

TN2MS — Care and Contacts from the Congo

A DXpedition to the Congo helps support the Mercy Ships charitable activities.



The hospital ship *Africa Mercy* docked in Pointe-Noire, Republic of the Congo.

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October 2013 was the fourth time that a team of Dutch radio amateurs traveled into Africa with a mission to support the charity organization Mercy Ships (www.mercyships.org) in combination with a DXpedition (www.tn2ms.nl). This time the trip was to the Republic of the Congo. Republic of the Congo is sometimes known as Congo Brazzaville to avoid confusion with the Democratic Republic of the Congo, which is known as Congo Kinshasa. The Republic of the Congo is much more stable than the Democratic Republic, which allows for safer travel.

The plan was for the team to support the activities of the hospital ship *Africa Mercy* (see lead photo) as volunteers for a week and afterwards to spend 2 weeks on a DXpedition. Starting on October 4, 2013, Ad, PA8AD; Marian, PD1AEG; Angelina, PA8AN, and myself, Arie, PA3A, traveled from Rotterdam to Pointe-Noire in Congo. After approximately 20 hours of traveling, we finally reached the ship.

The *Africa Mercy* has six operating theaters

and 78 beds. It offers free medical care to people within developing countries who otherwise have no access to it. The *Africa Mercy* is fully self-contained with a crew of

about 450 volunteers. Besides doctors and nurses, the ship needs other skilled workers. As a hospital, the *Africa Mercy* needs a clean environment, which requires clean water, electricity, food, drinks, security, transportation, a school for the children, working lavatories and showers, etc. Some of our team has skills in these areas and used their knowledge and experience to support the hospital's operation.

The GPS Project

One task where the ham radio team's expertise was helpful was for the GPS project. The *Africa Mercy* is equipped with about 30 cars used for travelling over land to bring medical help to those inland. Our team took on the task of equipping all 30 cars with a GPS. The GPS was tied into a VHF transceiver so that the position of each car would be passed on to the ship automatically, working similar to an APRS system. For the *Africa Mercy*, this serves to ensure the safety of the crew. If something unexpected happens, it is vital to know where the cars and crew are so that they can be guided back to the ship safely. Because of the limited technological infrastructure in many of the countries it visits, the *Africa Mercy* must have its own reliable communications system.

Ad and Arie started this project on the day after our arrival onboard. Immediately we ran into a problem with the GPS units the team had brought. The units were only equipped with a PS2 style circular



Figure 1 — Marian, PD1AEG (left), and Ad, PA8AD, setting up one of the beams.



Figure 2 — Arie, PA3A, connects the radials for the 40 meter vertical.

connector, which did not fit the radio. We needed a 15-pin D-connector. One of the Congolese day workers was sent to find an electrical store in the city and obtain the connectors.

Once we had the GPS and the radio connected, there were difficulties in passing the GPS location data to the mobile radio. We discovered later that the GPS units and transceivers were not configured for the proper baud rate and communications protocol. We set about correcting this by programming the GPS units with an African-style interface that used a D-9 connector to the serial port of the PC for loading the software to the GPS unit by RS-232 and a D-15 connector to the transceiver to provide a 5 V power source, all connected by some simple wiring. We then installed all the GPS units onto the cars and also modified the older mobile transceivers for GPS use.

Our last difficulty was discovered while monitoring the radio traffic. We found that on several of the radios the data carrier, which transmitted the position data to the



Figure 3 — One part of the TN2MS antenna farm.

ship, was set to a very low level. Once we corrected the data carrier level, the entire fleet of cars was able to be fitted with a working system.

Other Duties on the Africa Mercy

Other members of the team (Marian and Angelina) who were not trained in electronics set about volunteering for the various day-to-day duties both on board and in the areas surrounding the ship. This included helping out in the local café, working as members of the security team for an eye screening, which assessed potential eye patients, and, as care workers, visiting vulnerable elderly people who were abandoned by their children, or disabled people who lived far from their relatives.

Next Project: a DXpedition

After a week on board it was time to start the DXpedition. About 10 miles south of Pointe-Noire, we found a suitable location with electric power that was on almost 24 hours a day. We rented two cabins in a resort that were about 150 feet apart and about 1000 feet from the beach. Behind the cabins we were offered a nearly flat and virtually open field of 200 × 150 feet.

For the preparations, we used the experience of the TN2T team who had visited Congo 2 years earlier. We also had a good impression of the site through aerial photo-

graphs we found on the Google Earth and Bing Maps websites.

After a brief exploration, we immediately started building the antenna farm and unpacked all the equipment. The antennas were erected according to plan. When both beams (a five-bander and a three-bander) were heading north, they stood side by side about 150 feet apart (see Figure 1). In this way they were never pointed directly at one another when working Asia, North America, or Europe. The various verticals (five in total) were put in between and around the beams (see Figure 2).

