checkmark on "Enable new callsign message". This is a good point to review your font settings in Terminal and adjust the Settings/Set font screens to suit your eyes and computer monitor.

Now that you are decoding digipeats you are ready to start transmitting. This stage might be a bit problematic as success is dependent on a few factors: having all the software, computer and radio settings correct, and being heard by the satellite. The most challenging is being heard by the satellite. Since it has a very large footprint, you will often be competing with many other stations at any given moment. To make things easier I recommend that you start with a pass that **does not** include Europe in the footprint. This means a pass that starts from our southern or western direction. Northern or eastern passes are very busy with European stations (see Figure 3 for footprint). You can type anything you want to send in the MSG (message) field in Terminal. For best results keep your messages as short as possible, this minimizes the airtime that you are using and will be the most successful at getting heard and digipeated. Lengthy messages are more likely to collide with another station's call and not get digipeated. A basic QSO goes like this (as appears in the traffic window):

- me: From "VE7PTN" To "CQ" Message "CN89"
- them: From "[their call sign]" To "VE7PTN" Message "[their grid] QSL?"
- me: From "VE7PTN" To "[their call sign]" Message "QSL CN89"

- them: From "[their call sign]" To "VE7PTN" Message "TU 73" (or "RR logged")

That's it. Their "TU" or "RR" message to confirm receipt of my QSL is not *really* necessary. If they did not see my QSL then they will just call again when they see me communicating with another station. Most operators assume that when they see their own QSL message digipeated that the other station has also seen it and will log the QSO.

Be prepared to be very popular when you first get digipeated. Many stations are waiting for a "new guy" to show up and will pounce immediately when they see your digipeat. Thankfully, Carsten has written some great features into Greencube that will allow you to respond quickly. Rather than manually typing your messages for each transmission, use the shortcut buttons at the top of the Terminal screen. See Figure 4 for a table of my recommended settings for these (right-click on a button to customize it).

Get started with transmitting by sending a CQ message ("CQ" in the To field and your grid in the MSG field). If you have setup a CQ shortcut button, click the button to transmit. Keep an eye on your radio's meter display during transmit to make sure that the ALC triggering is low and SWR is acceptable. (If ALC is too high, adjust input audio level as appropriate for your radio; on the IC-9700 this is the MOD Input / USB MOD Level.) If Greencube heard your transmission, you will see your message digipeated within about three seconds. If it is not digipeated (very common) then one of these situations has occurred:

- your transmission collided with that of another station;
- your output power level is too low;
- propagation to/from the satellite has faded (look for low signal quality figure in Terminal);

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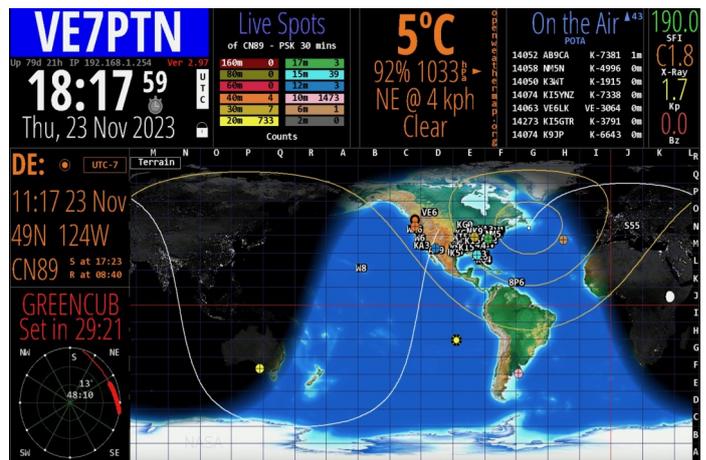
- your transmit frequency is not appropriate (e.g., wrong frequency selection or incorrect Doppler adjustment);
- there is a problem with your configuration that is corrupting the Soundmodem output to the radio (monitor the transmit audio on the radio to confirm that it sounds similar to downlink packet audio).

