

Gray Line Report

March 2023



**DX in the Congo
A QSL Display
QRN on 80 Meters
Multi Op Contests
... and more!**



Minnesota

**Newsletter of the
Twin City DX
Association
www.tcdxa.org**



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On the cover...

A few members of the TN8K DXexpedition.

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Gray Line Staff...

AJ8B
K0AD
K0JM
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W0VTT
W0ZF

TCDXA DX DONATION POLICY

The mission of TCDXA is to support DXing and major DXpeditions by providing funding. Annual contributions (dues) from members are the major source of funding.

A funding request from the organizers of a planned DXpedition should be directed to the DX Donation Manager, Mike Cizek, W0VTT. He and the TCDXA Board of Directors will judge how well the DXpedition plans meet key considerations (see below).

If the Board of Directors deems the DXpedition to be worthy of support, a recommended funding amount is presented to the membership for their vote. If approved, the TCDXA Treasurer will process the funding..

Key Considerations for a DXpedition Funding Request:

- ◆ DXpedition destination
- ◆ Website with logos of club sponsors
- ◆ Ranking on Most Wanted Survey
- ◆ QSLs with logos of club sponsors
- ◆ Most wanted ranking by TCDXA Members
- ◆ Online logs and pilot stations
- ◆ Logistics and transportation costs
- ◆ Up front cost to each operator
- ◆ Number of operators and their credentials
- ◆ Support by NCDXF & other clubs
- ◆ Number of stations on the air
- ◆ LoTW log submissions
- ◆ Bands, modes and duration of operation
- ◆ Previous operations by same group
- ◆ Equipment: antennas, radios, amps, etc.
- ◆ Valid license and DXCC approval
- ◆ Stateside and/or foreign QSL manager
- ◆ Donation address: USA and/or foreign

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DX in the Congo

By the TN8K team, English translation by Ladislav Valenta, OK1DIX – Collated by Mike Cizek , WØVTT

The Congo (prefix TN, full name: the Republic of the Congo) - is located on the west coast of Africa in the equatorial region. It is very similar in size to Germany, but for how big it is, it has just under 5 million inhabitants. Although the official language is French, the inhabitants speak the Kituba language. The country is quiet from a security point of view, unlike its "related" neighbor, the Democratic Republic of Congo – 9Q. TN is ranked 80th on the Clublog's "Most Wanted" list.

The Congo is a country we have been thinking about activating for years. But only now we have managed to implement a rather difficult project. It did, however, turn out a little differently than initially planned, but let's not get ahead of ourselves.

The basis of every expedition is always a ham radio license. Unless there is a license, or at least advanced negotiation, there is no point in taking any further steps. The first emails to the authorities in the Congo to obtain the license were sent in December 2021. The actual expedition was then planned for September 2022, time enough, it seemed. But, as it often happens with African institutions, communication was slow and for a long time, we were unable to get it.

In the meantime, we were looking for a QTH. As usual, several hours were spent pouring over maps and doing Internet searches for a location that would be optimal for our needs, yet

not too far from the airport. We finally succeeded.

On June 23rd, 2022 we concluded that we would be able to get the license in time and took a risk by buying flight tickets for September. As fate would have it, after many urgings and e-mails, on June 18th we received two individual licenses for TN/OK2ZI and TN/OK6DJ which were unusable for the expedition. It was clear that obtaining the club license as we requested would drag on, so we re-booked the flights for January 2023. It took another two months until the club license with the TN8K callsign finally arrived! The very next day on September 16th, 2022, the expedition was officially announced and featured in amateur radio newsletters and on Facebook.

Time passed and in our minds, we were slowly drawing the setup that we would bring with us to the Congo. It was clear that in terms of equipment, this expedition would be the biggest we had ever undertaken and also that it would be the most expensive project. On November 15th, 2022 the regular pre-expedition meeting took place at Peter's QTH in Ritka. All of the antennas had been checked and packed in the four special bags and the passports of all participants were sent to Paris for visas. They returned in a reasonable amount of time on December 19th with the visas pasted in.

The meeting of the whole team consisting of Petr OK1BOA, Palo OK1CRM, Petr OK1FCJ, Pavel OK1GK, Ruda OK2ZA, Ludek OK2ZC, Karel OK2ZI and David OK6DJ took place on the morning of Janu-

ary 5th at Ruda's QTH. Since we didn't want to risk the morning traffic on the D1 highway, we all arrived in Moravia during the previous evening and spent the night partly at OK2ZA's place and partly at OK2ZI's place. The final packing and transporting of trunks and cabin baggage took place on the morning of January 5th and shortly before noon, everything was ready. In total, seventeen 23kg pieces of baggage and eight 12kg cabin bags were prepared. At noon, we then set off in the hired minibus to the Vienna airport. Check-in was relatively smooth, as



were the flights from Vienna to Paris and then two hours later from Paris to Pointe-Noire, with a stopover in Luanda (Angola).

The first major problems came after our arrival in the Congo, where we passed through health and passport control without any problems but were held up because of our “suspicious baggage.” Although we had all of the necessary documents and the support of an official at the airport, it was not without nearly two hours of complicated negotiations. Pierre, the owner of our QTH, who was waiting for us at the airport and was present during the negotiations with customs, helped us a lot. In the end, our baggage was released, except for one trunk that didn't arrive at all and contained, among other things, 350m of coaxial cables, a very important piece of equipment, which was also almost half of everything we were carrying.

In front of the airport, we got into the prepared cars and started the 20 km-long journey to the QTH. It took almost an hour

through the clogged city both downtown and along rural muddy roads.

The QTH was located in Pointe Indienne – a shark fin-shaped promontory that juts out into the Atlantic Ocean. The rented house was in the northern part of the promontory, 500m from the coast, where there was an open profile with no elevation on any side. The direction to the EU, NA, and JA even sloped gently towards the coast. The house had a large garden (100×60m) surrounded by meadows and pastures, with the possibility of building antennas arbitrarily in the garden and "reasonably" in the surrounding area. There was no power connection in the QTH, but with the powerful 30kW diesel generator this was not a problem. As it turned out, the generator worked perfectly, except for one glitch, and it consumed altogether 1,200 liters of diesel

during our stay. We had a cook and his family at the lodge who took care of our meals and provisions, so we could concentrate solely on our objectives.

We arrived in the QTH on January 6th at 13:00 local time. Since we wanted to be QRV on the lower bands already on the very first night, we immediately unpacked our bags with the antennas and started building. During the afternoon we had built a vertical for 160m, a vertical for 40m, a vertical for 30m, two Spiderbeams, and in deep darkness we finished also the vertical for 80m. All of the verticals had ten quarter-wave radials. The 30m and 40m antennas were temporarily set up near the house, just for the first night,

knowing they would be relocated later.

After dark, we then converted the main room of the house into an operator's room and installed eight workplaces: a K3+Expert 1.3K-FA, a SunSDR2DX+JUMA, a SunSDR2pro+JUMA, an FT-DX10+JUMA, an IC-705+JUMA, another IC-705+JUMA, and finally the remaining two TS-480HXs, which were primarily intended for 6m and FT8/FT4.

The first contact under TN8K was made by Petr, OK1FCJ on 20m CW. We were working all evening on several bands, but the fatigue from the hard 24 hours of travel and building antennas was evident in our traffic. We still made almost two thousand contacts by midnight. The pile-ups were huge on all bands, so it was clear that we would not be bored.



The flight in

January 7th, 2023

In the morning, part of the team was working on the antennas. First, we moved the 40m antenna away to a meadow outside our property and upgraded it from a simple vertical to a two-element phased array. Then, we also moved the 30m vertical up to the fence for the final position and upgraded it to a two-element phased system. We erected mast #3 with a trio of two-element duraluminium Yagis for 17m, 15m and 12m and then mast #4 with five element for 6m and four element for 10m. We couldn't build the last fifth mast because of the lost trunk which contained the center of the last Spiderbeam.

We stretched a receiving loop on the ground, which we hoped would help us listen on the lower bands. Suddenly a thunderstorm and windstorm came in the afternoon. Fortunately, all of the antennas survived, except for the 40m vertical which fell to the ground. Thankfully the repair only took a few minutes.

At 1600 UTC the storm was over, all damages had been repaired, and the SWR of the antennas checked. After that six stations were in operation simultaneously – 30m and 6m on FT8 and 20m, 17m, 15m, and 10m on CW.

The last thing we managed to do that day in daylight was to build an RX-point behind the fence, to which all of the beverage antennas were connected. We

stretched the first one, 150m long towards the EU later that day. During the day we took turns at the radios and although we spent a lot of time working on the antennas, we managed to make over 10,000 contacts thanks to the brisk CW traffic. The pileups were massive. The familiar "big guns" we worked during the start of every expedition were calling. The joy was spoiled a bit by unusual number of the undisciplined callers, which slowed down the traffic considerably. The beverage antenna was tested at night, and it worked well, but atmospheric QRN from nearby thunderstorms made listening extremely difficult.

January 8th, 2023

In the morning after dawn, we put up an-

other antenna, a 20m wire dipole, which was pulled through a pulley to the middle of the 160m vertical. Thanks to this the coax cable from the 160m antenna did not "slack" during the day and was connected to this antenna. This helped increase the work efficiency on the 20m. This also allowed all of the Spiderbeams to be on the upper bands during the day. The 20m band behaved typically for the area, with conditions gradually deteriorating during the morning and not working at all by midday. Even on the FT8 frequencies, nothing was heard and the band only started to open up in the afternoon. Progress was also made with the receiving antennas and two more 150m beverages were stretched towards JA and NA. Some of the team then also went to test the local sea. The beach was sandy and beautifully clear, the water relatively warm but somewhat murky. We also learned that our lost trunk had arrived, but as it was Sunday and the special desk at the airport for such cases was closed we had no choice but to wait until the next day. The number of contacts was increasing rapidly and by midnight there were almost 30,000 QSOs in the log.

January 9th, 2023

The event of the day: they retrieved the lost trunk. We immediately unpacked it and took what was missing to complete our station. We assembled the eighth workplace, which was missing a power supply with wiring for the K3, and began preparing the Spi-



The team in Paris

derbeam, which was the only one of the three tuned to the SSB parts of the bands. However, it could not be completed by dusk and so we postponed it until the next day. As far as possible one station was in operation permanently on SSB, three to four stations on CW, and two on FT8. Then during the day one of the stations was allocated to 6m FT8 and although we weren't very hopeful of making any contacts, we still logged the first 19 stations on this day. When we got information from the VK hams that our signals were passing into their area we gave short-term CQ VK/ZL to allow them to make contacts, as their signals were weak, and breaking through the EU or NA pileups was almost impossible for them. Unfortunately, here too we have often encountered a lack of discipline on the part of the callers who simply did not respect our directional CQ. We did our best and by the evening there were over 40,000 QSOs in the log.

