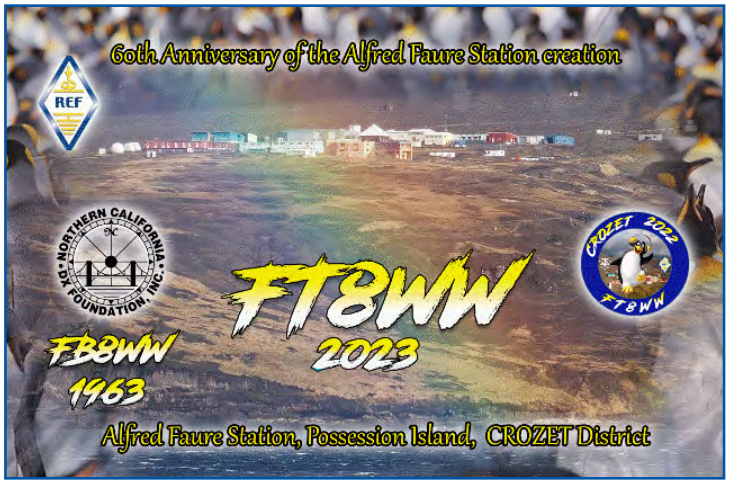
NCDXF newsletter

ncdxf.org Fall 2023

Crozet Island, FT8WW
Amateur Radio in the Middle of Nowhere

~ Thierry Mazel, F6CUK/FT8WW



After nearly two years of planning with a small group of dedicated friends, the adventure began on 10 December 2022, when my wife, Myriam, dropped me off at the airport in Bordeaux, France. My destination was Réunion Island, where Phil Bondu, FR8UA, was waiting for me at Roland Garros Airport in Sainte-Marie.

Although we had never met before, Phil and his wife, Anne, FR8TZ, gave me a wonderful reception. In these moments, the ham spirit takes on its full meaning. The following day we improvised a short photo session at the harbor of Le Port in front of the *Marion Dufresne*, the ship from which I would travel to Crozet in the French Southern and Antarctic Lands (TAAF).

Phil Bondu, FR8UA (left), and Thierry Mazel, F6CUK at Le Port, Réunion Island, prior to departing for Crozet.

The *Marion Dufresne* rotates four times a year between the sub-Antarctic archipelagos, namely Crozet, Kerguelen, Saint-Paul and Amsterdam, but for this rotation, an additional trip north to Tromelin Island would be made. Among those aboard were VSC (Volunteer for Civil Service) scientists who were heading to one of the four territories served and representatives of the French Southern and Antarctic Lands or scientists on a mission from the French Polar Institute (IPEV).

First stop: Tromelin

The first destination was Tromelin Island, where four people who had been on the islet for three months rotated out. I was on the first helicopter rotation out and, therefore, able to spend much of the day on the island.

continued on page 3

INSIDE

NCDXF
P.O. Box 2012
Cupertino, CA
95015-2012
USA
ncdxf.org

From the President's desk

Wow! As the expression goes, "A year makes a huge difference." The itch to travel on a DXpedition has finally felt some relief. Travel is easier and DXpeditions are happening, both big and small, and many more are being planned.

Sunspots are reaching higher levels, opening many more band slots for DXpeditions. Cycle 25 will definitely be remembered, especially by HF operators who have recently joined in the hunt for DXCC.

We've had generous contributions this year to the Cycle 25 Fund and we very much appreciate them. Your support and contributions allow us to fund DXpeditions, now and in the future.

Perhaps the most controversial issue at the moment is the growing use of FT8 by many DXpeditions. From the perspective of the DXpeditioners, it's "easier" putting the entity on the air by operating FT8 (yes, some operate FT4). Some DXpeditions appear to have used the MSHV version of WSJT-X in "unattended" mode — usage that falls outside the scope of the ARRL DXCC rules. Many DXers have strongly stated their desire for DXpeditions to operate more in the "traditional modes" (CW, SSB), and some even want RTTY back. NCDXF doesn't have control over all DXpeditions. For those that we fund, we remind them of the ARRL DXCC rules, and evaluate their mode and band plans before approving a grant.

One of the most interesting developments in recent DXpeditions is from what George, AA7JV, and his Radio-in-a-Box (RIB) operations have achieved. Most notable were the trips to Ducie, VP6A, and North Cook, E51D. A small team from George's boat, Magnet, lands radios, generators and antennas on the entity. Operation is from the boat via a 900 Mhz link. For both operations, George sponsored a group of remote operators, connecting to the RIBs via the Starlink satellite system. Initially, everyone felt the link was only good enough for FT8. However, Gerry, W1VE, figured out how to make it work on CW and SSB. Further improvements are in the works.

At the NCDXF Board of Directors Meeting held in person at the 2023 Visalia International DX Convention, two significant items were approved: 1) Fund youth operators for NCDXF-funded DXpeditions, and 2) Provide up to $100,000 in grants for a solution to the Deliberate QRM ("DQRM") negatively impacting many DXpeditions.

We know that younger operators can be challenged by the cost of participating in a DXpedition. NCDXF will help with that. For both NCDXF and DXpedition organizers the challenge is identifying younger operators who have both the time and interest to participate in DXpeditions.

A solution for DQRM is much harder. We continue to seek serious proposals. So far, we've received lots of ideas, but no grants have been made. See the DQRM article in this issue for more information.

This issue also contains several stories about completed DXpeditions funded by NCDXF: VU7W, TN8K, VP6A, FT8WW, 3B7M, and CYØS. See our *website* for a list of all the NCDXF-funded DXpeditions, both past and upcoming.

73,

Kevin J. Rowett

The Marion Dufresne at port. *Photo Thierry Mazel*

Tromelin, a small oval plateau, is covered with crushed coral debris. In the center and along its entire length sits an old airstrip with a few buildings in one corner, and small veloutier trees everywhere covered with nests and birds. A few coconut trees were planted next to the buildings to provide some shade. Two-thirds of the way around the island lies a beach, undermined by turtles that had dug nests to lay their eggs.

As in all the territories managed by the French Southern and Antarctic Lands, the protection of fauna and flora is at the heart of activities. Scientists, maintenance staff — almost everyone — measures, evaluates and works to preserve this heritage and leave as little human footprint as possible.

While the helicopter continued its rotations, I went around the island with a scientist as my guide. As a layman, what most impressed me was the absence of fear by the birds. They remained relatively calm as we passed by.

At the end of the afternoon, we returned to the ship and to Réunion, where we moored offshore and allowed the helicopter to drop off the staff that had rotated off Tromelin.

Next stop: Crozet

We headed south toward the Crozet archipelago, our second destination, which was where I would disembark.

Throughout the 4-day voyage, the sea was calm and I wasn't too sick. Along the way, we spotted dolphins and albatrosses. After the third day, the water changed color and the temperature dropped, and the wind was getting stronger. My t-shirt had given way to long-sleeved waterproof clothing.

Finally, on Saturday, 19 December, I saw the first cliffs of Crozet. Everyone was on deck with cameras and video to capture the moment.

Landing at last

Sunday was devoted to the comings and goings of the helicopter. Four people, including myself, disembarked, while 17 people departed. As on Tromelin, food, materials, containers and everything else necessary to allow our small community to live independently for more than three months had to be transferred from the ship.

Later, I located the building containing the cold rooms where food was stored, which would allow us to be independent between two rotations of the *Marion Dufresne*.

It was then that I discovered the base, its buildings, its lifestyle, and my future companions. That was when I realized the accomplishment of several months of work, of exchanges with the French Southern and Antarctic Lands, and the advice of the "elders." How many other Amateur Radio operators before me had hoped to be in my place? I fulfilled the dream of many. It was a bit of a magical moment.

The small community on Crozet consisted of 34 people. They were INFRA personnel (base infrastructure) who managed the base and depend on the French Southern and Antarctic Lands, and the scientific staff who work for laboratories, mainly the French Polar Institute. They all welcomed me with great care, and many of the concerns I had disappeared, as everyone was considerate.

Quickly, I found my assigned room where I would install the station. It was a relief to find the three containers that had left my house in August, almost in the state they were in when I last saw them. I must underline the remarkable work of the logistics teams of the French Southern and Antarctic Lands, ensuring that the containers

The Marion Dufresne at sea.
Photo Thierry Mazel

The base at Crozet Island. *Photo Alexandre Trouvilliez, TAAF*

were transferred to the *Marion Dufresne* preceding my arrival.

Very quickly, a concrete base was found where I could install my antenna supports. From 23 December, a team drilled, welded and bolted the two supports. The first was for the Spiderbeam mast; the second for the QO-100 dish. On the night of 25 December, I started my first broadcasts.

Equipment

Spiderbeam provided me with a pair of 18-meter poles to use as my masts. I only extended the first sections so that each pole was eight meters high. I installed three layers of guy wires (provided by Mastrant) in four directions: one at the top, one 1.5 meters below, and another 1.5 meters below the last. The 3mm diameter cables were capable of withstanding a load of 180kg.

At the top of the mast were two pulleys. The first allowed me to raise and lower a Levy-type antenna (two times 10 meters). A 600-ohm feedline provided by F6KOP fed a balun I made with two toroids. Next came a matchbox supplied by MFJ, model 998RT. Finally, a 7mm diameter coax supplied by Messi and Paoloni connected the system to the station. This antenna allowed me to cover the frequencies of 7, 10 and 14 MHz.

A second pulley allowed me to mount either a vertical or a vertical dipole for the high bands: 18, 21, 24 and 28 MHz. Here, too, we fed either with a balun for the vertical dipole, or directly for the vertical on a second MFJ 998RT matchbox.

