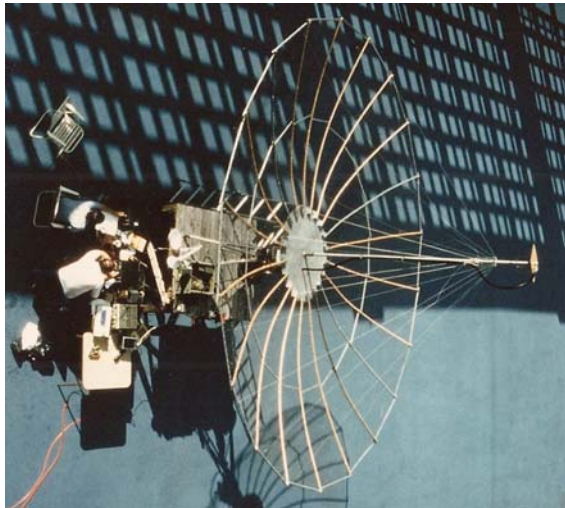


## Putting Aruba on 70 and 23 cm EME

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**Some History:** I have been doing EME dxpeditions for more than 30 years. The first ones were on 70 cm and used 8 long yagis that I carried on the top of my car. These early dxpeditions were all to rare U.S. states and included trips for first 70 cm EME to KY, WY, ND, MT, SD, AR, LA and MS. Polarization alignment is always a potential problem on 432 MHz. To avoid it in later expeditions, I switched to a portable 20' stress dish that I also carried on top of my car. This dish was used in WV, KY and DE (twice) and much later by W2WD in NB. It was also used for my first dxpedition outside of the U.S. and one of my most successful dxpeditions, to 4U1UN. The United Nations is located in New York City and thus allowed the use of ground transportation, in this case a small truck to carry the antenna and equipment.



20' portable dish on the roof of the UN

Aside from Canada and Mexico, there are no other DX locations easily accessible by road from the U.S. and as a result my EME dxpedition activity was dormant for a number of years. (I did participate in putting VE3ONT on 10 GHz EME in 2003). More recently as a result of business travel I have had the opportunity to visit several rare EME DX locations. The urge to put these locations on EME returned, but I was faced with a number of problems. To insure success in my earlier dxpeditions, I developed a set of rules: 1) Always chose the best possible moon weekend for operation (perigee with high moon). 2) Take backup equipment (extra preamps, tubes, relays – as much as practical). 3) Find local support. And 4) Keep things as simple as possible (this usually means limit operation to one band). But few of these rules could be applied with these new opportunities. The

weekend was fixed by business consideration. It often turned out to be the worst rather than the best for EME. During my trips to Bermuda and Hawaii, the moon and sun were synched. As I was flying, equipment size and weight was very restricted. To overcome this problem, I developed a small stress dish that could be carried on as luggage. I had little control over location and local support was often not available at the trip locations.



7' portable dish in use from Bermuda

**Aruba Opportunity:** The stars do sometimes align; and this was the case for my trip to Aruba this past Nov (2007). The moon conditions were near optimum (perigee and high northern declination) and the dates included the second weekend of the ARRL EME Contest. On top of all this a search for the island's radio club and a few e-mails located someone who was interested in VHF and EME, Lisandro, P43L. And even more fortuitous, Lisandro had a 12' dish!



Lisandro, P43L in his shack with 70 cm feed

I had been arranging to obtain a license in Aruba, but after discussions with Lisandro, it was decided to operate from his QTH under his call. Our plan was for him to mount the dish, which was in his backyard, but not then mounted. We would concentrate on 23 cm (rule 4) where the dish would be most effective, but try to get in some limited 432 EME for those nearing completion of DXCC on this band. OK1DFC very graciously offered to lend us one of his septum feeds, which was sent by FedX directly to Aruba. I would supply a 200 W DB6NT SSPA, preamps, relays, etc. needed for operation on 1296, and a quad feed, and preamps for limited 70 cm operation along with a TS2000X. Lisandro already had a 100 W brick for use of 70 cm and for backup an FT958. WD5AGO was also very helpful by offering additional backup preamps (rule 2). All seemed to be proceeding according to plan prior to my departure.

**On Aruba:** Lisandro, who works at the main airport, met me shortly after my arrival in Aruba on Tuesday 20 Nov and I visited his QTH. The dish was not yet mounted and needed some work to be put in operation, but all looked encouraging. A hole was ready for the mounting pole and everything we needed seemed to be on hand. The next day the cement (quick drying) was poured and the pole fixed in place. On Thursday the dish was mounted, but the mounting was delayed due to a problem with the back plate of the dish. The plate was corroded to a point where it was unusable. It had to be replaced and the mount modified. A new plate was fabricated thanks to Lisandro's resourcefulness.

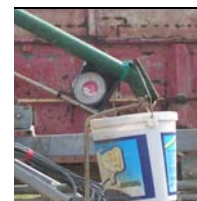


**Mounting and installing dish**

We also put the feed in place and ran cables to operating position, an open table next to the dish.

There was a beautiful moon in the sky and it was tempting to continue setting up the equipment, but we were committed to a Thanksgiving dinner with my family.

The next day, Friday 23 Nov, I had to work during the morning, but headed over to P43L's QTH as soon as I could to complete connecting up the equipment. Everything was in ready by about 2300 despite some light rain showers; the first since I arrived on the island. There was only one problem, no moon or sun to calibrate the tracking system to. We had placed a degree circle around the mast for Az readout and had a mechanical inclinometer for El readout. Tracking was strictly by hand.