January 10th, 2023

This time the whole night was very quiet. Almost no QRN on the lower bands. Unlike the previous nights the 80m band worked great and conditions were good. On the contrary, surprisingly, 160m didn't work at all. The conditions were similarly miserable also on the upper bands in the morning. During the day we finished the remaining antennas. We put up the last Spiderbeam for SSB and set up a quarter-wave vertical for 60m band in a meadow far beyond the property line. There was a lot of interest in the contacts on this band, and we made over a thousand contacts there on the first night. The only nuisance was that we had to disassemble and modify the IC-705 TRX, as it had the 60m band blocked from the factory and we had to modify the setting following the instructions on YouTube. Later in the afternoon, when it was not so hot, we built a two-element vertical system for the 40m band pointing to NA

and another vertical for the 30m band. These antennas were planned, but without the coaxial cables from the lost trunk, there was no point in building them earlier. We have also managed to establish the first satellite link via QO-100, which was our premiere on this band and certainly a premiere in the Congo. We had asked the owner of the facility to purchase a satellite dish antenna for us in town. In the meantime, we had been transmitting provisionally only with the feed pointed at the inverted lid of a large pot. In order to maximize our potential, we also installed the last "backup" workstation with IC-705+JUMA and so that evening the call TN8K appeared for the first time 9 times simultaneously on the air, with seven stations working in "human" modes and two on FT8. These FT8 stations were operated by operators in parallel with CW or SSB traffic on their tablets.

January 11th, 2023

Every day in the morning the upper bands worked fine to JA and so we gave these stations plenty of space. We tried the simultaneous operation of three stations on the 15m band – CW, SSB and FT8. With minor problems, it worked, mainly because FT8 was transmitting into the vertical antennas for 40m. This antenna works satisfactorily on 15m and thanks to vertical polarization there was no problem with mutual interference. After lunch, we stretched the last beverage 150m towards VK and decided to extend the JA beverage by another 100m. But that was easier said than done, as it turned out, what looked like a meadow was actually a swamp covered with grass and pulling 100m of wire and quarter wave radials took over an hour. If we had known what kind of terrain we were getting into, we might have changed our minds. We also took a commemorative photo to mark the 60,000 contacts in the log that day. The af-

ternoon conditions were very good on the upper bands and lasted until midnight when the 10m band was still full of stations. Unfortunately, towards the evening, there were heavy thunderstorms which swirled around our QTH and so listening in the storm QRN was very tiring. After midnight the storm was so intense that we had to make QRT for a while and disconnect all antennas to prevent possible damage to the equipment by static electricity.

January 12th, 2023

As soon as the storm subsided we got back to the stations, but shortly after the traffic had started it was over again because there was a power outage. The generator stopped working unexpectedly and did not start again. Just after dawn, the staff started working on the repair. It was found that the V-belt had broken. Fortunately, we managed to get it in town, but even so, the repair took almost the whole morning. As a result, our "unwritten" goal of 10,000 contacts per day was not met that day. We were also told that the dish antenna could not be found in any shop, so the owner of the building allowed us to dismantle his satellite dish from the wall and use it for QO-100, of course on the condition that we put it back at the end of our expedition. We also moved the RX loop further away from our facility, using the last piece of coaxial cable we had. At night, traffic continued on the lower bands and the beverage antennas were also used on the 60m workstation, where we worked on CW for a few hours, and many new stations were logged on this band.



January 13th, 2023

The conditions were weaker on the upper bands in the morning. Then another cloud-burst came through and mother nature showed us her power. The floodgates of heaven opened, and the rain drummed on the tin roof of the house with such force that even the reception in the headphones was heavily distorted. We had to cut off SSB traffic entirely because the microphones were picking up the noise so intensely that

the operator's voice was almost lost in it. On the other hand, the conditions were excellent in the afternoon and evening after the rain. Yesterday's 60m traffic lured us in, so we continued CW that day, but listening on the vertical was difficult due to equatorial QRN. Virtually every mark was broken by the crackle, and we

had to have everything repeated at least once. We also had to accommodate the CW speed which further impacted the rate. Despite this, there were over 90,000 QSOs in the log at midnight. We were enjoying amazing conditions with all bands open at once, from 160m to 10m. This is something that is very difficult to experience in Europe.

January 14th, 2023

The first technical fault occurred – the band-pass filter on 15m was gone. We had three complete sets of 200W band-pass filters with us, so losing one was not a significant problem. Each workstation is always equipped with the appropriate filter and in case of extreme interference, we connect two filters in series, albeit knowing that it causes a bit of attenuation in the RX path.

We experienced interference, especially when using the antennas on the same mast, just above each other. Performance-wise the filters didn't do any harm as they were connected between the TRX and the PA, and the TRXs had always enough power to drive the PA. Another significant goal was reached on this day - 100,000 contacts in the log. We briefly interrupted the traffic and took a few commemorative pictures, which we posted on our Facebook page.

January 15th, 2023

There was rain again in the morning, sometimes very heavy. There was so much water that it did not even soak into the sand that was in the yard next to the house. Streams of water flowed under the antennas and disappeared somewhere behind the fence. Fortunately, it didn't affect the propagation conditions. The 10m band was working nicely since the morning and so we gave FM operation on 29.050 a try, which we had never done before. It was an interesting experience for everyone. Even during the morning, the number of contacts from our most successful S9OK expedition so far in 2021 was surpassed. After lunch, we had a visitor – two neighbors on whose land our verticals for the lower bands stood. Getting along with them was absolutely smooth, the gentlemen were knowledgeable and listened with interest as Karel, OK2ZI explained in French that we were a non-commercial group promoting amateur radio and advertising the Congo to the world. With a promise that the antennas would be gone from the property within a week, and everything would be cleaned up, they thanked us for the explanation and left with a friendly nod. The thing almost unprecedented for Africa is that someone would allow you to do something for free.

January 16th, 2023

The lower bands were working well at

night, but there were not as many stations in the log as there could have been, again due to the greatly undisciplined callers, especially on 80m and 160m. Even the Japanese stations, which are usually very disciplined, would lose their inhibitions on the lower bands and call over each other. In the morning the upper bands worked nicely and there, on the other hand, the traffic of JA stations was exemplary. Europe was of course a mess as usual. More and more often we were encountering the annoyance of calling stations putting their callsigns twice in a row on CW. This was extremely annoying because the operator usually gets the callsign the first time and thus transmits in "stereo" with the caller when sending the report. As a result, the caller does not respond to our report, and we have to repeat the entire session unnecessarily. There's no reason to do that, especially on bands from 40m upwards where the signals tend to be stable and are not significantly affected by the atmospheric QRN. On the other hand, on the 80m and 160m bands, stations that call with their callsign twice gain an advantage. There's more time to exactly tune on their signal and receive the callsign on the first go.

January 17th, 2023

There was another goal reached on this day – 140,000 QSOs in the log. We were thrilled with how the number of contacts was increasing and how the callers were checking the empty fields on Clublog. However, our joy was somewhat spoiled by the fact that the expedition was fast nearing its end. The pileups may have been a little weaker at that time, but there were still so many callers at the opening peaks that we would have had plenty to do even if the expedition had lasted a month. Today was the last day of the QO-100 operation, with over 1,500 contacts in the log. We were regularly

monitoring propagation conditions. The report showed aurora and A=14 that day which made upper bands almost non-existent. We had another unexpected visitor this afternoon, a large herd of cows came in over the pasture and messed up our radials for the 80m and 160m verticals. It might seem like bad luck, but we should rather say lucky that they came only once and only towards the end of the expedition. We had studied YouTube videos of the area before selecting the QTH and knew that herds roamed freely in the surrounding pastures and were concerned if verticals could even be installed there beyond the fence.

January 18th, 2023

The end was near, it was the last day of full operation. More and more stations were now devoting themselves to SSB at the expense of CW, where there were already nearly 50,000 contacts in the log. Once again, we encountered the annoying nuisance of stations on SSB calling with just a suffix instead of the full callsign. This causes unnecessarily delaying and annoyance for the operator. This behavior is typical for stations from South America and Europe, especially from its southern part. It is not the case in the USA and certainly not in Japan. In the morning the conditions were poor, so we took time to take pictures for our sponsors and retuned the 80m vertical to the SSB part of the band. We also posted the information that this night would be fully dedicated to SSB traffic on both 80m and 60m, which we were often asked about on the band. Both bands had beverage antenna available for better RX. The RX loop barely worked this time, probably because it was too close to the transmitting antennas. On both of our previous expeditions to S9 and HKØ/A the loop was far from everything and worked very well.

January 19th, 2023

We worked all night on the lower bands. It was the last night there. We could feel that many callers were nervous as they knew if they didn't make the QSO now, they never would. A lot of well-equipped stations tried the "trick" and although they couldn't hear us properly, they called repeatedly and even gave the report right along with the callsign foolishly thinking we would log them. Naturally, when we called these stations, they didn't respond because they couldn't hear us. Of course, they are not in the log because the QSO has not been mutually confirmed. Unfortunately, we have to say that even some well-known OK amateur stations also resorted to this ugly practice, and we were saddened by this.

In the morning the packing of antennas started. First the beverages, then verticals for 160m+80m+40m. From phased pairs, only one pair on 30m and one on 40m remained standing. Before dusk, we packed two Spiderbeams. By morning only one Spiderbeam and two masts with duraluminium Yagis remained. On our last night, we were QRV from 40m to 6m with at least one antenna on each band. It rained heavily during packing. On the previous expeditions, the weather was always good for packing, but this time mother nature decided otherwise.

In the meantime, we had received a warning about the transport strike in France which could affect our air transport. Indeed, many flights were canceled, but fortunately, the plane that we were due to return on departed from Paris. We continued to operate, albeit limited, all evening, with over 160,000 contacts in the log. After checking the table on the GDXF website it looked like we might be able to reach 6th place.

In the morning Karel and David briefly activated their valid TN/OK2ZI and TN/

OK6DJ personal licenses and made about 200 CW contacts just for fun before they fell into their beds with fatigue.

January 20th, 2023

At 6:20 in the morning, we made the final QRT. TN8K was history. The log showed a fantastic 164,939 contacts. We quickly lowered all the remaining masts and the whole team, although very tired, started dismantling them. By noon everything was packed and tidied up and a photo shot of the whole group took place including the staff who looked after us magnificently. In the afternoon the hired cars arrived and the whole group moved to Pointe-Noire, where Pierre booked a restaurant and invited us to lunch together. Then it was time to say goodbye and move to the airport, where Pierre arranged for a helper from Air France to help us check in. However, once again it was not without

problems. The check-in took almost three hours. Two of our bags with antennas were allegedly over the size limit, no explanation or persuasion helped. We had to pay an extra fee for oversize baggage, a total of 600,-EUR. The airport staff is corrupt. When checking the baggage by X-ray they were openly demanding bribes. The highlight then was the uniformed police officer who was doing a "check of cash exported out of the country" before passport control and wanted to see all of our wallets. She unscrupulously told each of us to give her some money. Although she claimed not to speak English, she knew the phrase "give me money" very well. She was not interested in the Czech crowns offered, though. We've seen a lot of things on our travels in the world, but nothing like this.