In my opinion, the second balun was undersized, and it was my mistake not to have sufficiently tested it. This limited the output power to 250W and caused many hassles. It forced me to abandon the vertical dipole for a simple vertical, thereby removing the balun.

A second antenna system was mounted with the QO-100 dish. Nearby sited the box made by Lucien Serrano, F1TE, and offered by the REF. It allowed me to do SSB broadcasts and satellite videos. The most difficult thing was to point the dish to the satellite, in the wind — often in the rain — and with temperatures of 5°C or 6°C. It was sporty! After two days of testing, the satellite dish was set. Thank you, Lucien, for your help.

The HF station was made up of two TS-590S transceivers, two ACOM 1010 amplifiers, one of which was on loan from the Clipperton DX Club. The rest of the equipment was duplicated (microphone, Heil headset, PC, CAT, etc.).

On the air

The first QSO was on the night of 25 December on FT8 on 30 Meters with Pascal Tassinari, F8TRT, our webmaster. From the start, the traffic was tough and the pileups impressive. The agreement signed with the French Southern and Antarctic Lands indicated the conditions imposed by the French Polar Institute, namely three weeks of operation between the day of my arrival and 27 January. A daily shutdown was scheduled for a period of five hours, depending on whether the French Polar Institute personnel had to carry out a physical measurement.

At the end of the three weeks, and after agreement from the French Polar Institute, an amendment could be signed to the agreement, which would allow me to continue my broadcasts.

I started on 30 Meters at night on FT8, and, during the day, depending on the propagation, I was on 20 Meters.

Quickly, in the mornings, I switched to CW instead of FT8 in order to contact the American west coast. In the afternoons I was on CW, always on 20 Meters, with Asia and Europe. One afternoon, I tried the vertical dipole on 17 Meters, but the balun showed its limits and I modified the antenna to adapt it to 15 Meters. After a few days, my activity boiled down to 30 Meters for part of the night, then 20 Meters CW in the morning and 15 Meters in the afternoon until the end of propagation, and back to 30 Meters.

Around 5 p.m. local time (1300 UTC) the noise level became high on 15 Meters, which contributed to the difficulty of CW operation, forcing me to return to FT8.

I rested during the downtime when measurements were being taken, and the break was often longer than the imposed five hours. It was a trying time, with few hours of sleep. CW operation was difficult because the signal levels were not always very strong and the size of the pileup, 20 or even 30 kHz wide. Copying a call was difficult, and the lack of discipline, especially with Europe, did not make it easy. On average, I contacted three stations, and often four, every two minutes in order to promote ATNOs as much as possible, I limited myself to these three bands and only to FT8 and CW modes. After two consecutive hours of CW operation, I was tired, and I often took a little rest before coming back to FT8.

Over the first 21 days, I made about

21,000 QSOs. On three occasions, I had to lower the antennas because of the wind, fearing that they would give way, which reduced my activity time. In a 24 hour day, I worked around 17-18 hours, depending upon how tired I was.

Weather

I must mention the weather conditions on Crozet. Taking into account that I was there during the "summer," some days were pleasant with little wind and temperatures hovered around 10°C. Most days, however, the wind was strong, with peaks at 100 km/h — the record during my stay was 134 km/h.

It rains often, so we were frequently in the clouds, and the humidity was penetrating, even if the temperatures remained above freezing. With the wind, the feeling was quite different, and working outside was difficult. Installing and maintaining antennas was always a real challenge.

Living on the base

A community of 34 people is almost a family. Everyone pays attention to each other. Common life tasks are carried out in turn according to a schedule written by the DISCRO (head of the Crozet district, representative of the prefect, senior administrator on the Alfred-Faure base). Everyone participates, and in the event of a planning problem, exchanges between us were common.

We had two cooks who, during the stay, would do wonders for our meals. Our Christmas Eve and New Year's Eve meals gave us no cause to envy what our families were eating in mainland France. Every day we had fresh bread, baked overnight, as the chef was doing his sourdough. As far as frozen products allowed, the diet was varied and balanced, even for vegetarians. Nothing was missing.

I had my birthday while there, and the cakes, candles and the party, are unforgettable memories. We may have been isolated, but we were never alone.

A break in operations

On the evening of Sunday, 15 January, I had to stop my transmissions — and thus began a difficult waiting period while the French Polar Institute, the people in charge of terrestrial magnetism measurements, could analyze my logbook and determine whether my operations disturbed their work. I knew this might happen before I left.

I spent my days reading, accompanying scientists in their work, and taking video and pictures. I used the QO-100 satellite to transmit my pictures and videos for the educational needs of the schools with which I would have contacts in the upcoming days.

It was during this period that I had the chance to participate with Jeanne in counting and, eventually, fitting albatross rings — definitely one of the most memorable moments of my stay. Masters in the air, these birds are clumsy on land, and thankfully not aggressive, so we could easily check if they were ringed.

There were also visits to the manchotière (penguin colony). Seeing and hearing the tens of thousands of penguins brooding and vigorously defending their little corner, transported me to another world, and with the help of the resident scientists, all my questions were answered.

After two weeks, we had an answer: the activity on 10 MHz was seen by the measurements. The French Polar Institute gave its findings to the French Southern and Antarctic Lands, and agreed to extend my authorization for three weeks under several conditions, including the prohibition of operation on 10 MHz. During the fourth week I had to stop transmitting so the French Polar Institute could check the measurements again. If I did not interfere, I would be able to resume the transmissions, but I still needed to stop 10 days before *Marion Dufresne*'s departure from La Réunion, around 15 March.

The inactivity sparked a lot of comments in the Amateur world, but from the start, the agreement I signed with the French Southern and Antarctic Lands clearly specified all these stages; therefore I was not surprised and could only be satisfied that my authorization was extended.

Radio operations resume

On Monday, 30 January, the show resumed. I had taken advantage of the inactivity to change the vertical dipole into a simple vertical wire connected directly to the MFJ matchbox. I removed the balun, which definitely had overheated. This antenna allowed me to cover 28 and 24 MHz without a high SWR.

My operating schedule also changed a little. I started on 10 and 12 Meters, and I also started SSB on 10 Meters. The propagation was better. My signal, however, was not very strong since I only had wire antennas. At the request of the USA, I also started SSB on 20 Meters in the mornings, but the SSB was still a concern because of the not-very-efficient antennas and the unreliable propagation. An hour was devoted to CW every day, often more. My signal had to be strong enough to be heard by my target continent. There rarely were problems with Asian stations (mainly Japan) but it was more difficult with Europe and almost impossible with the USA, which was impacted by the prohibition of my operating on 10 MHz.

In the mornings, 20 Meters was open to the USA West Coast, but I had trouble being heard in the North American QRM. Sometimes, 17 Meters also opened up a bit to the USA and I tried to take advantage of it. In any case, the restrictions, due to scientific measurement downtime, limited my operating time and I often had to shut down in the middle of good openings. I discovered another difficulty in contacting Europe and the USA: the wall of Japanese stations. The Japanese stations were so numerous with signals much stronger than the rest of the planet that they formed a real wall, prohibiting any contacts outside of Asia.

Off the air — again

The log continued to fill up, until Sunday, 5 March. By then, I had exceeded 48,000 QSOs, but I had to stop because we were experiencing general power cuts due to a breakdown in the power plant. The cause of the outage was found the following morning. To make sure the equipment had not suffered too much damage, I made a few QSOs before shutting down the station.

The weather had changed — there was still wind and rain, but the temperatures dropped. And even if it weren't

very cold, it felt much colder with the wind.

The wind speeds were higher, reaching 136 km/h one night. The dish, which was my main concern, remained in place. However, one morning, there was no more QO-100. With the help of Lucien, F1TE, to diagnose the problem, I realized that there was water in the box. The winds and the incessant rains got the better of its waterproofing, which meant that I could not continue my programs with the schools.

AMSAT France quickly set up a back-up solution. They sent me the questions, I found the answers from the base staff, and then forwarded them to a station equipped with QO-100 in Africa or Mauritius, who relayed for me. The QO-100 link was maintained, even though it was not done from the base, the children had their answers via the satellite.

After a week without radio, I resumed for my last three days. There were still many callers for FT8WW, and I was doing SSB daily on 10 Meters, which seemed to me the best band for voice, considering the means at my disposal. One morning, I took advantage of a nice opening on 20 Meters with the USA to be on SSB. On the evening of 16 March, FT8WW was QRT.

Total QSOs, including QO-100, were 50,000. The statistics will show that I was active the equivalent of 22 days, with an average of 93 QSOs per hour. All statistics are on the *Club Log website*.

Packing it up

Now I had to think about my return. From 17 March, I tidied up, cleaned, filled the containers and completed the necessary documents for the return.

The fog, lack of visibility, wind, and rain disrupted the return schedule, which was established when the *Marion Dufresne* arrived. One day the helicopter could not take off, which also delayed the schedule, but it gave us an extra night on the base.

Once we were able to depart, I completed the rotation aboard the *Marion Dufresne*, arriving at the Kerguelen archipelago on 2 April. After a few days there, we departed for Amsterdam Island, where we arrived on 9 April. On 12 April we set sail again for La Réunion where we arrived on the morning of 17 April.