If your software and radio configurations are OK (i.e., you have the recommended settings based on appropriate references for your gear) then the most likely culprit is a collision with another station. Try transmitting again. If you are on a pass that is not overloaded, it should work. If not, experiment with different uplink frequencies. My trick for being heard is to transmit immediately after a downlink arrives. Soundmodem has a handy feature where it delays going in to transmit while it is receiving a package. So as soon as I hear an incoming package I hit transmit. My reasoning is that I know that the satellite will just have switched from transmit back to receive when my uplink signal arrives and is less likely to collide with another station. This technique has another couple of benefits: when the satellite is busy I am not contributing to the overload as much as I would if I were transmitting between downlinks, and I am less likely to miss an incoming packet because I know the satellite is listening and not transmitting.

When your CQ is successfully digipeated you will start to receive calls from other stations. Terminal puts a list of these stations in the Calling Me window, to the top-right of the traffic window. It orders the stations by how soon they will lose the satellite. Double-click on the top station and then click the QSL shortcut button to transmit your reply. Watch for your reply to be digipeated. Obviously if it is not digipeated then you were not heard and need to retransmit (the F11: Send Message button resends the previous message). Keep repeating your transmission every few seconds until you are digipeated. Once it is digipeated, log that station (via the right-click popup menu in the Calling Me window) and move on to the next station.

Greencube Terminal has a “multi-call” feature where it allows you to select more than one station in the Calling Me window (control-click to select). Then you click a shortcut button to send a single transmission to multiple stations. This can be an efficient way to respond to

multiple callers in a short time. However, this feature only works if the other stations are also using Greencube Terminal. You can distinguish which stations are using Terminal by whether they appear as bold text in the Calling Me (and Dupelist) window. So, you should only multi-select stations that appear as bolded text.



A screen shot from HamCLOCK with a pass for IO-117. The satellite location is the white dot in the yellow concentric circles, with the outermost yellow line indicating the overall footprint. Note that this is east of Nanaimo and includes much of Europe and North America, so a good candidate for an overloaded pass. It will be difficult to get digipeated on such a pass due to the large amount of traffic.

Once you are comfortable with being the CQ station you can try initiating a call to another station. Watch the Dupelist window for a station of interest and click on that station. Note that when you do, DXCC information appears near the bottom middle of the Terminal screen. Double-click the station to load its call sign into the To field and then click your “QSL?” shortcut to initiate the call. As above, watch for your transmission to be digipeated and periodically repeat until it is. Then wait for the other station to call you. When they do you can log them and move on, or you can send a 73 reply.

Another interesting Greencube Terminal feature is the Statistics display (top center). Here you can see the unique call signs during a pass and several other statistics. You can see an analysis of your “digipeat success”, that is what percentage of your transmissions were heard and digipeated by Greencube. On a busy pass I am often below 20%... and so is everyone else. On a quiet pass, or at least until Europe gets in the footprint, I can be 75% and above.

To finish up this month’s topic I will end with some Greencube etiquette advice. Since the satellite is so

popular you should do what you can to not overload a pass and earn a LID distinction.