**Az and El readouts (and bucket counter weight)**

I had a pretty good idea where to point the dish and tried to find the moon by listening for a signal, but none was found – the contest had not yet started. At 0000 the contest and our first sked started. We almost immediately found HB9BBD's loud signal – TNX Dominique. It took us a few periods to get the tracking worked out and QSO'd quickly. Also the moon peeked through clouds and gave us a visual fix. The moon played hide and seek all night, but I do not think we ever totally lost tracking. We also were harassed by occasional rain showers, but always managed to cover the equipment in time. We QSO'd on 25 Nov at 0000 HB9BBD (559/549), 0020 K1JT (559/559) - [there were no prearranged skeds or *look for time* with K1JT or K2UYH], 0030 OK1DFC (549/559), 0045 K5JL (559/559), 0051 K9SLQ (569/559), 0058 PA3CSG (O/O), 0112 OE9ERC (559/569), 0120 DF3RU (559/559), 0126 G4CCH (559/549), 0133 OZ4MM (559/559), 0140 OK1KIR (559/559), 0150 DJ9YW (559/549), 0204 OK1CA (559/549), 0211 HB9Q (559/539), 0217 RW1AW (559/O), 0231 K2UYH (559/559), 0300 DL1YMK (559/O), 0315 W5LUA (559/549), 0320 DL4MEA (549/549), 0405 LA9NEA (O/O), 0436 VE6TA (559/459), 0540 G4CCH (O/O) on JT65C, 0551 K1JT (O/O) on JT65C, 0630 K2DH (559/449) and 0840 K5SO (569/569). We were on for all our JA and VK skeds, but heard nil. Our window appeared clear to about 10 degrees, which was the start of our window with VK3UM. We did copy JA8EER around 0820 near .015 and CWNR. For safety reasons, we had to



take the station apart and put the equipment inside. I caught some sleep and returned early in the afternoon to connect up the station again. I was hoping for better WX and at the start of our window at about 2330 it looked encouraging with a visible moon, but our luck did not hold and later the WX turned bad. We started calling CQ on CW, but when there was no response switched to JT. We worked on 25 Nov on JT65C at 0006 K2UYH (10DB/16DB), 0028 ES5PC (O/O) and 0030 SM5LE (21DB/O), then back on CW at 0100 OH2DG (559/539), 0115 SM3LBN (459/559), 0130 SM3AKW (559/549), 0138 SP6JLW (459/539), 0147 OZ6OL (559/549), 0230 G3LTF (559/439) – during heavy rain, 0250 F6KHN (559/O) and 0630 partial N2UO (O/O). We had problems with rain, but managed to keep everything dry enough to operate with the rain. We were on for all our skeds until about 0635 when there was a *cloudburst*. 4" of rain fell in a matter of minutes. I was in QSO with N2UO at the time. Marc was sending OR, but I could barely hear him from the noise of the rain falling on the tarp on my head. We then lost the control system, probably as a result of the several inches of water on the ground. I was also afraid the PA might be wet. It kicked off too. With all the water, there was no choice but to shut down. It is too bad as we could have easily completed with Marc and worked some JAs and possibly others. The next day my time was limited as I was leaving the following morning and could only operate for an hour or two on 26 Nov. I packed up the 23 cm equipment and put a 70 cm feed in the dish.



**P43L and friend installing 432 MHz feed**

The system for 432 was very simple. A quad feed was fed with about 20' of 1/2" Heliac cable. This cable connected to Lisandro's 100 W Mirage SSPA, which was feed through an ARR 432 preamp with internal relay switching by my TS2000X. I e-mailed skeds to DL9KR, HB9Q and OZ4MM. At the last minute I

moved the sked frequency from .045 to .042 because of interference near .045. The weather was good with a clear sky. The sked with DL9KR started at 0000, but the moon was block by a hill to our east and did not clear it until about 0020. We then immediately heard Jan's signal and completed (O/O) by 0030. We next called and worked HB9Q by 0100 and started calling OZ4MM. We exchanged (O/O) but did not complete a QSO as Stig never received our Rs. I then collected my equipment, packed and by the next morning was on a plane heading home.

**Operation:** We used a combination of skeds with random operation in between. I firmly believe in skeds for dxpeditions. Skeds save time and help the smaller stations. They tell everyone when you will be on. K1RQG was invaluable as our skeds coordinator – TNX Joe. We listened for skeds stations for at least 10 minutes, before calling CQ, if nil was heard. In most cases we completed our skeds in less than 10 minutes and then called CQ and looked for other stations. In general stations were very cooperative and we did not have problems with anyone trying to take over another's sked. We did not have a lot of luck with our few JT65 skeds and are not sure why. It may have to do with the stability of my TS2000X when operated outside. Its stability is excellent when operate in an indoor relatively temperature stable environment. We tried calling CQ on JT during periods when no CW activity was heard, but added very few new stations.

**Summary:** In all we completed QSOs on 1296 with 31 different stations [K1JT = K2UYH] (29 on CW and 4 on JT). On 432, we QSO'd 2 stations. We completed more than 70% of our skeds and most of those we missed were the result of being forced to QRT early on 1296 due to sever WX.

Anyone contemplating a Caribbean island vacation and interested in EME should consider Aruba and teaming with Lisandro to put the island back on EME. 70 cm would be particularly desirable. I left P43L with everything needed to be operational on 70 cm EME in a modest way (feed, feedline, relays, 100 W SSPA, preamp, etc). Lisandro also still has OK1DFC's feed. With the addition of a power amplifier and LNA, he could be back on 23 cm with a serious signal.

My thanks to all who helped with this dxpedition, especially OK1DFC, WD5AGO and K1RQG. I also want to thank P43L and his XYL for their wonderful hospitality and participation. I do not think Lisandro realized what he was getting himself into. I am hoping there will be regular EME activity from Aruba in the future.