King penguin colony at Crozet Island with the ship Marion Dufresne in the background. Photo TAAF

Thank you's

You can't set up such an important project without the help and advice of many people. I can't name everyone and I hope you will forgive me, but nevertheless it is necessary to mention:

Mr. Gérald Darmanin, the Minister of the Interior and Overseas, for authorizing the project; Mrs. Florence Jeanblanc-Risler, the Prefect Superior Administrator and her predecessor, Mr. Charles Giusti; the staff of the French Southern and Antarctic Lands at the headquarters on Réunion Island as well as all the staff and friends from the base; the French Polar Institute, which despite the risk of disruption, allowed me to operate; the REF and the very many radio friends for their advice and help; my equipment suppliers; the very many sponsors and friends who, through their financial assistance, helped me bear the costs of the project, and, finally, above all, my wife who, for two years, tolerated my changing moods and supported my departure for five months.

NCDXF Fund for DQRM grant available

In April 2023, NCDXF announced a fund of $100,000 to address the continuing Deliberate QRM (DQRM) plaguing DXpeditions. No one likes it except the source. We are still looking for an effective deterrent to stop it. NCDXF needs an individual or group to step forward to address this issue.

We have had a couple of groups show interest, but other business opportunities are keeping them from committing their resources at this time. Several individuals have shared thoughtful insights to the problem.

We are looking for a dedicated person or team to take the lead in finding solutions. Are you interested? Please let us know by emailing *K9CT* or *N1DG*.

CYØS
Sable Island 2023

Jay Slough, K4ZLE

According to our team leader, Murray Adams, WA4DAN, Sable Island is a very special place. After my participation in the 2023 CYØS operation, I must agree with him. To finally obtain permission to make this multi-operator, multi-day DXpedition a reality, it took multiple phone calls, several trips from Murray's home in North Carolina to Halifax, Nova Scotia, and additional short trips out to Sable Island itself. All of this was at Murray's own expense.

The team and equipment

Our on-island team consisted of the following: Murray Adams, WA4DAN; Dan Sullivan, W4DKS; John Crovelli, W2GD; Lou Dietrich, N2TU; Lee Imber, WW2DX; Craig Thompson, K9CT; Glenn Johnson, WØGJ and myself, Jay Slough, K4ZLE.

The support team consisted of Pat Dolan, N2IEN; Bill Engel, K5DHY; Randy Rowe, NØTG; Bob Allphin, K4UEE; Hal Kennedy, N4GG; Chaz Cone, W4GKF; San Hutson, K5YY, and John Comella, N8AA. There were no rookies on either team. Two are NCDXF board members; three are CQ DX Hall of Fame members, and two are CQ Contest Hall of Fame members. Over half the team had previously operated from Top Ten entities, and our results bear witness to the quality of the team.

We operated 10 to 160 Meters, 2 Meter EME, 6 Meters and satellite. Modes were CW, SSB, FT8, FT4 and RTTY.

Antennas used were as follows: Hy-Gain monoband Yagis on 10, 15 and 20 Meters; Cushcraft 12/17 Meter A3WS duoband Yagi with diplexer; Verticals on 30M to 160M (using Spider poles); 60 Meter dipole; 3-element Yagi on 6 Meters, and two 12-element Antennas-Amplifiers PA144-12-7AGPL on 2 Meters. The same Spider Pole supported both the 160 and 80 Meter verticals. This limited us to having only one or the other band operational at a given time.

On HF there were four K3s and three KPA500 amps. The VHF station consisted of an Icom IC-705 and Italialabs 1kW SSPA amplifier.

Originally, we had planned to have near real time Club Log feeds, but the existing internet on Sable would not support that mode. True to the time proven adage, "Plan well but also plan to innovate," we had to change those plans. As a result, logs were pulled from the master at least twice per day and sent to K5DHY for Club Log upload.

This was not a tent and generator operation, but that does not mean there weren't other obstacles to overcome besides intermittent internet. While the weather on Sable was not as intense as some previous venues, it was not a summer stroll on a tropical beach. We experienced snow in some amount every day except one. Temperatures were generally in the 30s F, and the wind was almost a constant 25 knots, with gusts into the low 50s. Weather is

The local team consisted of (from left) Lou Dietrich (N2TU), Dan Sullivan (W4DKS), Craig Thompson (K9CT), Murray Adams (WA4DAN), John Crovelli (W2GD), Lee Imber (WW2DX), Glenn Johnson (WØGJ) and Jay Slough (K4ZLE).

The beach also serves as the runway on Sable Island.

also a limiting factor traveling to and from Sable, and can sometimes delay plans for days. In our case, we were delayed by half a day traveling to Sable, and because Halifax was fogged in on our scheduled departure day, we were delayed a day. That extra day allowed us to push our total Qs over 80,000.

Background

A Canadian National Park Reserve, access to Sable Island is normally limited. Because of its protective status, no interference is permitted between wildlife and humanity. The island is as pristine as nature provides. Interference is prohibited, but scientific research abounds. One scientist, Zoe Lucas, has over 40 years of experience as a naturalist there. She does continuous research and monitoring involving terrain restoration projects and biodiversity studies. While there, we learned that over 500 wild horses roam the island, and it is estimated that up to 400,000 seals arrive during the winter months to breed and pup. In addition, over 350 species of birds have been recorded on the island.

Sable is a shifting crescent-shaped sandbar that gets its name from the French île de Sable which means island of sand. It is approximately 300 km (190 miles) southeast of Halifax, Nova Scotia, and about 175 km (109 miles) southeast of the closest point of the mainland. It is not more than 1.6 km (1 mile) across its widest location and about 42 km (23 miles) long.

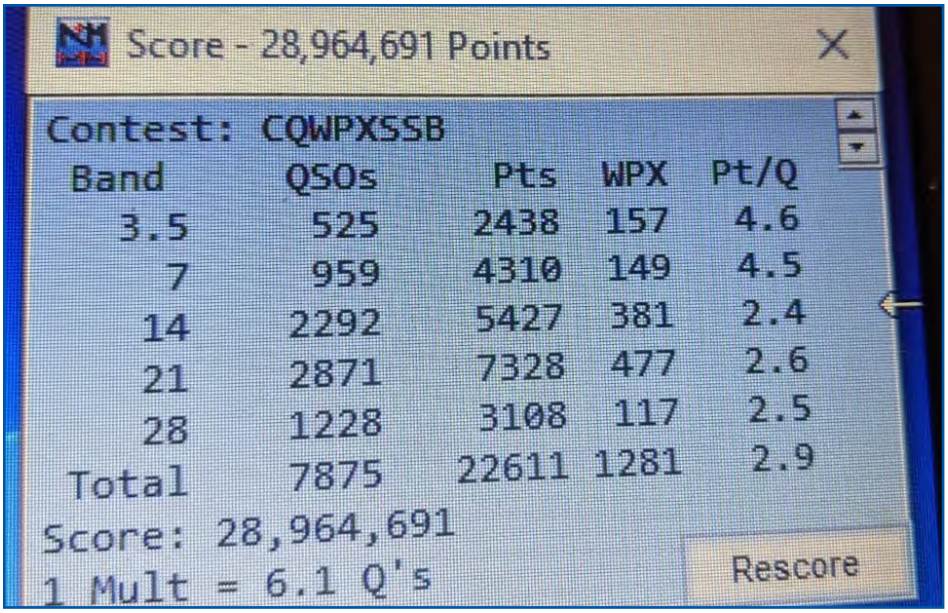
Parks Canada, which manages and protects the island, does not recommend coming by boat, so we arrived via air. Normally that would entail a charter with Sable Aviation on their BN-2A Britten Norman Islander from Halifax, NS. Because there were eight of us plus equipment, we would have had to make two trips. Instead, we chose to also employ Vision Air and their Sikorsky SK-76A++ helicopter. Otherwise, it would have taken two days each way. Our total weight allowance between the two aircraft was 3,000 pounds. We all committed to personal weight of no more than 240 pounds each, including personal items which included food for the entire island stay. Murray spent many hours (days) juggling equipment composition vs. weight to meet the weight restrictions. The island has no airstrip, so fixed wing takeoffs and landings are on the sandy beach.

Operations

We arrived on 20 March 2023 and departed on 31 March. Except for during the WPX contest, we operated split. Even though Club Log had rated CYØ at No. 49 most needed, the piles were generally massive. The team participated as a Multi-Multi entry in the WPX SSB contest with the plan to satisfy much of the phone demand during that time. We made nearly 7,900 QSOs during the contest in spite of a G-3 solar event. This resulted in a new Canadian Multi-Multi record. Overall, Japan, Oceania, Africa and South America were our priorities when there were openings. FT8 was exclusively Fox/Hound mode.

On EME and SAT operation, Lee, WW2DX, focused on 2M EME, 6M, and satellite. As mentioned previously, we did make some RTTY and FT4

Antennas whipped in the wind.



Results from the WPX SSB contest.

QSOs. Total Qs approached 85,000. As a result of this DXpedition Sable Island dropped from No. 49 to No. 73 on the Club Log most needed list as of September 2023.

I have been on many DXpeditions, some at the top of the needed list, and while those were once-in-a-lifetime experiences, I consider this operation another once-in-a-lifetime event. There is much history of this island not covered in this summary and so much beauty to be admired. I have been truly fortunate to visit this place. It is the team's hope that you made it into the log, if you wanted to and if you did not, I fear it could be another seven years or more before it is activated again. However, if Murray has anything to do about that, perhaps it shall not be so long. Time will tell.

The team at Sable Island HQ.

Thanks and appreciation

As a representative of the team, we are thankful for the individuals and organizations that made this operation possible. We are especially appreciative of Parks Canada staff (Sarah Medill and Ken Wile), our aviation partners and Zoe Lucas for their participation. And, of course, without the financial support of NCDXF and other like organizations, operations like this could not possibly happen. Thank you for your support.