Cheers!

We were also surprised by the double check of the contents of our cabin baggage, first at passport control and then again just before boarding. As much as we had a good time in the Congo and liked it the bureaucratic buffoonery at the airport was so frustrating that we wanted to be all out of there. Fortunately, the plane left on time and after a short stop-over in Angola and an hour's wait on the airport tarmac, continued to Paris for a night flight. Everyone, even those having trouble with it, fell asleep on the plane from fatigue.

January 21st, 2023

The plane landed in Paris while it was still dark. The transfer to the next flight was without any problems, as well as the flight itself. All baggage arrived in Vienna, but one was damaged, and a claim had to be made. The hired minibus was waiting for us and the journey to Rudy's QTH was also smooth. There, we were

warmly welcomed by Rudy's wife with a cauldron of delicious sirloin steak with cream sauce, which we all devoured with great gusto. In the afternoon, we then went our separate ways home, and at 10 pm the last member arrived. This was the real end of the whole adventure.

We would like to thank all the stations that called and made a contact with us. We couldn't have done it without them, and we believe it was fun for everyone. At least the feedback on Facebook speaks unanimously that it was. Thanks to our host Pierre, who adapted the interior of his house for our needs and provided us, a strange gang from Czechia, with ideal conditions plus allowed us to do literally whatever we wanted with the antennas on and around the property.

Thanks to the couple Giselle and Rene who oversaw our food and safety and took absolutely great care of us. Thanks to Murphy who was in our favor this time. The equipment worked as it should, nothing broke except one filter. Most importantly, all the antennas worked as they were supposed to.

We would also like to thank the sponsors, both the organizations and the individuals. Without their help, this costly mission would not have been possible.

Our sponsors: Northern California DX Foundation, European DX Foundation, International DX Association, Greater Milwaukee DX Association, German DX Foundation, Swiss DX Foundation, DX-news, Clipperton DX Club, Far East DX Ploitiers Foundation, Oklahoma DX Association, Mediterraneo DX Club, CDXC UK DX Foundation, Danish DX Group, SDXG, Minnesota TCDXA, Southeastern DX Club, Lone Star DX Association, GM DX Group, OH DX Foundation, Northern Ohio DX Association, National Capitol DX Association, East Tennessee DX Association, Northern Illinois DX Association, Araucária DX Group, Spiderbeam, Mastrant, DD-amtek.

From among individuals, we were supported by a large number of amateurs and we thank them all, especially KØGEO, N1HO, OG2M, OK5MM, HB9FPM A HB9JOE, OK6RP, ACØW, OK1NS, OK1ALX, OK1CF, OK1FPG, OK2MDC, OM3PC, OM5ZW, TF3SG, IKØAGU, OM4TW, OK2IT, OK1NP, N3OC, GM3WOJ, WO9I, ZL1IU, HB9BAS, KQ4DPH, TF3DC, OK2ARM, OK2NMA, WF8R, DK2CF.

The result puts us in 6th place in the official Megaexpeditions all-time ranking (<https://gdx.de/megadxpeditions/honorroll.php>). With thirteen days of operation and only eight operators, this is a spectacular achievement. By the time you read

these lines, the QSL tickets are already in production. As soon as we receive them, the arduous procedure of distributing them will begin, which as usual will be taken care of in an exemplary manner by David OK6DJ. OQRS direct requests have already been confirmed at LoTW.

For detailed statistics see <https://clublog.org/charts/?c=TN8K#r>

Equipment used:

TRX: 1x K3, 1x FT-DX10, 3x IC-705, 1x SUN-SDR2DX, 1x SUN-SDR2PRO, 2x TS-480HX.

PA: 6x JUMA PA1000, 1x Expert 1.3K-FA

Antennas:

160m vertical with capacitive hat + 10x quarter-wave radials

80m vertical + 10x quarter-wave radials

60m vertical + 10x quarter-wave radials

40m 2el. vertical phased system + 2x10 quarter-wave radials to JA

40m 2el. vertical phased system + 2x10 quarter-wave radials to NA

30m 2el. vertical phased system + 2x10 quarter-wave radials to JA

30m vertical + 10x quarter-wave radials

20m - 10m 5-band Spiderbeam @10m

20m - 10m 5-band Spiderbeam @10m

20m - 10m 5-band Spiderbeam @12m

20m inverted V-dipole @10m

17m - 2el. Yagi

15m - 2el. Yagi

12m - 2el. Yagi

10m - 4el. Yagi

6m - 5el. Yagi

RX antennas:

3x beverage á 150m (NA, EU, VK)

1x beverage 250m JA

RX loop





Raspberry Pi / QSL Display Board

By Bill Salyers, AJ8B

I was stopping by the QTH of K8DV, Dave, to pick up cards I had left to be checked as well as to talk strategy for the upcoming Ohio QSO Party. One of the things that caught my attention was an electronic picture frame that Dave was using to display QSL cards. I LOVE getting QSL cards and have been looking for a way to display them proudly and I realized that Dave was on to something!

I immediately went home, set up the scanner and scanned in many of my favorite cards. My plan was to load them in to the “cloud” so that I could access them from anywhere. I then set my screen saver up to reference these QSL images and viola, I had access to QSL cards no matter where I was via my laptop!

Sometime later, I was reading about the various projects that are being completed using the Raspberry Pi microcontroller modules. I am an old UNIX guy and have been itching to try this out, but I needed a project. While researching the Raspberry Pi, I came across an article about a “Magic Mirror” (1). This is a unit that uses a Raspberry Pi to display overlays on top of a two-way mirror. I realized that this was the Raspberry Pi project that I needed to jazz up the shack and get the experience I wanted with this technology. Using a powerful LINUX computer to do nothing more than display images seems like overkill and if I were doing this

with a PC, I would agree. However, considering the cost and the experience, it was well worth it. In contrast, I found a 22” electronic picture frame on Amazon for \$399 and it was not as customized as this project was to be at a fraction of the cost!

This project has three phases. The first is setting up the Raspberry Pi 3. (RP3) The second part is configuring the cloud source. The third and final part will be to configure the RP3 to pull QSL card images from a “cloud” location and rotate through them as well as display the weather, time, and our Calendar Events list. (See photo, next page)

Phase 1 – Raspberry Pi 3 (RP3): Gathering the Components

Monitor I had a 22” LG monitor that had been dropped at work. The bezel on the back was cracked and could not be supported by the monitor stand. Since I was going to use a wall mount, I knew this would not be an issue. (the photo above shows the unit I used)



The RP3 board has 4 USB ports, an HDMO port, an audio output port, a network port, and a mini-USB port for power. It also has built in WiFi!

Computer The next item needed was the RP3 microcomputer. I recommend a kit such as those offered by CANAKIT. Amazon.com offers several versions depending on how many options you want. My kit came with all

that I needed including an SD Memory card, case, and power supply. Prices range from about \$65 to \$90. The RP3 motherboard has 4 USB ports, an HDMI port, an audio out port, a network port as well as a USB mini port for power, all of this on a 2.3 by 3.5-inch circuit board. The RP3 even has wireless network capability built in. For this project, we will run a version of Linux.

There are other versions of the Raspberry Pi that you can consider. However, I did get a good price on this kit, and I thought I might want to use it for another project, so I selected one with a bit more RAM than I really needed.

Video Connection I was able to find a DVI to HDMI Connector on Amazon for \$2.99. This allowed me to connect the RP3 module to the monitor with a very short HMDI cable. The entire RP3 unit would be mounted on the back of the monitor, so, cable length is important.

User Interface Once the project is completed, you won’t need to interact directly with the RP3 module. However, you will need a USB keyboard and mouse to get it up and running. If you have a Bluetooth keyboard and mouse, that will work as the RP3 has built in Bluetooth as well!

Network Although the RP3 module has built in Wireless capability, I chose to use the built in ethernet as the network connection. My main reason was simply that the ham shack is in the basement, the furthest point possible from my wireless access point and I have a network drop at the location where I wanted to mount the monitor. Also, since the monitor was never going to move, I really did not need the benefits of the wireless connection.

Memory Card One of the main reasons the RP3 module works so well in a small package is that it utilizes an SD memory card to store all programs and data. The memory card that I use is a 32 gByte card with a “10” rating. Many kits come with an operat-

ing system preloaded on the SD card, otherwise known as NOOBS. (New Out Of Box Software). When the RP3 initially boots, you are asked to select which operating system to load. NOOBS will handle the install and initial configuration automatically. Choose Raspbian, the RP3 version of Linux, for your O/S. If you choose not to get the NOOBS option, or would like a more detailed description of the O/S process, visit <https://www.raspberrypi.com/software/operating-systems/>.

Keyboard & Mouse You will need to have a keyboard and mouse available during the configuration and setup of this project. However, once you have completed your work, you will no longer need these to be connected to the RP3. My QSL display monitor has been running for 8 months and I have not yet needed a keyboard or mouse.

Once you have the components together, boot the RP3 by powering connecting the USB power supply. You will initially see a four color “rainbow grid”. The system will continue to boot until the Raspbian Desktop is displayed. (The first time through is the longest.)

The desktop should appear as shown. There are only a few tweaks we need to make before we can launch our project. In the upper left-hand corner, click on the “Raspberry” icon and slide down to Preferences. Go to the Localization Tab and configure the Set Locale, Set Time zone and Set Keyboard as appropriate for your area. At this point, we are ready to configure the second phase of the project.

Phase 2 – Create the Cloud Accounts

We need a simple way to display our QSL cards in a random, rotating order. We would also like to display the time, weather and our Calendar Events list. This can be set up in 4



QSL card images are pulled from the cloud and overlaid with local weather, time, and calendar events

easy (and free) steps from the web browser on your standard desktop.

#1 – Set up a “DropBox” account at www.dropbox.com. This is the internet-based account that you will load your QSL card images in to and the system will pull the images from. Create a directory in that account called QSLimages. Store a couple of QSL images in that directory to get started. If you already have a DropBox account, just set up the appropriate directory for your QSL images.

#2 – Set up a Gmail account for your calendar. This is the account that we will access for Calendar Events and appointments. I keep upcoming club meeting and contests on my calendar.

#3 – The easiest way to display all this information together is to use a free service called DAKboard. (Although this is a free account, I always recommend a donation to the developer, so he can continue to help support the existing product.) Go to www.DAKboard.com and choose “Create Free Account”.