- Be patient and do not needlessly repeat calls. This seems obvious, but it is the No. 1 transgression that I see and the main complaint about stations seen on X (formerly Twitter). If you call a station (especially a popular one that everyone else is also calling), **do not** repeat your call once you see it digipeated. Trust that your call sign is now in that station’s Calling Me list and they will reply when they can. You can keep an eye on the Dupelist to see when that station appears at the top, meaning it was just digipeated, and then look in the traffic window to see the message. If it is a CQ then go ahead and repeat your call. But if it is a reply to another station, wait your turn.
- Keep your transmissions as short as possible to minimize the time it takes the satellite to digipeat it – milliseconds count here. This means using appropriate ham radio abbreviations such as “QSL” and avoiding superfluous content like your name and location (other than grid). Sure, if it is a quiet pass (i.e., every packet you send is digipeated on the first try) go ahead and get chatting. Late night passes to the west and/or south are good for this. Funny story: On one such pass my cat jumped on my radio desk and landed on my keyboard, hitting the shortcut that I had setup for “CQ POTA”. That transmission was digipeated, telling all stations that I was operating in a park, which I was not. So I immediately sent a message “NOT POTA; CAT ON KYBD”. This triggered humorous replies from other stations.
- Use the multi-call feature to reply when multiple stations are calling you and they are also using Greencube Terminal (i.e., bolded call signs in Calling Me window).
- On busy passes, limit your calls to a few QSOs. It’s just common courtesy to allow room for other users. Also avoid extra transmissions like “73” once you have a QSL from the other station. I know this might seem rude, we Canadians do like to say “thank you” after all. But every digipeat that I get is one that someone else did not. So best to keep my transmission to what is necessary to complete the QSO. That said, I do see some

stations that will repeat their QSL to me until I send a 73 or RR. So, some flexibility is required here.

- Promptly upload QSOs to Logbook of the World. Almost all Greencube operators use LoTW and are expecting your electronic QSL via this system. You can see an indicator in the Dupelist of a station’s LoTW status.

Shortcut Button	Label	Message	To call	TX Delay	Explanatory Notes
F1	CQ	[MYGRID4]	CQ	0	"[MYGRID4]" gets replaced with the first four characters of your grid from General Settings
F2	QSL	QSL [MYGRID4]	(blank)	0	the To Call will get automatically filled with each use
F3	QSL?	[MYGRID4] QSL?	(blank)	0	my first message when I reply to a CQ
F4	TU 73	TU 73	(blank)	0	Means "thank you"; is useful to confirm that you saw someone's QSL or QSL? when they ask
F5	R Log	R Logged	(blank)	0	Means "Roger and I have logged QSO"; is useful when they ask if you have logged the QSO
F6	GRID	[MYGRID4]	(blank)	0	A brief alternative to QSL or QSL? when satellite is very busy (I find it confusing when I receive just a grid from someone and prefer QSL or QSL? So I know whether they are answering or asking)
F7	LoTW	TU 73 LoTW Op: Bruce	(blank)	0	A verbose alternative to TU 73 or R Logged meaning "I will log our QSO to Logbook of the World" (I will use this when I get a question about LoTW logging or an operator gives their name)

A table with my transmission Shortcut settings for Greencube Terminal. Note that I have the TX Delay set to zero in all cases. This is the recommended and most common setting for this variable. Any value greater than zero will cause Greencube to store your digipeat for that many seconds before transmitting it (called “store and forward”).

Well, that’s all for another month. Thank you so much for sticking with me in this Greencube series. I look forward to working you on this interesting bird. Merry Christmas and 73.



Youth on the Air

YOTA Callsigns

December 2023 is devoted to YOTA or Youth On the Air. Expect to hear many stations from around the world with the suffix YOTA and if you hear one please call. Some of the callsigns you might hear include: 3V8CB/ YOTA, 4X1YOTA, 8N2YOTA, 9M2YOTA, A91YOTA, AO23YOTA, CO0YOTA, CQ7YOTA, DQ23YOTA, E2YOTA, E71YOTA, BG23YOTA, HA6YOTA, HG0YOTA, HL0YOTA, K8Y, LR1YOPTA, OH2YOTA, OL23YOTA, OM23YOTA, PA6YOTA, PC6YOTA, S50YOTA, SH9YOTA, SK8YOTA, SNOYOTA, SU8YOTA, TC100YOTA, TM23YOTA, TM4YOTA, YOOYOTA, YS1YOTA, YT23YOTA and ZS9YOTA. From Canada VE3YOUTH and VE2YOTA and from BC a special look out for VE7YOTA (VE7ASI from Salt spring Island).

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 January 2024 NARA Newsletter will be noon on **December 28** with an intended publication date of **December 31**.

News items and comments should be sent to:

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