As an aside and a teaser, many of the same team members are hoping to activate CY9, St. Paul Island, in 2024.

50 Years Ago
A Blast From the Past

West Coast DX Bulletin
published every week by the Marin County DX Group
November 13, 1973

One of the local QRPers came by last week and we talked of a number of things. We got to telling him about ZL4CA who was on 20 CW last week. "You know," we said, "he was first licensed in 1917." This bit of information fell awful flat as the QRPer could not extend his perspective that far into the past.

We tried but he could not get it.

Finally we said: "You know, he was licensed long before you could buy sliced bread at the grocery." This hit home.

"You mean that bread did not always come sliced?" he asked and we knew that we had lost again.

For many, all things began when they gained awareness and for $9 a year you can be aware of what you missed in DX … $10.50 brings it by airmail. Sooner or later most will find out that to make a point you'll have to relate to something to eat.

VP6A – RIB DXpedition to Ducie Island

George Wallner, AA7JV

Ducie Island, VP6A, was the first major DXpedition that used the recently developed Radio in a Box (RIB). The operation proved that it is possible to operate an effective, eco-friendly, small footprint DXpedition with good results. VP6A was also the first DXpedition to make most of its contacts using remote operators.

Pictures of the VP6A operation clearly show, or more precisely, don't show, the essence of the operation: minimal footprint. All you can see is the RIB landing craft and the five antennas. Unlike pictures of traditional operations, you don't see tents and other signs of human presence. The landing craft, which carried three RIBs, two generators, and the antennas of the 900 MHz IP link, held all the equipment on the island. All this equipment stayed on the craft during the entire time, with only the fuel cans and a few boxes on the ground. The "local" operators remained onboard a boat anchored nearby. The boat was also the relay point to the remote operators, who connected via Starlink.

Ducie Island

Ducie Island is a small, uninhabited coral atoll about 300 nautical miles east of Pitcairn Island. It is a bird sanctuary, and its lagoon is barely accessible even for small craft. Ducie is not an easy place for big boats.

We went in June 2023, a windy time of the year in the South Pacific, sailing aboard the 158-foot power catamaran *Magnet*, which is capable of long-range ocean voyages. We timed our arrival to coincide with a somewhat calmer period, and although the winds were down upon our arrival, huge swells were crashing on the south and southwest reefs, completely blocking the entrance to the lagoon and the easy to reach beaches.

We found a relatively calm spot to land and set up on the exposed north side of the island. We only had a short weather window to get everything transported and set up. Using the RIB landing craft, we were able to get all the equipment ashore and have three stations on the air in about three hours. The fourth station and its antenna were put on the air the next day.

In anticipation of rough weather, when landing at the station site would become impossible, we stockpiled fuel on the beach. When the stormy weather arrived on the third day, we had to move the boat to the southeast and then the east side of the atoll to stay in the relatively calm lee. That necessitated that we make the daily refueling and maintenance trips in a small boat through rough seas and a difficult half-mile track.

The minimal footprint of the RIB VP6A operation on Ducie Island.

Controversy

Some have complained that using RIBs makes it too easy. That it changes the "expedition" nature of the operation, and that it is somehow not the real thing. That may be true, or not, but it is totally beside the point. A DXpedition takes place for one primary purpose: to put the entity on the air. All the other stuff is irrelevant, and can be ditched if they get in the way of the primary mission.

This is the very purpose behind the RIB, and the minimum footprint operation: to put an entity on the air despite mounting restrictions. More and more, DXCCs most-wanted are becoming out of the reach of traditional DXpeditions. Rules against camping and overnight stays are being used to reject applications. And it is getting worse. If we want to activate these rare entities, we must find a way to operate within some very restrictive new rules.

The RIB is a complete station in a weather-tight box. It is controlled via a UHF data link from the boat, where the "local" operators are. The RIB contains a Flex 6700 SDR transceiver, power supplies, a remote monitoring and control system and is water cooled. The RIB offers two additional key advantages: it eliminates the need for camping, and it shortens the set-up time.

From left: George Wallner (AA7JV), Gregg Marco (W6IZT) and Mike Snow (KN4EEI) with the RIB landing craft on Ducie Island.

Operators

There were only three of us actually at Ducie: Mike Snow, KN4EEI; Gregg Marco, W6IZT, and myself, AA7JV. We had four stations on the air. One station was locally operated by us; the other three stations were remotely operated by a team of operators from around the world. They were James Brooks, 9V1YC; Donald Mikes, AA1V, Edward Stearns, AA7A; Jose Carlos Cardoso Nunes, CT1BOH; Jose Emanuel Ribeiro De Sa, CT1EEB; Filipe Monteiro Lopes, CT1ILT; Sven Lovric, DJ4MX; Paul Granger, F6EXV; Ken Tanuma, JN1THL; Brayden Ebare, KC1KUG; Lee Finkel, KY7M; Warren Merkel, KD4Z; Vivien Johnson, KL7YL; Adrian Ciuperca, KO8SCA; Norman Grant, K1DG; Nathan Wood, K4NHW; Ross Forbes, K6GFJ; Kevin Rowett, K6TD; Mark Aaker, K6UFO; Jonathan Kimball, KL2A; John Miller, K6MM; Tom Berson, ND2T; Don Greenbaum, N1DG; Steven London, N2IC; Martti Laine, OH2BH; Florian van der Wagt, PB8DX; Atilano Oms, PY5EG; Cary Rubenfeld, VE4EA; Todd Bendtsen, VE5MX; Lee Moyle, VK3GK; Glenn Johnson, WØGJ; Peter Chamalian, W1RM; Gerry Hull, W1VE, and Hal Turley, W8HC.

We operated the local station and kept an eye on the computers running the remotely operated stations. It was quite an experience watching the operators work the pileups.

Initially, remote operations were FT8 only while we ironed out some audio issues which were caused by satellite latency, but by the fifth day, with the help of Gerry, W1VE, we were up

The proof is in the numbers

We did a comparison of VP6A statistics with KH7Z/KH1, the 2018 Baker Island DXpedition, which had similar QSO counts, and the numbers show the point behind the RIB idea: lighter touch, similar results.

	Baker	VP6A
ClubLog rank	12	56
Total QSOs	68,000	62,000
Unique calls	18,091	14,974
Days on/at island	11	14
Days operating	9	13
People camping	11	0
Shower, latrine	2	0
Radios	6	4
Linears	6	1
Antennas	12	5
Tents, tables & chairs	10	0
Generators	8	2
Gasoline used (gallons)	300	80
Water (gallons)	400	1
Setup time (hours)	48	5
Tear down time (hours)	24	2

and running with remote CW. Remote stations had 100W output. The local station had a PA in the RIB.

The importance of remote operators is two-fold: it's a way to slow the upward spiral in the size and cost of DXpeditions, and it provides an opportunity for those who are not able to travel or devote the time.

Pete, W1RM, one of the remote operators, commented: "At age 80, going to some remote island is not in my future, so doing this sort of thing is truly great."

Acknowledgements

The RIB development and construction was funded by the Northern California DX Foundation (NCDXF). We have made extensive use of the Flex Radio SDR technology, which makes remote operations easy. DX Engineering provided material support. A number of people contributed to the development of the technology: Gregg, W6IZT: IT; Warren, KD4Z: Node Red software; Mike, KN4EEI: RIB construction and RIB boat (and much more); Gerry, W1VE: Remote CW. Don Greenbaum, N1DG, managed the remote operators (herding cats).

A Remote Operator's Perspective on VP6A

Don Greenbaum, N1DG

In July 2023, I was the "chief cat herder" and a remote operator on the VP6A DXpedition team. Having been on many multi-op teams including A52A, VP8ORK, K4M, and most recently the KH1/KH7Z DXpedition to Baker Island, it was a very different experience operating from home.

The best part of any DXpedition is the camaraderie of the team. You plan, you raise money, you attend ham conventions, join many Zoom meetings, and then for two to four weeks you travel with the group to some rare country or island spending $20,000 to $25,000 of your own money to hand out new countries to the appreciative horde. You get sunburned, lose your normal sleep patterns, then sleep all the way home. In the process, you make lifelong friends.

The pros

VP6A was coordinated using Slack chat channels, which added some camaraderie. Not quite the same, but we did feel like a team with a goal. Most importantly, there was no need to travel and be away from the family for a month. I got to sleep in my own bed, wake up on my schedule for two to four hours of being the DX, and come back for more shifts as needed during the day. And, I didn't have to spend the $20,000 to $25,000.

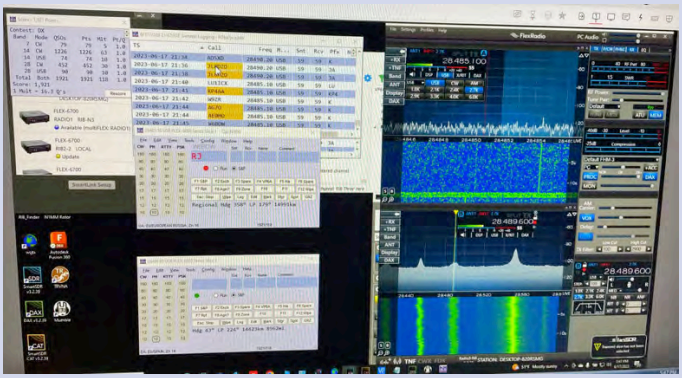
For two weeks I rose at my sunrise, while most of the other ops were either at work in Europe or asleep on the West Coast. At these times I often had two stations to myself to operate. Despite it being 0200 on Ducie, 17M and 20M were almost always open. I could run one RIB on HF and the other on 80M, 40M or 30M with plenty of customers. Early in the operation, FT8 Fox/Hound mode would often be running five streams on each of two bands.