#4 – Once you have created your DAKboard account, log in to it and click on the Screens Link in the left menu. (Make sure to click “Save Changes” as you move from section to section at the top)

Go to “Custom Screen”. My settings are as follows:

Screen: Time/Events–Top, Weather –Bottom
Date/Time: Enabled, Time zone – New York, Digital Type, 24 Hour format, Show Seconds
Calendar: Enabled, Agenda, 5 Days to Show

In the Calendar section, you will need to click on “Add Another Calendar” and allow it to have access to your Google account; the Gmail account you set up in Step 2.

Photos & Background: Photo Source- Dropbox

You will need to enter your DropBox account information from step 1. DAKboard will confirm that you can access those images.

Change Photo – Every Minute

Transitions: Gradually fade photos in and out

Drobox directory: /QSLimages

Weather: WeatherSource: OpenWeatherMap

Location: <Closest City, State>

Extended forecast: 5-Day

There is a unique URL that is created for your account that will allow you to access your customized DAKboard from any

browser. You will need this URL when it is time to finalize the RP3 setup. To get this unique URL, go to Settings & Defaults in the screen you have chosen. Your custom URL will be listed in the field “Private URL”. It can be copied to the clipboard by clicking on the clipboard icon immediately to the right of the Private URL field. Print or make a note of this VERY long URL as we will need it in the final step. You can click on Logout.

If you have a few QSL images loaded into the Drobox account and/or you have a couple of events set up on your Gmail calendar, you can now go back to DAKboard.com and login from your PC. You should see something like the web browser screen shot on the right. The QSL card forms the background, (a card from 3Y0PI in this case) the date and time are in the upper left-hand corner, the upcoming events are listed along the top and the weather along the bottom. Now that we have a mechanism in place to “collect” the information, we just need to adjust the settings on the RP3 to instruct it how to reach the DAKboard.com website. (I use this URL as my home page on the browser in my shack)

Phase 3 – Customize the Raspberry Pi

When the Pi boots, we will want it to automatically launch the Chrome web browser and set the home page to our custom DAKboard. We will configure the Chrome browser to put it in “kiosk mode” so we won’t need a keyboard or mouse..EVER. I prefer to display the DAKboard in Portrait mode. To add these final configuration changes...

Note from the President

Bert Benjaminson, WBØN, President

- Open a command window on your RP3
- Type raspi-config. Choose “Boot to Desktop”
- Save the configuration and reboot.

1. To get DAKboard to load when our Raspberry Pi boots, we will need to modify the “autostart” file. To begin editing this file using the nano text editor, run the following command in a command window

```
sudo nano /etc/xdg/lxsession/LXDE-pi/autostart
```

2. The first line that we will be adding to the bottom of the file will run the unclutter application. By utilizing unclutter, we will hide the mouse after it has been idle for longer than half a second (0.5).

```
unclutter -idle 0.5 -root &
```

3. Next, we need to add our call to the Chromium web browser. We will be using this browser to display the DAKboard on our Raspberry Pi. When you type in this line, ensure that you replace “<DAKboard URL>” with the display URL you noted earlier in this guide.

```
/usr/bin/chromium-browser --noerrdialogs --disable-infobars --kiosk --app=<DAKboard URL> &
```

4. Once you have made those changes, you can now save and quit out of the file. If you are using nano, you can save and quit by pressing CTRL + X, then Y, followed by the ENTER key.

5. We can test that everything is working properly by restarting the Raspberry Pi. You can restart the device by using the following command.

```
sudo reboot
```



Boy has it been a real Minnesota winter here so far. It has made it rough for some members to make the trek to our monthly meetings at Pub42. Thank you to all who have braved the elements to make it to Pub42. Hopefully the weather will cease and desist hindering our meeting attendance!

Ok now as for the bands and DX: The sunspots are increasing, making for a lot more DX especially on 10 and 15M. The ARRL DX CW contest was actually fun again with 10M being the money winner for me and others. I hope the bands are as good for the ARRL DX SSB contest this weekend March 4th and 5th. These DX contests are the reason I became a “contester” even if it’s not a real contest for me as I can’t compete with the stations with towers beams etc.... But I can have FUN with the DX smorgasbord!

Unfortunately for those of us with antenna challenges, the DXpeditions have been rough, so more sunspots are needed for us. I do see a lot of our members working these “ghost stations” which I do not see or hear so the TCDXA is being well represented in the DXpedition chase. Keep up the good work gang!

See you on the bands or at the TCDXA club meetings... either at Pub42 or online.





RFI on the 80 Meter Band

By Ron Dohmen, NØAT

In the summer of 2021, I noticed an unusual noise on 80 meters. I live in an urban environment, and I see a lot of noise come and go. But this noise was more consistent in that it appeared every day.

The noise was broadband in nature and was present on 80 meters only; not on any other band. It seemed strange as the noise peaked in the phone portion of the band. In the center of the phone band it was S9 with no preamps enabled and with 18 dB of attenuation. That would put it at about 20 over 9. Not insignificant.

The noise peaked in the middle of the phone band, around 3.8 Mhz. Going down the band it got gradually weaker until at the bottom of the band, 3.5 MHz, it was barely readable. At the top of the band, 4 MHz it was only about S4. Maybe some of this variability is due to the response of my dipole antenna.

The noise didn't appear 24/7 hours of the day. It started up in the morning, usually between 7 and 10 a.m., and went off during the night. When it started, listening in the center of the phone band, it would start very weak, S1, and take about 10 minutes to build up to 20 over 9. On my radio the noise sounded like an electrical motor.

TRYING TO IDENTIFY THE NOISE

I went to the ARRL web site, [Sounds of RFI \(arrl.org\)](http://Sounds of RFI (arrl.org)) to see if I could identify the RFI. I listened to all the recordings on the web site and did not hear any that sounded like the noise I was experiencing. I sent a wav file to the link on the site to see if anyone monitoring the site could help. As I found out later, the ham in charge of this web site became SK and the site wasn't up to date.

Since the noise sounded like a motor in the neighborhood, I decided to do a little sniffing. I used my Icom IC-R2 as an EMI sniffer. The IC-R2 was set to 3.675 MHz, AM. I searched my house and found nothing.



I used my Icom IC-R2 as an EMI sniffer

The noise comes on in the morning and remains on throughout the day, maybe it is coming from a pump. I live in a hilly area and have a few lift pumps in the area. I thoroughly investigated the lift pumps and found nothing.

One of my neighbors works for a floor cleaning company and stores his trucks in a 3-car garage in his backyard. Maybe he has some sort of cleaning machine running during the day. I went over to his house, he wasn't home (except for his dog), and sniffed all around his garage and house and heard nothing. I did hear the noise when I put my IC-R2 sniffer at the power line coming into his house.

GETTING CLOSER

Now I started to use my sniffer to get a more accurate id on the noise. I found the noise on all down wires on electrical poles in my block. These wires could be electrical for underground service, CATV cable, or telephone wires. At one pole I found a piece of 1 1/2" hardline coming out of the ground and cut off about 10 feet into the air; I found the noise on this piece of hardline.

I worked my way around my block and couldn't directly identify the location of this noise generator. I got into my car and drove through industrial areas and found nothing.

Next, I expanded my search. Since the noise was louder on my north beverage antenna, I decided to concentrate on the block to the north of me. Now I am making progress. Walking the street, I found an area where I didn't have to put the sniffer on a down wire off a pole. The noise was audible while walking in the middle of the street.

BRING IN XCEL ENERGY

At this point I was ready to call the electric company, Xcel Energy. I called their



A custom display case with LED lighting for antique guns

electrical troubleshooter at 9 AM in the morning, and an hour later there was a knock on my door. That's quick service. The RFI specialist was somewhat new on the job, but he showed an interest in my problem. He took note of the frequency and location of where I had been looking.

He left for a while and came back to tell me he fixed some loose connections, to see if that fixed the problem, It didn't. Now we are going to have to investigate further.

IDENTIFY THE HOUSE GENERATING THE NOISE

The next step is to identify the house where the noise is coming from. First the Xcel RFI specialist wanted to make sure the noise wasn't coming from my house. I broke out my battery powered Yaesu FT817 to listen to the noise while he pulled the power meter on my house. The noise was still present.

After getting the OK from his boss, he went to the area where we heard the noise strongest, about a block and a half away. He opened the cutout on the electrical pole servicing the homes in the area, cutting off power to 6 homes. I was at my house and talking to him over our cell phones while he worked. When he cut the power, the noise went away! Now we are making progress. After restoring the cutout we needed to find

out which of the 6 houses the noise was coming from. He walked through the neighborhood and began pulling meters, one at a time, until we found the house where the noise was coming from. The third house was the one.

CONTACTING THE NEIGHBOR

A few days later when the owners of the house were home, the Xcel RFI troubleshooter stopped by and talked to them about the RFI problem. He got their phone number so I could contact them and do some further investigation. The gentleman at the house was very cooperative and interested in helping us find the noise source.

I went to his house, and he began to switch off circuit breakers until the noise went away. My wife was at my QTH listening and reporting to me over the cell phone. When he flipped the third breaker the noise went away. He had built a custom display case with LED lighting for his antique guns. The guns in the display are heavy, he let me hold one; I don't see how anyone could hold and shoot one of these guns.

The power supply for LED display lights was generating all the RFI and putting it out on the power lines..

The display case power supply was wired through a switch in his hallway. He turned the switch on in the morning when he got up and shut it off when he went to bed. This explains the behavior of the noise coming on in the morning and going off at night.

He said he had to take the display case apart to get at the power supply that was buried inside the wall. I suspect he was able to replace the power supply as I haven't heard the noise since.





The MWA Contest Corner

Guest Article: Distributed Multiple Operator

By Al Dewey, KØAD



*[For this issue I am pleased to yield this column to **Mark Endorf (WAØMHJ)**. Mark is an experienced DXer and Contester and recently used his expertise to organize a “Distributed Multiple Operator” effort for the recent ARRL SSB DX Contest. I find this way of contesting with others fascinating and asked Mark to share his story with TCDXA. — Al Dewey, KØAD]*

First licensed in 1968, I quickly became interested in DX’ing and contesting within my first year. I joined TCDXA in 1972, and have also been a member of the Minnesota Wireless Association since 1970. My wife and I (both now retired) live in Ham Lake, Minnesota but spend most of our summer up north in Grand Rapids, Minnesota. When not DX’ing in the winter, I enjoy downhill skiing. In the summer I do a lot of bicycling in northern Minnesota.

Distributed Multi-op Contesting in the ARRL DX Contest

In 2020, the ARRL issued guidelines for operating as a distributed multi-op option for the ARRL DX contest. This came as a result of COVID pandemic guidelines for social distancing. It allows operators who are within a 100km (62 mile) radius, to operate their home stations in a multi-op, multi-transmitter setup.

All stations must be linked, and the requirement of no more than one transmitter at a time on a given band must be insured. This special category extended into 2021.