Each cabin had one station consisting of a transceiver and linear. Both cabins could connect to the 20 – 10 meter antennas. The 30 and 40 meter verticals were placed between the two cabins so that they could be connected as needed. The combined 80/160 meter vertical and the corresponding K9AY loop were located as far apart as possible to minimize the impact of the vertical on the directivity of the loop. The 80/160 vertical antenna was a tunable monobander that was used on 80 meters the first week and 160 the second (see Figure 3).

Once everything was set up and working properly, the team was divided into groups of two per cabin to share operational duties. A day in the life of the team members was as follows: In the morning in each cabin one

member of the team would start operating. The other would go to the resort restaurant for breakfast. After breakfast, operators were relieved on a regular basis but without a tight schedule. Change of operators usually happened after 1½ to 2 hours. Every day at about 1800 local we stopped all activities for a team dinner and to share the experiences of the day. Operations commenced again about 2030 and continued until sometime after midnight, mostly in a “silent” mode like CW so that the other person could sleep. In this way, the two stations were on the air for more than 16 hours per day.

The objective of the DXpedition was to give as many different stations enough opportunities to work Congo and also give the weaker ones a fair chance. Lots of hams e-mailed us about propagation paths to nearly every corner of the globe. Most of the time we were able to receive those e-mails over the Internet, which is not always reliable in this part of Africa.

We followed up on almost every suggestion for working the distant continents. To actually hear stations from such areas, we often had to ask a pileup from another continent to stand by (see Figure 4). For the most part the calling stations were courteous and stood by while we worked these difficult locations. Of course we missed stations; we know that we were not perfect. Some stations tried to speak to us through the DX Cluster in *talk* mode in order to get around the pileup, but we didn't feel it was appropriate to accommodate them.

Low Band Operations

The lower bands proved to be very difficult, and sometimes nearly impossible, due to the huge static levels generated by the thunderstorms around us. On 40 meters, we could work reasonably well with CW but 80 meters was extremely difficult and 160 meters almost impossible. Signals of S-6 were buried under S-9++ static that made copy very hard, even with the automatic gain control off. These high static levels prevented us from hearing the reported pileups on 80 and 160 meters.

Good Propagation on Higher Bands

The propagation on the higher bands from 17 – 10 meters was generally good. In particular the 15 and 12 meter bands were open to the whole world. At any time of day pileups were heavy on every band in CW, SSB, and RTTY. A significant phenomenon we

noticed was that many hams are now using a bandscope or panadapter.

With a panadapter, it is easy to see which station in the pileup is answering the DX station. When they complete their contact, those with panadapters jump to that frequency and start calling. Many stations moved quickly along with the frequency



Figure 4 — Angelina, PA8AN, running one of the many pileups.

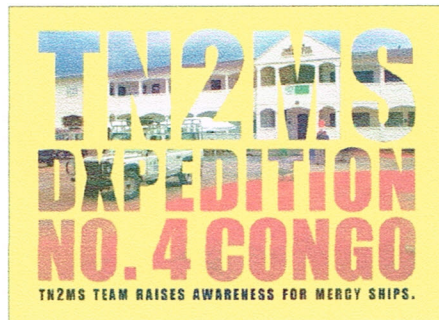


Figure 5 — The TN2MS QSL card.



Figure 6 — The TN2MS team in front of the Mercy Ships HOPE Center, from the left: Ad, PA8AD; Angelina, PA8AN; Arie, PA3A, and Marian, PD1AEG.

of the station last worked. The only way to keep up the contact rate up was to change frequency after almost every contact.

The Magic Band

In the second week we used a lightweight two-element beam from Nuxcom (nuxcom.com) for the 50 MHz band. This setup worked well for 3 nights when we experienced openings to the Middle East (including Oman), South and Central Europe, North Africa, the Caribbean, and South America. The experts call this type of propagation TEP (Transequatorial Propagation). This band proved a lot more efficient than 160 meters.

Packing Up

After almost 2 weeks of intensive radio work and volunteering, it was time to pack up. The nice environment, the climate, the entire entourage, relaxed atmosphere, and the still ongoing pileups made it difficult for us to leave. After 11 days of operating we had more than 30,000 contacts in the log and lots of good memories. Before we knew it, we were saying goodbye to the *Africa Mercy's* crew and had arrived back in the Netherlands. We immediately started working on the QSLs (see Figure 5) along with Henk, PA3AWW, our QSL manager.

We managed to ship all direct cards in December 2013. We also transferred the donations from hams, given via our website, to Mercy Ships, which will benefit the HOPE Center in Pointe-Noire, a clinic that is set up near the ship for recovering patients and their caregivers (see Figure 6). We are delighted that we can sponsor this Mercy Ships project via ham radio because we were able to experience and witness the good work this organization performs for those in need.

All photos by the author.

Arie Kleingeld, PA3A, an ARRL® international member, has been a licensed radio operator since 1977 and was a member of the 5L2MS, 9L5MS, and TN2MS DXpedition teams. He is an active CW and SSB contester and an Elmer to many radio amateurs in the southwest Netherlands. Arie holds a master's degree in Telecommunications and works as a freelance consultant. He and his wife Marian, PD1AEG, can be reached by e-mail at pa3a@xs4all.nl.