Much of time I had my N1DG station running two remote RIB stations on FT8, plus my own station monitoring from home. SO3R?

Managing the operators

One of my roles on the VP6A operation was to organize the remote operators. We started with a core group centered around NCDXF board members and the general NCDXF community of contributors.

After a few days, with the addition of a third CW-only RIB, we reached out to additional DXpeditioners and contesters known to the core group. Word spread of the fun to operate remotely and before I knew it we had trained and scheduled over 30 operators who would keep the stations on the air (storms permitting) 24/7.



A screenshot of what the remote ops see in CW and SSB.

The final list of operators is mentioned in George's article. You will recognize many of them, I'm sure. I prepared a shared spreadsheet where the ops could pick a time and band that suited their schedule. With three radios, there were 36 two-hour shifts available per day. There was plenty of radio time for each of us. I think 36 operators is the optimum amount a lengthy (2-week or more) DXpedition needs. Not everyone can operate a shift a day with work and family commitments. Many days some operators would work two or more shifts, and during the overnight hours some ops worked two shifts and/or operated two RIBs simultaneously.

Consulting the spreadsheet also let you know who was operating on what bands. The Slack chat channel also allowed the remote ops to coordinate band changes or report operational problems to others or the Magnet crew. We had our own "911" phone number. What do they say, "no man is an island?"

Lastly, the shipboard operators had the notebooks controlling the RIBs nearby on their operating table so when they were at their radios they could watch the action.

In summary, operating from home without the sunburn, time away from family, and the labor involved in setting up and tearing down a small village for two weeks is fantastic. AND, there was no negative impact to an ecologically sensitive island or the remote op's wallet.

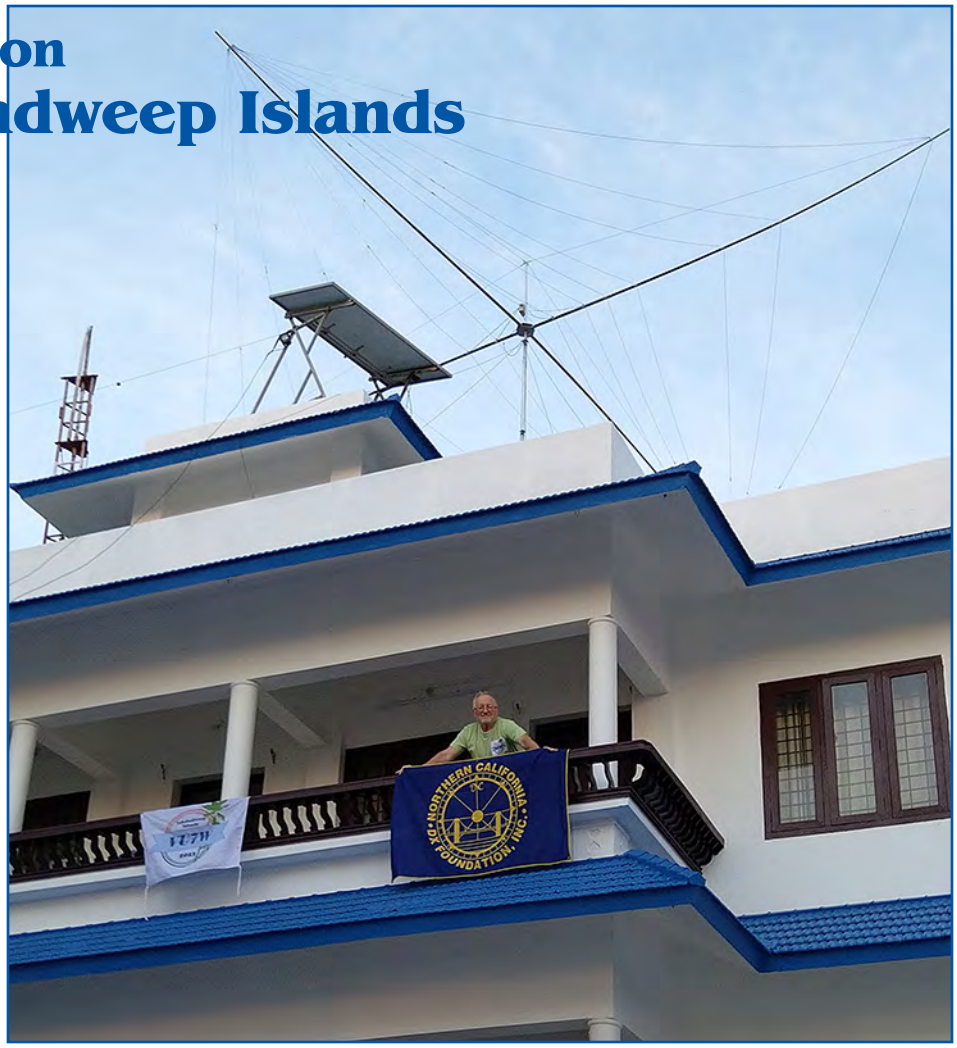
Will I ever go again in person on a DXpedition? Tomorrow!

A Double DXpedition
VU7W, Lakshadweep Islands

Yuris Petersons, YL2GM

This year started with a plan to visit Lakshadweep Islands for one DXpedition from 15-29 April; however, it turned out to be a double DXpedition — with a secondary visit from 8-19 June 8.

The journey started on 13 April from my hometown of Valka, in northeastern Latvia. Together with my XYL, Zigrida, we drove to Riga International Airport. As usual, the car was packed with antennas and equipment, this time with a total weight of 100kg. After four connecting flights we reached Agati Island, and then continued our trip to Kavaratti Island by passenger ferry, arriving late in the afternoon on 15 April.



Yuris Petersons, YL2GM, on the balcony during the Kavaratti Island DXpedition.

Operations begin

I managed to set up my end-fed half-wave (EFHW) antenna and made my first QSOs using FT8. Our three-story hotel had a flat roof, divided into segments with one of them being elevated. There was already an antenna mast on one of the segments, but it was bent, so I couldn't use it. The other segment was covered with solar panels, making it difficult to place my Spiderbeam there. I also discovered that the solar panels made noise and caused interference on the bands.

The following day, I managed to set up the Spiderbeam by mounting it in the center point of the building between both segments. Speaking with the hotel staff, I arranged to have the solar panels switched off, which significantly reduced the noise levels. However, it was still pretty high because of the very densely populated area right next to us, where no one seemed to care about saving electricity because the lights were turned on 24/7.

On Monday, 17 April, we encountered our first electricity shortage (two hours). The staff told us it was due to nearby construction work. Later, while turning the antenna, I found out that two elements were tangled, so I climbed up to fix it. Because the daytime temperatures were above 35°C, and working in the sun was quite extreme, I planned any outside tasks in late afternoons or early mornings. Even so, I still managed to get sunburned.

On Thursday, 20 April, I set up my FT-710 transceiver on FT8 as a secondary station. The main station was the Sun SDR and SPE Expert amplifier intended for CW and SSB. Unfortunately, SSB had very low activity, only about 80 QSOs with EU, 4X, BY and JA6. All attempts to reach JA3 were unsuccessful.

Island hospitality

Later that day, we were visited by Mr. Aboobacker, VU3EBX, who is the only radio Amateur on the islands. He invited us to join an excursion to visit the island's lighthouse and water desalination plant. At the end of my DXpedition, I gifted my 6M antenna to Mr. Aboobacker so he would be able to make QSOs from the island in future.

A couple of days before the end of the DXpedition, I set up an LBS vertical and that resulted in new QSOs on 60M and 160M.

Coming to an end?

During our final days, Jaffer, the hotel administrator, told us that he was going to Minicoy Island the following week and he invited us to stay there if we returned. At that point we did not know what our future plans entailed, but as it turned out, we would meet again — in the second part of this DXpedition.

On the way home, I received a proposal from a Japanese Amateur Radio group to visit the island again. They offered to support my return trip financially, and with a 6M antenna from JA1BK. I accepted their offer and left all my equipment in hotel storage in Kochi City, and we continued on our way home.

Back again

On 3 June, we started our second trip from Riga International Airport to Kochi with two connecting flights through Dubai and Muscat. Until our ferry departure on 6 June to Minicoy Island, we had two days to spend in Kochi. The travel agency would later inform us that the ferry would be delayed until the morning of 7 June, but that, too, was delayed. We finally left the port after midnight.

After arriving at Minicoy Island late the following afternoon, we drove to Minicoy Island Resort. Our living apartment was situated on the first floor and on the second, I set up my station. The first days went by as a usual with setting up antennas and regularly checking the 6M band for Japan. The first successful day was on 10 June when I managed to work 85 Japanese stations. The propagation window was very short, only about 30 minutes. There were no EU stations on this band. In total the propagation on 6M was very limited and I only managed to log about 200 Japanese stations.

On 16 June, my XYL Zigrida had her birthday. With the help of hotel staff, we organized a surprise cake and a celebration dinner outside in a tent on the beach. The staff greeted Zigrida in colorful ceremonial dresses.

A second ending

At the scheduled end for the DXpedition, the staff informed us that the ferry departure was postponed for two days. As a result, I had to cancel my flights and plans to visit Ham Radio 2023 in Friedrichshafen. Later, we learned the delays were cancelled, so there was hope that I could still attend the hamfest.