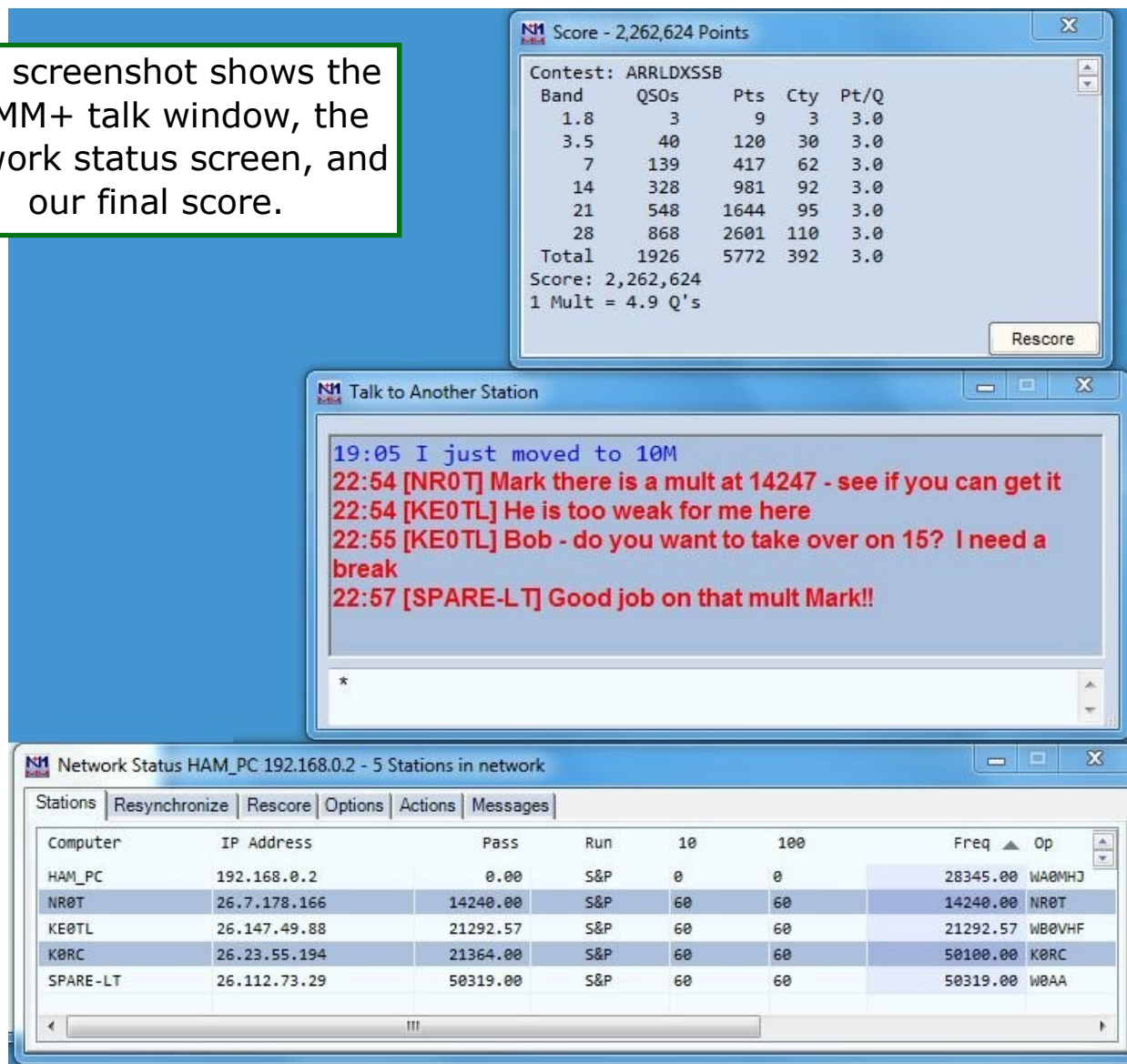
The March 2021 ARRL Contest Update newsletter wrote:

Sort of like the special "limited-time" flavors of a favorite super-premium ice cream brand, the availability of the distributed multi-operator entry category in the ARRL International DX Contests may be fleeting. The 2021 Multi-operator Accommodation to allow this class will likely sunset as the pandemic recedes.

Fast forward to 2023, and this option was still available. Having stumbled across a technical article about how to implement this in an N1MM environment, my interest was tweaked to try this method of multi-operating before this opportunity vanished. I put out a feeler on the Minnesota Wireless reflector, and got a response from Rolf – NRØT. He has been recently operating as Multi-2 from his QTH, and was eager to try this out.

The basis of setting up this type of operation, is to use a VPN (Virtual Private Net-

This screenshot shows the N1MM+ talk window, the network status screen, and our final score.



work). Linking the computers of “gamers” together is similar to what we were attempting to do. At this point I will admit I never did read that article about linking multiple instances of N1MM through a VPN. I am not a “gamer,” and I really know just enough about computers to be dangerous. Many VPNs have subscription fees, but Rolf found, and suggested a free version called “Radmin.” Rolf led the way in downloading and installing everything on his side, and I followed along using instructions he would e-mail me. Everything fell into place so easily, we joked that we must be overlooking something critical. Since we seemed stable and

ready to go with a week before the ARRL Phone contest, we invited Bob-K0RC to join in if he was so inclined. I recall operating with K0RC years ago in a multi-operator effort at the QTH of K0IR, and remember that he saved our bacon more than a few times when N1MM or the network had hiccups. We decided as a group that we would use the club call of the Minnesota Wireless Association - W0AA.

Our final configuration was K0RC, myself (WA0MHJ) operating from our home QTH's, and NR0T, K0MPH, WB0VHF, and KN0WN operating from the QTH of Rolf – NR0T in a two transmitter setup.



Once the VPN is installed, it's easy to "find" all of the others on your network.

Conclusion: As a comparison to a conventional multi-operator contest, I will use the time operating from the QTH of KØIR. Face to face interaction, camaraderie, great food, & host are hard to beat, however as KØRC put it: "It's nice to get up and get a cup of my coffee from my coffee pot. There is something to be said about being in front of your 'familiar' radio, without having to learn the nuances of an unfamiliar one. There is no need for band pass filtering when operating remotely, because you are not dealing with interstation interference. The biggest and best plus to all of this for me was having a short stroll in the evening to your own bed." I hope that ARRL will consider extending this type of operation for the future, regardless of pandemic status.

Distributed multi-operator contest setup

This is not as daunting of a task as some may think, but it requires that a few basic things are configured correctly at all operating positions. Many people recommend having a spare computer on the network should the need to do some type of "real time" maintenance arise. N1MM+ must be the same version at each computer, and configured with the same contest information; call sign, contest category, etc. All supporting N1MM files like country.dat should be current, and common at each computer. Computer time must be sync'd. I think now that many people use programs like NetTime for FT-8 time sync, this is no longer a big issue.

Once the VPN is installed, it is relatively easy to configure and "find" all of the others on your network. Once this is done, clicking on the "system" tab in the window below gives a dropdown menu of firewall exceptions, and you simply select N1MM+ as the application to be allowed.



None of us were full time, but if needed, we had the capability of putting four signals on the air at once. The concern about setting operator schedules was never a concern, as we had clear visibility of where each station was at any time. We decided any radio left unattended should be switched to a WARC band to clearly indicate it wasn't being manned. Also N1MM clearly displays in bold red in the band map display if more than one station happens to show on a given band. Frequency changes and QSO data were updated instantaneously. With the N1MM "talk box" open, it absolutely felt like we were all in the same shack. Additional details on the setup are included at the end of the article.

How did we do? I'm not sure where we will end up in the final standings, but I am pretty sure all of the operators had as much fun as I did. Our 160M totals were a bit disappointing, but the 10M activity more than made up for that. 10 meters had stations up to 28800 and beyond at times. We were able to reach 3/4 of the way to a 5BDXCC in one weekend!

Book Review

YASME: The Danny Weil and Colvin Radio Expeditions

By James D. Cain K1TN

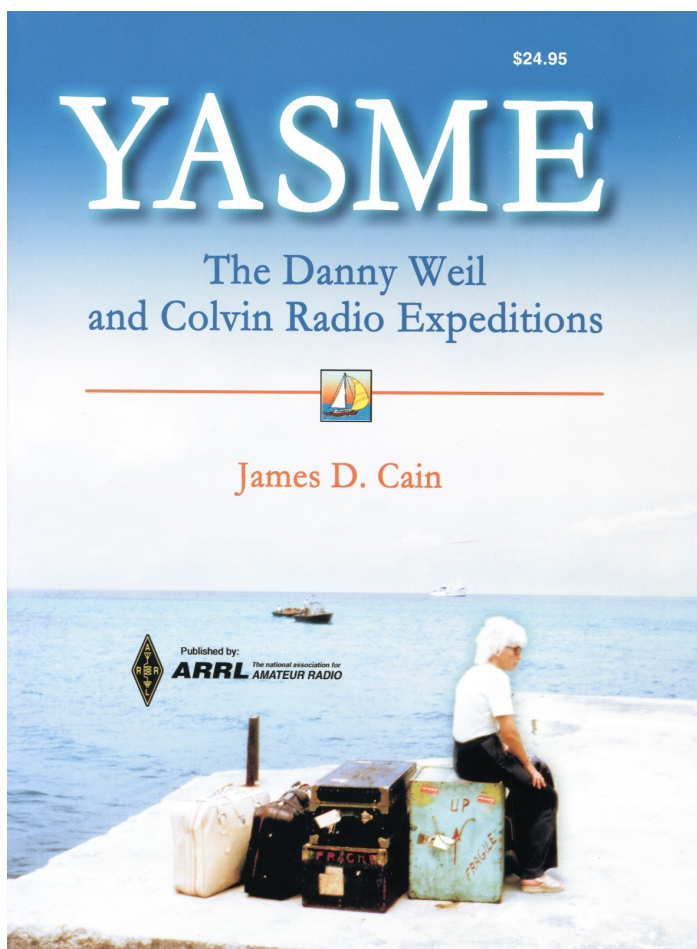
By Mike Cizek, WØVTT

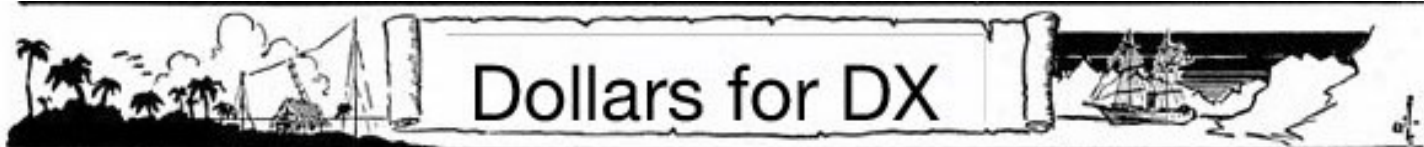
Sometimes I feel like I missed out on the “golden days” of DXpeditions: Don Miller, Gus Browning, Danny Weil, and WØMLY were all finished by the time I discovered DXing in the mid-1980s. All I could do was read about their exploits in the old magazines and DX bulletins. When I was a beginning DXer, Lloyd and Iris Colvin were the big names on the DXpedition trail, operating from over 100 countries during the course of their travels. The Colvins gave me several new ones, and I felt it an honor to meet them

on one of my first trips to Dayton, many years ago.

Jim Cain’s book YASME offers a nice look at both the Danny Weil and Colvin DXpeditions, as well as the beginnings of the YASME foundation. He begins with some background biographical info and explains how our protagonists all came to become globetrotting DXpeditioners, despite getting very different starts. Danny Weil didn’t discover amateur radio until after he had sailed from England to the U.S. Virgin Islands, where he met Dick Spenceley, KV4AA. Dick convinced Danny to get his ham license and add Amateur Radio to his travels. The Colvins were both licensed for many years before they started DXpeditions, although they travelled a fair amount during Lloyd’s Army career. The author also includes short chapters on Don Miller and Dick McKercher, WØMLY.

Being a serious student of DXCC history, I’m always interested in learning more about the world of DX, and especially about the years before I started in the game. The YASME book is very well written, and is easy to read. The book was originally published by ARRL in 2002 and has been out of print for many years. It is now available as a free PDF download from the YASME Foundation website. <https://www.yasme.org/the-yasme-book/>





Mike Cizek WØVTT
DX Grant Manager
mgcizek@gmail.com

This year has already seen a nice amount of DX activity on all bands 160 through 6 meters. We recently voted to fund the 3B7M operation to the tune of \$500, and they have been making many of us happy with their activity on the bands. 3B7 is a new one for 33% of our membership, and I hope everyone has made it into their logs at least once by now.

The only new request for funding we received this quarter was from an Italian ham going to Monaco. His total budget was for \$2200, most of which was paying for his hotel. Since Monaco is #167 on the Most Needed list, and I really didn't think our club members were interested in funding someone's vacation in Monte Carlo, I politely told him that we would not be able to fund his DXpedition.

On a personal note, this year has been very good here at WØVTT. In the first two months of 2023, I have already added more DXCC Challenge points than in all of 2022. I hope all of us are having similar success this year.



The DX Mentor Podcast Announcement

A new Amateur Radio Podcast is now available, and we invite you to give us a listen. The DX Mentor Podcast is different than any other podcast you have heard. It is focused on helping you become a better DXer no matter your current level.

Each podcast will focus on a specific topic and will feature several guests in a roundtable format to discuss and analyze the topic at hand. These guests are among the top in the subject matter and will cover the topic so that both entry level DXers and seasoned DXers will learn something.

So far, we have had guests such as 4Z1UG, W8GEX, W3UR, WØVTT, KØMD, N4BAA, W2VU, WC3W, K4ZLE, NR8Z, WBØN, K8DV, KI4KWR, and AA7A.

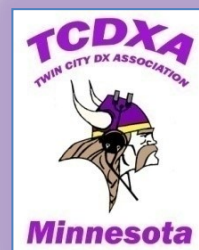
To give us a listen, go to your favorite Podcast service, download The DX Mentor and subscribe. If you prefer YouTube, subscribe to The DX Mentor YouTube® channel.

More information can be found by emailing thedxmentor@gmail.com or by calling 1-513-855-3980.



TCDXA OPERATING BUDGET FY 2023 (Sep 2022 - Aug 2023)

March 17, 2023



| INCOME | | | | ACTUAL | BUDGET | <i>Actual 2022</i> |
|--|--|--|--|------------------|------------------|--------------------|
| Surplus from FY 2022 (balance 8/31/2022) | | | | 10024.48 | | 12915.93 |
| Member Dues 2023 | | | | 4293.56 | 4400.00 | 4461.62 |
| Door Prize Ticket Sales club share | | | | 229.00 | 500.00 | 277.00 |
| Donatons (estates, wills, etc.) | | | | 0.00 | 0.00 | 0.00 |
| Refunds and Reversals | | | | 0.00 | 0.00 | 0.00 |
| TOTAL INCOME | | | | 14547.04 | 4900.00 | 17654.55 |
| EXPENSES | | | | | BUDGET | <i>Actual 2022</i> |
| Member Recruitment/Retention/Zoom | | | | 0.00 | (300.00) | (195.96) |
| Website ISP & Domain Name | | | | (97.77) | (150.00) | (97.77) |
| Office Supplies, Miscellaneous expenses | | | | 0.00 | (50.00) | (15.94) |
| Meeting Room Rental | | | | (300.00) | (600.00) | 0.00 |
| Holiday Party Dec | | | | (451.28) | (500.00) | 0.00 |
| ARRL Spectrum Defense Fund | | | | 0.00 | (250.00) | (250.00) |
| NCDXF Donation | | | | 0.00 | (250.00) | (250.00) |
| MWA Plaque | | | | (80.00) | (80.00) | (80.00) |
| DXpedition Contributions Total | | | | (756.05) | (5000.00) | (6896.07) |
| #1 Dxpediton - TN8K Republic of Congo | | | | (251.07) | | |
| #2 Dxpediton - 3B7M St. Brandon | | | | (504.98) | | |
| #3 DXpedition - | | | | 0.00 | | |
| #4 Dxpediton - | | | | 0.00 | | |
| #5 Dxpediton - | | | | 0.00 | | |
| #6 Dxpediton - | | | | 0.00 | | |
| #7 Dxpediton - | | | | 0.00 | | |
| #8 Dxpediton - | | | | 0.00 | | |
| #9 Dxpediton - | | | | 0.00 | | |
| #10 Dxpediton - | | | | 0.00 | | |
| TOTAL EXPENSES | | | | (1685.10) | (7180.00) | (7785.74) |
| NET | | | | 12861.94 | -2280.00 | |
| Checking balance | | | | 12557.64 | | |
| PayPal balance | | | | 279.30 | | |
| Cash / Checks on Hand | | | | 25.00 | | |
| NET BALANCE | | | | 12861.94 | | |

When required, Wells Fargo & PayPal online statements can provide detail not shown in this report.

Backscatter

Collected by Mark Johns, KØJM

WELCOME ABOARD

TCDXA has welcomed these new members so far in 2023:

Arlow (Bill) Andersen, KØVAA
Apple Valley, Minn.

Clay Bartholow, WØLED
Crystal, Minn.

Chris Cox, NØUK
Minneapolis, Minn.

Jodi Rasmussen, N7IDX
Lake Havasu City, Ariz.

Rob Schweitzer, KØCD
Hudson, Wisc.

Ned Swartz, K1GU
Friendsville, Tenn.

Thor Teigum, KØTJT
Madelia, Minn.

— · · · —

This will be my final edition of Backscatter, and my final issue as part of the *Gray Line* team. I've appreciated the opportunity to serve the TCDXA in this way these past four years. — de KØJM

Gary Grivna KØGX
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Dayton Amateur Radio Leader Ron Cramer, KD8ENJ, Silent Key

Ron Cramer, KD8ENJ, of Dayton, Ohio, passed away on Saturday, March 11, 2023.

He was Vice President of the Dayton Amateur Radio Association (DARA) and previously served as its President.

Cramer was General Chairman of Dayton Hamvention®, the world's largest annual gathering of radio amateurs, from 2017 to 2018. In 2017, he was among the Hamvention leadership and team who helped successfully relocate the event to its current venue at the Greene County Fairgrounds and Expo Center in Xenia,



Ron Cramer,
KD8ENJ, SK
1947 - 2023

Ohio, after 52 years at Hara Arena. In 2019, the event would go on to host the ARRL National Convention in Xenia.

"Ron was one of the most active members of DARA and Hamvention and was extremely well liked and respected," included a message from the DARA Board. "Please keep him and his family in your prayers." Cramer is survived by his wife of 49 years Liz (Ann Mergler).

[*Gray Line* thanks the *ARRL News* for the above information.]





Special Gray Line Addendum

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Special Edition – 2022 DXCC Year End Review – by Joe Reisert, W1JR – January 1, 2023

DX in 2022 was quite improved over 2021. Solar activity is on the rise mainly affecting the upper HF bands, especially 10 and 12 meters. Covid (CV) and its variants are still out there and causing problems but many DXers found workarounds. Despite CV, some DXpeditions were successful during the year although many others were postponed or cancelled due to flight problems and various personal reasons. FT8 is filling in the gaps as we'll see later.

2022 in Review: I dedicate the 2022 DXCC Year End Review to the memory of JH1AJT, Zorro-san (Little Fox) Miyazawa who became a Silent Key in March 2022 at age 73. Zorro was the founder of FGC (Foundation for Global Children) in 2010. Along with his travelling he organized many DXpeditions to rare and semi-rare DXCC entities such as E3, A5, XZ and XU to name a few.



JH1AJT, Zorro (R), with the Prince of Bhutan (L)

About 270 entities were active during 2022, about the same as in 2021. The only entity active on the top 10 on the **Club**

Log DXCC Most Wanted List (In order of rarity: P5, 3Y/B, FT/W, BS7H, CEØX, BV9P, KH7K, KH3, 3Y/P & FT/G) was FT8WW. The only other entity active in the top 20 was VKØMQ on Macquarie Island. Some semi-rare DXCC entities such as 3B9FR, 4U1UN, 9N7AA, SØ1WS, ST2NH, TR8CA, TT8SN, TZ4AM, and VK9DX(N) were active off and on during most of the year. CW activity decreased except during contests. Meanwhile FT8 activity at times averaged over 75% of the stations on the DX bands.

Some recent DX gatherings and conferences were cancelled due to CV or were on Zoom such. Others will resume in 2023 such as the International DX Convention (Visalia) in April. The Dayton Hamvention will be in May as usual. However, the former Crown Plaza in Dayton, the gathering spot for many DXers closed in October 2021.

The Arecibo Observatory 1,000 ft. (305 Meter) diameter dish antenna sometimes used for Amateur Radio purposes was destroyed in 2020. Now the National Science Foundation has de-

cided not to rebuild the antenna but instead replace it with an education center concentrating on STEM (Science, Technology, Engineering and Mathematics etc.)

Ham Radio and the Internet: There is no doubt that the Internet has had a profound influence on DXing. The DX Cluster Network is made up of many DX Cluster nodes. Many DX Cluster nodes such as DX Summit, DXHeat, VE7CC and the RBN (Reverse Beacon Network) etc. are great resources for timely DX spot activity and DX info.

When spotting DX on the DX Clusters, make sure to show the mode of operation such as CW, SSB, FT8, FT8/FH especially when the frequency spotted is not in the expected frequency spectrum. Please don't ask for skeds etc. Most DXpeditions aren't watching the DX Cluster and most users don't appreciate these interruptions.