On 20 June, we returned to the port and departed on time, arriving in Kochi the following day around noon. We were able to get on the next flight out to Dubai, and to Riga. Once we arrived back in Latvia, Zigrida continued home and I flew on to Friedrichshafen.

Acknowledgments

Thanks to everyone who supported and followed us on this journey, and thanks to everyone who worked VU7W. In total 60,000 QSOs were made. For more info, visit the expedition website at *lral.lv/vu7w*

Saint Brandon Island, 3B7M

Lubo Martiska, OM5ZW

The idea to visit the Mauritian isle of Saint Brandon started in May 2022 before Sylvia Ondruskova, OM4AYL, and I visited 3B8. I tried to get a license for a 3B8 holiday DXpedition, but I applied too late so there was nothing to do but to take a holiday. I had already arranged some appointments in Port Louis, the capital city of Mauritius, regarding the activation of St. Brandon/3B7 and the organization of the DXpedition.

At that time, St. Brandon was ranked No. 54 of the most wanted DXCC worldwide and around No. 30 in NA. Many things had to be arranged — licensing, logistics, transportation, and entry permits — as well as putting a team together. The initial idea was to do a Czech-Slovak DXpedition with a maximum of six people, so I approached David Beran, OK6DJ, and a few people from the Czech DXpedition Group (CDXP) because they had experience in organizing DXpeditions.

Who's up for a challenge?

However, even they had never put together a DXpedition of this type before. Located 430km (about 270 miles) northeast of Mauritius in the Indian Ocean, St. Brandon actually encompasses 13 islands which are little more than sandbanks, shoals and islets — and most are without water, food, electricity, internet, etc. All team members were up for this new experience.

It was necessary to have a person in Mauritius to help us with obtaining all the necessary permits as well as logistics. That person was Mathieu from Raphaël Fishing Company, which manages the St. Brandon archipelago. He helped us arrange transport, permits, power generators, power cables, food, drink, fuel, etc. It was the license that was very difficult to get, but after several urgent attempts, we obtained it in October 2022.

Because we were still in the pandemic period, there was the possibility that we would have to spend a week in state quarantine — and this project would flop. Negotiations continued between Mathieu and the Ministry to cancel the mandatory quarantine. Fortunately, after many sessions, the requirement was lifted, and our goal was a bit closer.

The team was gradually formed, and the final line-up was settled on in December as Rudolf Sedlak, OK2ZA; David Beran, OK6DJ; Rudolf Karaba, OM3PC; Sylvia "Sysa" Ondruskova, OM4AYL; Martin Znasik, OM4MM; Jozef "Joe" Reck, OM4MW; Miroslav Bebjak, OM5RW, and myself, Lubo Martiska, OM5ZW.

Our Czech friends were still waiting for the DXpedition to Congo, TN8K, so our Slovak part of the crew started with preparations of equipment and other things. Satellite internet was the alpha-omega of our DXpedition. Luckily, I managed to contact WRX Slovakia who helped us with satellite internet as well as satellite transmitters. We were limited by data, but it would be enough to update the logs and send some photos.

We still had to get access to the island from Outer Island Development Corporation (OIDC), and that was the responsibility of our agent, Mathieu, who updated us daily. With

The 3B7M team: (from left) Miro, OM5RW (kneeling); Martin, OM4MM; Ruda, OK2ZA; Jozef "Joe," OM4MW; Sylvia "Sysa," OM4AYL; Rudolf, OM3PC; David, OK6DJ, and Martiska, OM5ZW.

10 days to go, it was done and all the documents from our side were processed.

More obstacles

Summer is considered cyclone season and in early February we were anxiously watching Cyclone Freddy. It was supposed to sweep through a day before our arrival, somewhere between 3B8 and 3B7. Mathieu had already called to tell me that because of the cyclone, they had to evacuate everyone from the South Island to the North Island, about 50 km away.

In mid-February, we all set off for Mauritius, and were met by Mathieu and his companions who awaited us with two big taxis. After we stowed our things, we headed out to shop for some additional supplies.

The following day, the Ministry still wouldn't grant us an ocean sailing permit and, after waiting at the port for six hours, we resolved ourselves to spending another night in Port Louis. Returning to the port the next morning, we were greeted by smiling faces. We had permission to sail! The cyclone was heading south and it was far enough away to no longer be threatening.

Bon voyage

On 24 February 2023 at 10:30 a.m., we departed for 3B7. Seasickness set in quickly once we reached open ocean. Some team members took medication to combat mal de mer, and they were sleeping. Miro, OM5RW, was the best of us, being a former sailor. He had a smile on his face.

We sailed along at 8-10 kph, but because we were laden down the trip dragged on. We also needed to go to North Island and pick up the evacuated crew, which only served to make our trip six hours longer. We finally reached our destination around midnight, but had difficulty in finding a buoy to anchor. Disembarking was another problem, so we only took the essentials, one radio, PA and an antenna for 30 Meters to begin operating.

Freddy's gift

We were horrified to find that Cyclone Freddy left a distinctive trail. Our rooms were full of sand and dirt. Ruda, OK2ZA, and David, OK6DJ, began building the 30 Meter antenna in darkness. We unpacked one radio and started operating. The first QSO was on 30 Meters with DM4AO, and by morning we had about 800 CW QSOs in the log.

At morning's light, we started to build antennas — one Spiderbeam, two VDA on 10 and 12 Meters, and a vertical on 40 and 80 Meters. At the same time, we were ramping up operations on 10 and 12M. The pileups on SSB were 50 kHz wide and on CW 20 kHz wide. Conditions were very good on the upper bands and we were

mostly targeting 10 and 12M where we were a new one for many stations. We had four stations in operation and tried to work mainly CW and SSB. At the same time, we were starting to use a TS-480HX for running FT8. By the way, FT8 was launched from the island for the first time ever. The upper bands were open until 0200 local time, about eight hours after sunset. We were trying to give QSOs to as many stations as possible while giving priority to NA since 3B7 was very high in the most wanted rankings there. On SSB we had Ruda, OK2ZA; Sylvia, OM4AYL, and Martin, OM4MM. CW was mostly Joe, OM4MW; Rudy, OM3PC; David, OK6DJ; Miro, OM5RW, and Lubo, OM5ZW.

The diesel generator that Raphael Fishing Co. used to power the house failed after our first day, and it was determined that the supply cable was to blame. Fortunately, we had spare cables, as well as spare generators. One was a 6.5 KVA Honda EU 65; the other was a 3 KVA Honda EU 30 which we had rented on 3B8. We also brought about 700 litres each of gasoline and diesel to the island. We were thoroughly prepared for this scenario because we could not have done it without electricity.

Operations in full swing

The following day, we started building more antennas: Spiderbeam 2, vertical for 160 Meters, and Beverage and EWE antennas for receiving. At night, we started operating on 160M and suspected that with reception on the island it wasn't going to be so easy. The Beverage antenna was not hearing, as there was no proper ground on the island. In addition, interference from power stations caused us a lot of problems. Miro, OM5RW, built the EWE antenna which could be partially listened to, but it was hearing as well as expected. Nevertheless, we were making some QSOs.

The next morning, we tried to get the satellite internet up and running to update the logs. We were communicating with our pilot Peter, OK1FCJ, who gave us all the necessary information on email. Since we had limited data, it was necessary to keep communication to a minimum. We did make a short call home via the INMARSAT satellite network to let them know we were okay.

David, OK6DJ, started QO-100 operation. The contacts gradually came in and we tried to work mainly the CW and SSB modes. After four days of operation, we reached our first 50,000 QSOs. The equipment used was two FTDX10, three SUNSDR, one TS-480, one IC-705, two Expert 1K3 PA and two JUMA1000 PA. We also had bandpass filters, microKEYERs, and about eight laptops.

Island life

The kitchen was simple. Joe, OM4MW, started to feel as hungry as a wolf, and the word "fish" began to sound more like a swear word than food to some members of the DXpedition. There were some members who still enjoyed fish and, looking at the amount of fresh lobster, made it look like a Sunday lunch. Breakfast was mostly toast with peanut butter and jam. We had plenty of beer, since we had several teetotallers on the team. As such, toast with beer was a good breakfast combination for some! We were definitely not starving.

The high temperatures and related fatigue started to get to us. Some took it as an excuse to relax. Sysa, OM4AYL; Lubo, OM5ZW, and David, OK6DJ, accepted Mathieu's offer for a fishing trip. The locals gave us a tour of the nearby islands and took us fishing. David, OK6DJ, caught a nice fish and our dinner was certain. In addition, we swam in the beautiful water of the Indian Ocean without crowded beaches. We were completely exhausted when we returned from our 3-hour trip.

Meanwhile, the remaining team worked the pileups and Rudo, OM3PC, together with Joe, OM4MW, performed a meritorious activity. We had about 80,000 QSOs in the log with four days to go. We knew for sure that if nothing extraordinary happened, we would reach the magical 100,000 QSO total. However, as the days went by, we endured more frequent storms, which caused quite a few problems. After one such storm, both Spiderbeams and the 80M vertical were blown away.

At night, it was almost impossible to work stations due to the strong QRN. We crossed the magical 100,000 QSO mark with more than two days left. We began to pack up, taking down the lower band stations, RX antennas, and, gradually, everything else. There was much to do, as one group transmitted while the other group packed. As we finished packing on the morning of our departure, David, OK6DJ, made the last QSO. We finished our effort with 123,000 QSOs in the log.

Successful ending

The long boat ride back to Mauritius awaited us, but most of us slept the whole way because of fatigue. After 24 hours, we arrived. We all had dinner together and evaluated our effort, before our flight home the next day.