Radio Propagation: The only known day of 0 (zero) sunspots was on June 8th. DX radio propagation was fair in early January with solar flux near 100 but improved to around 125 by early February and reached 150 by the end of March. It peaked again in mid-April and reached 165 in mid-May. Near mid-September solar flux started to average around 150. By the end of the year it averaged 110-165. Check DX.QSL.net/propagation.

As guidelines radio propagation is usually best when the A index is <15, the K index is <4, the solar wind is <375 kms and solar flux is >125. The solar flux should improve as the sun heats up during solar cycle (SC) 25. Remember that Frank, W3LPL is now reporting up to date timely HF propagation in every issue of The Daily DX based on the NOAA/SWPC web pages.

Also check out **QSO Today** which has been interviewing many prominent and interesting people in ham radio who talk about the hobby, radio propagation etc.

Recent solar forecast papers say an early peak above projections portends an earlier and higher SC peak. So far this has been happening. Check [SWPC Solar Cycle Progression](#). Watch for long path propagation to improve. We'll just have to wait and see. It still remains to be seen if there is a link between the four Jovial planets - Jupiter, Saturn, Neptune and Uranus to the long term solar cycle as some writers have proposed.

Band by Band Activity in 2022 (Frequencies in MHz):

160 Meters: DX activity was low to moderate especially on CW except during contests when activity filled the band. The cancellation of many planned DXpeditions due to CV really hurt 160 DX. FT8 activity has increased around 1.840. Try to avoid using frequencies on 160 meters that are divisible by 5 (e.g., 1.820, 1.825, 1.830 etc.) since broadcast birdies are often present.

75/80 Meters: Nowadays DX activity has been low to moderate on these bands except during contests and DXpeditions. DX was also hurt by the cancellation of many DXpeditions due to CV. On the other hand FT8 activity has increased around 3.573.

60 Meters: More entities have now received permission to operate on this band albeit many are often limited to 15 watts and a dipole antenna. Well over 250 DXCC entities have been active on 60 meters. Most DX activity is now concentrated around channel 3 at 5.357 and almost entirely on FT8. The FCC is still considering non-channelized operation near channel 3 for USA stations. The ARRL awards program does not recognize 60 meter contacts for awards. **USA stations on 60 Meters are limited to 100 watts output power and a dipole antenna.** Use of gain antennas requires reduced transmitter power.

40 Meters: 40 meters is still the workhorse band during night time and in local winter. Much activity has shifted to the FT8 mode around 7.074. CW and SSB DX activity are especially high during contests. **USA stations cannot operate SSB below 7.125 so it is best to stay above 7.128 for safety.**

30 Meters: 30 meters is still very popular especially for low power stations. This band is usually open a few hours before sunset to after sunrise but it can be open almost all day during local winter. There is lots of FT8 activity around 10.136. **The USA power limit is still 200 watts transmitter output power.**

20 Meters: It is still the go-to DX band especially during daylight although much of the CW activity has moved to the digital modes near 14.074. SSB activity is still high. As radio propagation improves some of this activity may move to the higher HF bands.

17 Meters: Low sunspot activity had really hurt the higher HF bands especially before October. However, 17 meters has been less affected and often opens shortly after 20 meters. There is lots of FT8 activity around 18.100. All modes seem to be doing well on this band.

15 meters: With increasing sunspots 15 meters is starting to open and support worldwide DX. FT8 activity near 21.074 is high.

10 and 12 Meters: These bands are beginning to support good DX. Vigilant DXers are taking advantage of the improved radio propagation. There is activity during the summer months when F2 propagation is poor but is often assisted by sporadic E propagation. 10 Meters was wide open from October through December especially during DX contests.

6 Meters: In recent years DX seems to have gone mostly digital. MSK144 is popular all year around 50.260 while FT8 is most popular around 50.313 and 50.323 during



W7GJ, Lance, during his September 2022 T07GJ 6 Meter EME DXpedition to Mayotte Island. He hopes to go to ZD9 in 2023.

band openings. EME (Earth Moon Earth) DX using digital modes such as Q65 is becoming very popular during local moonrise and moonset.

TEP (Trans-Equatorial Propagation) and other related propagation associated with the equatorial ionospheric anomaly are increasingly common with increased sunspot activity. K6MIO released a report on TEP explaining its mechanisms (ref. 1).

Over 200 stations contacted TO7GJ (FH) during a recent EME DXpedition. Three top 6 meter DXers have confirmed 280 or more entities and three North American DXers confirmed 200 or more.

2022 Month by Month DX Activity Sample:

January: This January was very productive even on the upper HF bands with over 210 entities active. Notable semi-rare stations included CEØYHO, VK9DX(N), 3X2Ø21, SV2RSG/A, 3B9FR and XV1X to name a few.

February: Likewise February saw Z21A, TU5PCT, Z81D and HVØA. As usual there was lots of DX contest activity.

March: Solar flux increased DX on 15 Meters and above. DX wise FH/K6ZO, FH/FR5DX, TZ1CE, 9N7AA, FJ/KP4DO, 9X4X, 5UA99WS, 7Q7M, 5X4E, FJ/DK6AS, C56DF, D6ØAB, FW1JG, XX9ET and TY2CP were all active.

April: This month did not disappoint with YJ8RN, XT2MAX, JX/LB4MI, HC8MD, TX5N (FO/A 54K), VP2V/N2EIN (10.5 K), 9N7AA, 9N7CI, 9N7WE, FW1JG, C91AHV and E51WL (N).

May: A special operation was VU4W (Andaman I.) working 33.5 K with 57% being FT8. Also active were HKØ/PY8WW, 4U1ITU, C5C and 6O1OO.

June: This was also an active month with 9X2AW, JG8NQJ/JD1 (JD1/M), VKØMQ (Macquarie 5.5K), D2UY, Z21RU (53K), XZ2B, 7O/DL7ZM, 5A1AL, OJØMR and FP/KV1J (3.6K).

July: 7Q7RU, PYØFUN, Z66X (2.6 K), 3A/F6EXV, 3A/PB9DX (20 K) and K7K (NA070-11K) were all active.

August: As usual this was a quiet DX month but H44MS as well as 4W/JH2EUV were active.

September: Activity increased with J5JUA, E41MS, ZL7/K5WE (18.5K), FH/OK1M, VK9XX, 5JØDX and FO/F6BCW (FO/M).

October: 3C3CA, D6ØAE, TX7G (FO/M), TYØRU (124 K), P29RO (OC240) and FJ/SP9FUY were very active.

November: This month it was reported that for one week over 230 entities were reported as active. Activity started with 5V7RU, VK9CM, A35GC, T33T, T88WA (29K), K8H (KH8-14 K), TY5AF, J5JUA, TL8AA/TL8ZZ, 4U1ITU, VK9XX and 3D2AG/P (3D2/R).

December: YOTA call signs were everywhere from dozens of countries. Also 9M6NA, H44SHD, VK9WX (W), XT2AW, S21DX (10K), 3D2AG/P (14.5K) and FT8WW were active.

Unauthorized Operations: During the year many so called pirate operations were prevalent including but not limited to YK9R, FT5XU, YI1BGD (now QRT), 1AØUN, JW6VDA, VQ9LT, RI1FJ, ZL8AC and ZL9HR etc. DXpedition call signs such as FT8WW (sometimes during activation) were often pirated. Many EZ call signs were spotted (probably E7 stations copied incorrectly) but EZ operation has been unauthorized since 2006. Also many call signs were busted or copied incorrectly and posted on the DX Clusters. WFWL (work first, worry later) still applies so don't waste your time and \$\$\$ working suspected pirates.

The CQ Marathon website maintains a large list of incorrectly spotted call signs. Many thanks to John, K9EL who is stepping down after many years running this website and turning it over to Mark, WC3W.

DXpeditions: They are the lifeblood of working the rare to semi-rare DX entities. They usually have obstacles since these entities are often in remote locations that makes travel difficult. Permission to operate from these locations can sometime be difficult to obtain and travel can be very costly. Despite this, some EME DXpeditions took place at semi-rare locations.

This year was no exception with many delays and cancellations. Hurricanes and severe storms damaged antennas on some DXpeditions. Temperatures above 35C (95F) along with high humidity and critters were sometimes a problem. Power outages and local RF interference sometimes made it difficult to copy weak signals.

Operating techniques: The INDEXA Summer 2022 newsletter discussed many operating tips. This past year was a tough one worldwide. Needless to say, the RST report on CW is now almost always 599 and 59 on SSB! FT4 and FT8 and especially the F/H (fox & hound) mode are more complex.

The **DX Code of Conduct** is a great operating guide. Don't tune up your transmitter on the common DX frequencies or on top of a DXpedition station. Split frequency operation on rare DX stations is almost always a must. Unfortunately many stations call right on the DX station frequency or tune up on same which causes panic. **Deliberate QRM is always forbidden.** The old adage still applies. Always **Listen, Listen, Listen** before you start to transmit!

Also **don't spot rare DX on the DX Cluster unless you know it's legit and surely don't spot rare DX call signs for test purposes.** It causes lots of bells to ring worldwide and unnecessary worry. Finally, don't post rare call signs to thank someone for receiving a QSL etc. Those watching the cluster do not appreciate this type of boasting.

Digital Operations: RTTY hasn't died but activity except during RTTY contests is fading. WSJT-X is often the dominant DX mode with sometimes 75% of all DX activity. WSJT-X is managed by K1JT and his development team. It can often decode signals that are barely audible. FT8 sensitivity is up to 10 dB better than CW. The developers of WSJT-X have just announced availability of candidate release WSJT-X 2.6.0-rc5. General availability release 2.6 is likely early in 2023.

FT8 can be a band opener during times of poor propagation. It also allows smaller stations to participate in DXing. The use of a panadapter is highly recommended and assists in observing where the activity is concentrated. A recent mode known as Q65 became available. It is highly recommended for EME, ionospheric scatter, and other weak signal work on VHF, UHF and the microwave bands.

According to mode analysis by Club Log, FT8 was often the dominant DX mode at 75-80% of communications outside of contests and during weekly CW Ops Tests (CWT). DXpeditions often use the F/H (Fox and Hound) split frequency mode several KHz above or below the normal FT8 channels.

Operating FT8 has a learning curve. Since most of the activity on the channel is displayed, it is fun to see many well-known DXers now operating FT8.

DX Contesting: DX contests as usual were everywhere this year and lit up the sometimes quiet bands using CW, SSB and digital modes. **CWops** have been busy all year and were honored to receive the Yasme Excellence Award.

Early reports are that it was a normal contest year with greatly increased 10 meter DX activity especially from October through December. The [WA7BNM Contest Calendar](#) is a great source of contest activity. The **ARRL Contest Update** is a monthly newsletter that often has interesting tidbits on upcoming contests and operating etc. Remember that contesters should stay healthy so you can operate long hours of continuous activity in the contest. The next [Contest University \(CTU\)](#) is scheduled for the [Hamvention](#) in May 2023.

When spotting DX on the DX Clusters, **make sure to show mode of operation** such as CW, SSB, FT8, FT8/F/H especially when the frequency spotted is not in the expected frequency spectrum. Please don't ask for skeds etc. Most DXpeditions aren't watching the DX Clusters.

DXCC and ARRL Matters: There are many interesting resources on the ARRL website including [Contest Update](#) the [K7RASolar Update](#) the [DX Bulletin](#) and [The Propagation Forecast Bulletin](#). They are worth checking out on a regular basis. The **ARRL DXCC List** is a very helpful publication for DXers and is available at a cost of less than \$6.00. New publications were published in 2022 which were primarily aimed at improving technology and assisting newcomers to the hobby such as licensing manuals. The 100th edition of the ARRL Handbook was substantially revised. The ARRL QSL bureau is another service for ARRL members.

LOTW (Logbook of the World) is operated by ARRL and is becoming very popular world-wide. It now has over 1.6 billion records with over 165,000 users. Contacts are constantly being uploaded. You can check out if your QSO has been logged on LOTW.

There are now over 1,600 persons that have qualified for the top of the ARRL DXCC- Honor Roll. Over 220 persons have reached the ARRL DXCC Challenge 3,000 level. You can see the latest ARRL DXCC Standings here.

Participants in ARRL contests using the low power category will now be limited to 100 Watts (instead of 150 Watts).

Finally, reports in the news media tell us that Bougainville, an autonomous region in Papua New Guinea (P29), has voted to become an independent nation in 2027. If this happens, it could be added to the active DXCC list.

QSLing: Postage costs and shipping costs have gone through the roof. USA rates are increasing in January

2023 and also in other countries. DXpeditions are often asking for \$3.00 and sometime up to \$5.00 for a QSL confirmation. A few countries are still not accepting mail. The USPS announced in mid-December that it is temporarily suspending mail service to over 15 countries. Paper QSLs can often be ordered either by email, web sites or several OQRS services (Online QSL Requests Service). Paper QSLs are becoming a lost art form. LOTW can often be used by those operators who don't require a paper QSL.

Club Log is also a great resource for log checking and QSLing info especially OQRS. Some DXpeditions upload their logs often so you can verify your QSO and hence eliminate duping. Nowadays most contests require log submission to the contest sponsor shortly after the contest is over.

Technology: The state-of-the-art is constantly improving our equipment. Receivers and transceivers are becoming more sophisticated and can better handle strong signals both with improved filtering and software. It is interesting to note that this is the 75th anniversary of the invention of the transistor which had a profound effect on the design of our receivers and transmitters. More vacuum tube power amplifiers are being replaced with solid state amplifiers.

Accessories are a necessary part of operating. Nowadays building is often being replaced by buying. Many commercial sources are available. Likewise electronic flea markets and ham-fests are often a great source of inexpensive equipment and accessories.

One of the areas constantly changing is antennas. As solar cycle 25 continues its rise more emphasis will be concentrated on gain and multiband antennas for the upper HF bands. These antennas do not need to be as large and placed as high as antennas in the lower HF region.

Variations of hex and spider beams are now becoming common since they are relatively small. These antennas are already being widely used by recent DXpeditions. Even a simple half wave dipole at 25 feet AGL or higher can be very effective on the upper HF bands. Remember to keep transmission lines losses low since coax losses increase as frequency increases.

Another technical subject is the problem of RF feedback, powerline radiation and radiation from antenna feedlines. These are discussed in detail in ref. 2 and ref. 3. Recent videos and papers by N6MTS are very informative in describing how to use a vector network analyzer such as the NanoVNA to check out the performance of common mode current chokes (check the Internet).

A more recent area of concern is RFI from the switching power supplies used on solar power arrays and is addressed in ref. 4. A new solar power array installation nearby my home has severely impacted my operating and overloading large sections of the HF spectrum, especially 30 meters. Thus it is limiting my weak signal operation.

RIB (Rig in a Box) is now being tested and upgraded by C6AGU/AA7JV. This is a small remote station that can be left on land when there are environmental restrictions. It is operated remotely from a boat or via the Internet.

IOTA: Poor radio propagation and CV just about shut down travel to most rare and new IOTA (Islands on the Air) activity. A few exceptions were RI5ØWS (AS104), K7K (NA070), RIØQQ (AS092), P29RO (OC240), XF1S (NA169) and S21DX (AS140). The IOTA website is www.iota-world.org. An IOTA dinner will be held in Visalia in April 2023.

YOTA (Youngsters on the Air): This is very important for the future of our hobby. Many operators are allowing youth to operate from their own station especially during the SSB contests, on the digital modes such as FT8 and some even on CW. Several groups have introduced CW training such as CWops with CW Academy, the Long Island CW Club and K1USN that transmit slow speed CW for practice.

December this year was designated YOTA month with numerous stations sporting call signs with YOTA from around the world. Several scholarships are now available to youth under 25 years of age such as WROF, NCDXF, the ARRL Foundation and ARISS. YOTA camp is scheduled for July 16-21, 2023 in Ottawa, Canada.

Safety: This can never be stressed enough. With many hams confined to working at home there is a need for antenna and tower repair. As hams are aging, it is most important to employ professional expertise for antenna work especially when tower climbing is required. Climbing harnesses are mandatory and should never be disconnected from the tower. Old school safety belts are no longer considered safe.

Silent Keys (SK): This is always a tough subject to discuss. The CV pandemic has also been a factor. Many prominent DXers and major contributors to our technology and success of our hobby have died this past year, some from CV. The Silent Key listing in the latest QSTs has recently decreased but I wonder if this is due to under reporting.

The following is a partial list of SK DXers and others that contributed to our hobby. They are generally listed in the order as they have departed us during this past year: F2YT, XW1A, W7CD, YV1OD, JH1AJT, DL7UXG (DXNL), KC6AWX, W7LR, W3TMZ, OK1RD, LA1EE, G3LIK, G3SXW, DJ9ZB, RZ3CC, DL1DA, V31MD, HI8X, CO2LP, HZ1AN, UAØSE, K6TA, K2QMF, GI4FUM, W4EA/W4ETO (ETO), HS1YL, ZL1AIH, UT5UGW, W2HD, CN8KD, W9WU, K7NV, DJ2BW, EA5BYP, OH5NQ, V85SS, UR8GX, G3JUL, W1YL, AA5B, W7OM, N6OJ, K5YJ and W9EVT.

And now the Drum Roll: DX is still affected by travel restrictions due to CV. There were approximately 70 entities that were NOT believed to have been active during 2022*.

Africa (19): 3B6, 3CØ, 3Y/B, 9Q, 9U, E3, FT/G, FT/J, FT/T, FT/X, FT/Z, S9, TJ, TN, VKØ/H, VQ9, ZD8, ZD9 and ZS8.

Antarctica (1): 3YØ/P.

Asia (10): 1S, A5, BQ9P, BS7H, EZ, P5, T6, VU7, XU and YK.

Europe (2): 1AØ, and R1F.

North America (9): CYØ, CY9, FO/C, KG4, KP1, KP5, TI9, XF4 and YVØ.

Oceania (21): 3D2C, C2, E6, FK/C, H4Ø (Temotu), KH1, KH3, KH4, KH5, KH7K, KH8/S, KH9, T2, T3Ø, T31, T32, VK9M, VP6D, ZK3, ZL8 and ZL9.

South America (8): CEØ/X, CEØZ, HKØ/M, PYØ/S, PYØ/T, VP8/G VP8/O and VP8/S.

*Please note that some rare entities may not be on this list for 2022 because operations were short, set up schedules or only on VHF, EME (Earth-Moon-Earth) etc.

Those DXCC entities that are not believed to have been activated in ten (10) or more years have increased and now includes: 3Y/B, 3Y/P, BQ9P, BS7H, CEØX, EZ, FT/G, HKØM, KH3, KH7K, KH8S, KP5, YK, YVØ and ZL8. This means that an avid DXer working hard at DXCC may take well over 10 years to make it to the DXCC Honor Roll. This list also serves as a guide to those planning DXpeditions to rare entities. As for me, the top of my need list for the DX Challenge has not changed in many years and not surprisingly goes to P5, BS7H, FT/W and BQ9P in that order.

Upcoming DXpeditions: The 3YØJ DXpedition to Bouvet Island is planned by a Norwegian group in January 2023. CYØ (Sable I.) is hoping to be QRV early in March 2023. Also TN, 9U, 3B7, 1S and others are all promised for early in 2023 but delays to some of these have already been announced.

Remember to stay tuned and check the www.ng3k.com/misc/adxo.html for future operations.

Looking ahead to 2023 and Beyond: As stated above, solar cycle 25 should be really cranking up in 2023. DX has really changed in the last few years with FT8. Some DXers chase the ARRL DXCC Honor Roll, the DXCC Challenge or the CQ DX Marathon. Well over 1,600 DXers worldwide have confirmed all 340 on the present DXCC entities list. More than 230 DXers have now achieved the very difficult DXCC Challenge 3000 level. Fernando, EA8AK now has an amazing 3271 entities and still leads the DXCC Challenge.

It's time to improve or repair if necessary your 10 thru 15 meter antennas as well as keeping your 80 and 160 meter antennas in repair. Then there are the never ending DX Contests, DX Marathon, DXCC Challenge and IOTA chasing. There are lots of things to do. Don't let the airways slow down for lack of activity. HF radio conditions on the higher HF bands are improving. Try to stay active and join the fun. Also don't forget to support the various DX foundations around the world that help make DXpeditions possible!

Finally: We hope this review has been informative especially for historical purposes. I have tried to rearrange the subjects this year. Any suggestions are appreciated. Most prior year editions can be viewed on the "[K8CX Ham Gallery](#)." They are listed on the Table of Contents.

Once again I am honored to be asked by Bernie, W3UR to write this review for the 18th year and for his valuable inputs and help. Thanks also to John, K9EL for his inputs and especially to Frank, W3LPL for his many helpful comments and inputs. Finally thanks to my son Jim, AD1C for his computer help!

Happy New Year and best of DX in 2023.
73, Joe Reisert, W1JR

NOTE: Obviously all the opinions etc. expressed are solely mine as are any errors that I have made. This End of Year Review is copyrighted. Therefore copies or use of this review MUST first be approved by Bernie, W3UR and then a courtesy copy of the reprint sent to Joe@Reisert.org.

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1. "[F-Region Propagation and the Equatorial Ionospheric Anomaly](#)" by K6MIO
2. "[Common-Mode Chokes](#)" by W1HIS
3. "[A Hams Guide to RFI, Ferrites, Baluns, and Audio Interference](#)" by K9YC
4. "Can Home Solar Power and Amateur Radio Exist" by K1KP, QST, April 2016.