Despite all the problems, we rate our DXpedition as a success. We made 25,000 unique station contacts possible.

Thank you to all OK/OM stations for calling us and thanks to the many OK/OM sponsors listed on our website *3b7m.com*. Thanks also to the CDXP guys for their help. We hope this was not the last mutual CDXP and OM7M DXpedition.

TN8K, Republic of the Congo

by the TN8K Team

The Republic of the Congo (the Congo) (TN) is located on the west coast of Africa in the equatorial region. It is very similar in size to Germany, but for its size, it has just under five million inhabitants. Although the official language is French, the inhabitants speak Kituba. The country is quiet from a security point of view, unlike its "related" neighbor, the Democratic Republic of the Congo (9Q). TN is ranked No. 80 on the Club Log's "Most Wanted" list.

The Congo is a country we have been thinking about activating for years, but only now were we able to implement this rather difficult project. It did, however, turn out a little differently than initially planned.

Planning stages

The basis of every DXpedition is always an Amateur 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 DXpedition was then planned for September 2022, time enough, or though it seemed. But, as it often happens with African institutions, communication was slow.

In the meantime, we looked for a QTH. Many 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 23 June 2022, we learned that we would be able to get the license in time, and took a risk by purchasing airline tickets for September. As fate would have it, we received two individual licenses for TN/OK2ZI and TN/OK6DJ, which were unusable for the DXpedition. It was clear that obtaining the club license we requested would drag on, so we re-booked our flights for January 2023, and it took another two months to get the club license with the TN8K call sign. The following day, the DXpedition 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 Congo. It was clear that, in terms of equipment, this DXpedition would be the biggest we had ever undertaken, and also the most expensive.

On 15 Nov, the regular pre-DXpedition meeting took place at Petr's (OK1FCJ) QTH in Ritka. All of the antennas had been checked and packed in four special bags and the passports of all participants were sent to Paris for visas. The passports were returned on December 19 with the visas pasted in.

A meeting with the whole team — Petr Bohacek, OK1BOA; Palo Halek, OK1CRM; Petr Spacil, OK1FCJ; Pavel Novak, OK1GK; Ruda Sedlak, OK2ZA; Ludek Odehnal, OK2ZC; Karel Odehnal, OK2ZI, and David Beran, OK6DJ — took place on 5 January at Ruda's QTH.

We completed the final packing and transporting of trunks and cabin baggage, and in total, we had 17 23kg (50 pound) pieces of baggage and eight 12kg cabin bags. Arriving at the Vienna airport, check-in was relatively smooth, as were the flights from Vienna via Paris to Pointe-Noire.

Arrival

The first major problem came upon 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

Our QTH in Pointe Indienne with an ocean view.

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 present during our 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, 350 meters of coaxial cables.

From the airport, we started the 20km-long journey to the QTH, which took almost an hour through the clogged city streets and 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, 500 meters 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 surrounded by meadows and pastures, with the possibility of building antennas in the garden and surrounding area.

There was no power connection in the QTH, but with the powerful 30kW diesel generator, this was not a problem. The generator worked perfectly, except that it consumed 1,200 liters of diesel during our stay.

Hit the ground running

We arrived on 6 January at 1300 local time, and because we wanted to be QRV on the lower bands the very first night, we immediately unpacked our bags with the antennas and started building. By that evening we had built a vertical each for 160M, 40M, 30M and 80M, plus two Spiderbeams. All the verticals had 10 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 converted the main room of the house into an operator's room and installed eight workstations: K3 + Expert 1.3K-FA; SunSDR2DX + JUMA; SunSDR2pro + JUMA; FT-DX10 + JUMA; 2x IC-705 + JUMA, and 2x TS-480HX (primarily intended for 6M and FT8/FT4).

The first TN8K contact 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 2,000 contacts by midnight. The pileups were huge on all bands, so it was clear that we would not be bored.

The following morning, part of the team worked on the antennas, moving the 40M antenna to a meadow outside our property and upgrading it from a simple vertical to a two-element phased array. Then, we moved the 30M vertical to a fence for the final position and upgraded it to a two-element phased system. We erected mast number three with a trio of two-element duraluminium Yagis for 17M, 15M and 12M, and then mast number four with five elements for 6M and four elements for 10M. We couldn't build the 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. A sudden thunderstorm and windstorm came up that afternoon, and fortunately,

Constructing the antennas.

Operators at their stations.

all of the antennas survived, but for the 40M vertical which fell to the ground. Thankfully the repair only took a few minutes.

By 1600 UTC the storm was over, all damage had been repaired, and the SWR of the antennas was rechecked. 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 was to build an RX-point behind the fence, to which all of the Beverage antennas were connected. We stretched the first one, 150 meters long, toward EU. 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 an unusual number of 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.

Progress

The next morning we put up another antenna, a 20-meter 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 20-meter antenna. 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 150-meter Beverages were stretched towards JA and NA.

Some team members 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 being Sunday the special desk at the airport was closed, so we had 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.

After retrieving the lost trunk, we immediately unpacked it and completed our eighth work station, which was missing a power supply with wiring for the K3, and began preparing the Spiderbeam, which was the only one of the three tuned to the SSB parts of the bands. As far as possible, one station was in operation permanently on SSB, three to four stations on CW, and two on FT8. 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 sent 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, there too, we 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.

The whole night of 10 January was very quiet — there were almost no QRN on the lower bands. Unlike the previous nights, the 80M band worked great and conditions were good. Surprisingly, 160M didn't work at all. The conditions were also similarly miserable on the upper bands in the morning.

A herd of cows came through the open pasture and messed up our radials for 80M and 160M verticals.

During the day we finished the remaining antennas, putting up the last Spiderbeam for SSB and set up a quarter-wave vertical for 60M in a meadow far beyond the property line. There was a lot of interest in the contacts on this band, and we made over 1,000 contacts there on the first night. The only nuisance was that we had to disassemble and modify the IC-705 TRX, as it had 60M blocked from the factory and we had to modify the setting following the instructions on YouTube.

That afternoon, when it was not so hot, we built a two-element vertical system for 40M pointing to NA and another vertical for 30M. These antennas were planned, but without the coaxial cables from the lost trunk, there was no point in building them earlier.

We also made the first satellite link via QO-100, which was our first time on this band and the first time it was used in the Congo. We had asked the owner of the facility to purchase a satellite dish antenna for us in town, but in the meantime, we transmitted provisionally 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 an IC-705 + JUMA, so that evening the call TN8K appeared simultaneously nine times on the air, with seven stations working in "human" modes and two on FT8. These FT8 stations were operated by operators on their tablets in parallel with CW or SSB traffic.

Continuing operations

Every morning the upper bands worked fine to JA and so we gave those stations plenty of space. We tried the simultaneous operation of three stations on 15M: CW, SSB and FT8, and it worked with minor problems 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 150 meters towards VK and decided to extend the JA beverage by another 100 meters, but that was easier said than done. What looked like a meadow was actually a grass-covered swamp and pulling 100 meters of wire and quarter-wave radials took over an hour. If we had known what terrain we were getting into, we might have changed our minds.

We also took a commemorative photo to mark 60,000 contacts in the log.

Afternoon conditions were very good on the upper bands and lasted until midnight when 10M was still full of stations. Unfortunately, toward the evening of 11 January, we encountered heavy thunderstorms so QRN was very tiring. After midnight, the storm was so intense that we had to shut down for a while and disconnect all antennas to prevent possible damage to the equipment from static electricity.

As soon as the storm subsided, we got back to the stations, but shortly after the traffic had started it was stopped again due to a power outage. The generator stopped working unexpectedly and did not start again.

Just after dawn, the staff working on the repair found that the V-belt had broken. We managed to get a replacement 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 also learned that a dish antenna could not be found in any shop, so the owner of the building allowed us to dismantle his satellite dish and use it for QO-100 — on the condition that we put it back at the end.

We also moved the RX loop farther away from our facility, using our last piece of coaxial cable. At night, traffic continued on the lower bands and the Beverage antennas were also used on 60M, where we worked on CW for a few hours, and many new stations were logged.

The following morning the conditions were weaker on the upper bands, then another cloudburst came through. The floodgates opened and the rain drummed on the tin roof 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 opera-

tor's voice was almost lost in it. After the rain, the conditions were excellent in the afternoon and evening. The previous day's 60M traffic lured us in, so we continued CW, but listening on the vertical was difficult due to equatorial QRN. Almost every character 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 was something that is very difficult to experience in Europe.

Technical issues

On 14 January, the first technical fault occurred: the bandpass 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 radio and the PA, and the radios always had enough power to drive the PA. Another significant goal was reached that day: 100,000 contacts in the log.

The following morning there was rain again, sometimes very heavy, and there was so much water that it could not even soak into the sand. 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 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 in 2021 was surpassed.

Two neighbors on whose land our verticals for the lower bands stood, stopped by for a visit. They 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 within a week and everything cleaned up, they thanked us for the explanation and left with a friendly nod. Almost unprecedented for Africa: someone would allow you to do something for free.

Continuing on, the lower bands were working well at night, but there were not as many stations in the log as there could have been, 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 the traffic of JA stations was exemplary. Europe was, of course, a mess as usual. More often we encountered the annoyance of calling stations putting their call signs twice in a row on CW. That was extremely annoying because the operator usually gets the call sign the first time and thus doubles 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 80M and 160M, stations that call with their call sign twice gain an advantage. There's more time to tune in their signal and receive their call sign on the next go.

On 17 Jan, we hit another goal: 140,000 QSOs in the log. We were thrilled with how the number of contacts was increasing and how callers

First QSO: **2023-01-06 18:46:00**
Last QSO: **2023-01-20 06:20:00**

Band/Mode breakdown

Band	CW	FT8	FT4	SSB	RTTY	FM	Total	Total %
160	1954	1465	14	0	0	0	3433	2.1%
80	3675	2271	539	315	0	0	6800	4.1%
60	660	2978	320	96	0	0	4054	2.5%
40	4799	6943	2467	1741	0	0	15950	9.7%
30	5238	7066	2300	0	1197	0	15801	9.6%
20	5093	8241	3199	4959	1625	0	23117	14.0%
17	7753	5954	3576	4662	0	0	21945	13.3%
15	9069	9437	3394	7174	0	0	29074	17.6%
12	8005	4865	3271	6164	0	0	22305	13.5%
10	5782	6179	2832	4812	0	1172	20777	12.6%
6	0	99	0	0	0	0	99	0.1%
2	0	25	10	0	0	0	35	0.0%
13	324	371	277	577	0	0	1549	0.9%
Totals	52352	55894	22199	30500	2822	1172	**164939**	

were checking the empty fields on Club Log. However, our joy was somewhat spoiled by the fact that the DXpedition was fast nearing its end. The pileups may have been a little weaker, but there were still so many callers at the opening peaks that we would have had plenty to do even if the DXpedition had lasted a month. It was the last day of the QO-100 operation, with over 1,500 contacts in the log. We regularly monitored propagation conditions. The report showed aurora and A=14 that day which made the upper bands almost non-existent.

Another unexpected visitor arrived, in the form of a large herd of cows that messed up our radials for 80M and 160M verticals. We were rather lucky that they only came once, and toward the end of the DXpedition.

The end closes in

The last day of full operation, and more and more stations were 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 their full call sign. This causes an unnecessary delay 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.

Conditions were poor in the morning, so we retuned the 80M vertical to SSB. We also posted that this night would be fully dedicated to SSB traffic on both 80M and 60M, which we were often asked about. Both bands had a Beverage antenna available for better RX. The RX loop barely worked this time, probably because it was too close to the transmitting antennas. On our previous DXpeditions to S9 and HKØ/A the loop was far from everything and worked very well.

We worked all night on the lower bands. We could sense that many callers knew that if they didn't make the QSO now, they never would. A lot of well-equipped stations tried the "trick" of calling repeatedly, even though they couldn't hear us properly; some even gave their report along with their call sign thinking we would log them. 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.

The following morning the packing of antennas started. First the Beverages, then verticals (160M, 80M, 40M) and from the phased pairs, only one pair on 30M and 40M remained. 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.

We had received news about a transport strike in France, which could affect our flights. 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 on the official Megaexpeditions all-time ranking.

Karel and David briefly activated their TN/OK2ZI and TN/OK6DJ personal licenses and made about 200 CW contacts just for fun before they fell into their beds with fatigue.

At 0620 on 20 January, we made the final QRT, and 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.

Departure day

That afternoon the whole group moved to Pointe-Noire, where Pierre invited us to lunch before we said our goodbyes and headed to the airport. Pierre had arranged for help from Air France for the check-in, but it was not without problems, taking almost three hours. Two of our bags with antennas were allegedly over the size limit, and no explanation or persuasion helped. We had to pay an extra fee, a total of €600.

Fortunately, the plane left on time and, after a short stopover in Angola, continued on to Paris for our flight to Vienna.

Acknowledgements

Thank you to all of 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.

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 Giselle and Rene, the couple who were in charge of 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 of the antennas worked as they were supposed to.

We also thank our 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 Ploiters 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 Tennesee 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.

For detailed statistics see the *TN8K club log*.

Cycle 25 Fund & Cycle 25 Society

To help supplement NCDXF's mission to provide necessary financial support for well-organized DXpeditions to rare and financially demanding DXCC entities, NCDXF established the Cycle 25 Fund in 2016. The goal of the Cycle 25 Fund is to double NCDXF's endowment through significant estate gifts from current DXers, which will allow NCDXF to continue its mission throughout sunspot Cycle 25 and beyond.

NCDXF Vice President, Craig Thompson, K9CT, who oversees the Cycle 25 Fund, has established a Cycle 25 Society for those who participate. Thompson said, "The Cycle 25 Society is for honoring those special individuals who commit to estate giving before the next sunspot maximum. When you let us know your plans, we will honor you on our website and send you a special Cycle 25 Society pin as a memento of your thoughtfulness."

Since the announcement of the Fund, the following individuals have made estate-planning commitments:

Tom Berson, ND2T
Al Burnham, K6RIM
Bruce Butler, W6OSP (sk)
Rusty Epps, W6OAT
John Grimm, KØYQ
Rich Haendel, W3ACO
Glenn Johnson, WØGJ
Hardy Landskov, N7RT (sk)
Ed Muns, WØYK
Alan Rovner, K7AR
Bob Schmieder, KK6EK
Rich Seifert, KE1B
Charles Spetnagel, W6KK
Ned Stearns, AA7A
Randy Stegemeyer, W7HR
Craig Thompson, K9CT
Dan White, W5DNT

Craig invites DXers interested in the Cycle 25 Society to visit the NCDXF website *ncdxf.org/pages/estate.html* for more information. You can also contact Craig to discuss Cycle 25 Fund funding options, including specific bequests, designation of IRA beneficiaries and purchase of an annuity or life insurance.

DXpedition Lending Library

NCDXF has a number of VHS/DVD videos and Microsoft® Power Point presentations on CD-ROM available for loan to organizations wishing to show them at their meetings. There is no charge to use the programs in the **Foundation's** library, but clubs borrowing materials are responsible for postage in both directions. To view the complete listing of programs available for your club's use, visit our website, *ncdxf.org*, and click on "Videos."

Contributions

NCDXF relies heavily upon the generosity of its contributors to fund various projects. We ask you to consider making an annual contribution of US$50 or its equivalent in foreign currency. However, we do not wish to exclude anyone from the **Foundation** for financial reasons. If $50 is not within your budget, then please give what other amount you can. Naturally, we welcome contributions in excess of $50! **NCDXF** is an organization described in Section 501(c)(3) of the Internal Revenue Code and all contributions are tax-deductible to the extent permitted by law for U.S. taxpayers. Send your contribution to: **NCDXF**, P.O. Box 2012, Cupertino, CA 95015-2012, USA. You may also contribute and order supplies online via our secure server, visit *ncdxf.org/donate*.

Qualified Charitable Distribution (QCD)

Are you 70½ years old or older? If you donate to charities, then you can save on your taxes.

The IRS issued a press release in November 2022 stating that you can use a Qualified Charitable Distribution (QCD) from your IRA to save on taxes.

All of us at this age can or must take a distribution each year from our IRA or 401(k) plans. Take a look at the distribution form from your plan trustee and you will see that there is a way to have your plan trustee send the distribution to selected charities or 501(c)(3) entities. If you meet the age where a Required Minimum Distribution (RMD) must be taken each year, this election qualifies as your RMD and, because you are sending the money directly to the charity, no taxes are withheld! Check with your tax advisor about which method is best for you.

NCDXF is a qualified 501(c)(3) organization and you can send money directly to NCDXF without any taxes being withheld. Please let NCDXF know that you are sending this from your plan trustee so that we can give appropriate documentation to you recognizing your donation.

For more information, please go to the IRS website and search for IR-2022-201, November 17, 2022.

Show your support for NCDXF

NCDXF offers several ways for you to show your love for DXing! Impress your friends with a gold-toned lapel pin at a DX convention. Show up at your next hamfest sporting a NCDXF ball cap, don a NCDXF T-shirt or keep warm wearing the new NCDXF 50th Anniversary hooded sweatshirt or knit beanie to set up your Yagi on Field Day. We've also added wicking long-sleeved tech shirts to keep you looking *and* feeling cool on your tropical DXpedition. And when you return from that rare DX entity, you can send out your QSLs affixed with an NCDXF label. To place your order, fill out and mail in the form below or visit *www.ncdxf.org* to place your order online through our secure website. *Please note, due to drastic increases in mailing costs, shipping (included) is only available to US addresses.*

Navy blue long-sleeve hooded sweatshirt with full-length front zipper and pockets (sizes: S, M, L, XL, 2X & 3X)

White, long-sleeve tech shirt (sizes: M, L, XL, 2X & 3X)

Navy blue short-sleeve t-shirt, (sizes: M, L, XL, 2X, 3X)

Gold-toned lapel pin

Navy blue ball cap (one size, fits most)

Navy blue knit beanie (one size)

Roll of 500 labels

Send me the following supplies (shipping included):

ITEM	UNIT COST	QUANTITY	TOTAL
Join NCDXF with your Contribution / Renewal (circle one)			$
50th Anniversary Sweatshirt (circle size S / M / L / XL / 2X / 3X)	$60		$
Short sleeve T-shirt (circle size M / L / XL / 2X / 3X)	$20		$
Long sleeve tech shirt (circle size M / L / XL / 2X / 3X)	$25		$
Ball cap	$12		$
Knit beanie	$25		$
Lapel pin	$10		$
Roll of 500 labels	$10		$
TOTAL ENCLOSED			$

Name & callsign _____

Mailing address _____

Email _____

Check enclosed or Charge to Visa / MC / AmEx (circle one)

Card number _____ Expiry _____ Signature _____

Mail your completed order form to NCDXF, PO Box 2012, Cupertino, CA 95015-2012