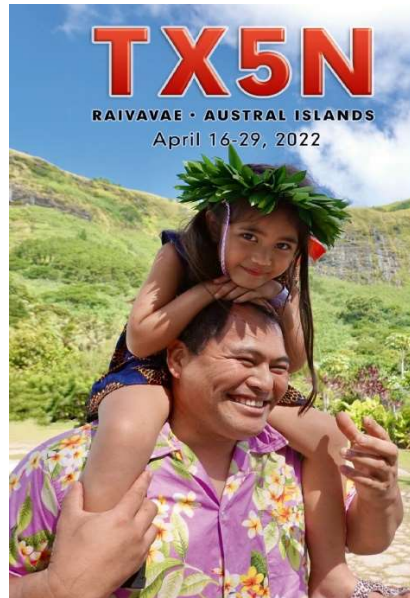


## TX5N DX-pedition to the Austral Islands

By Gene Spinelli K5GS, ZL1NA, VK2IXC



### Introduction to the Austral Islands

Discovered by Europeans in the 18th Century, the Austral Islands are located 373 miles (600 km) south of Tahiti's capital city Papeete. The islands are administered by France and fly the flag of French Polynesia. The archipelago is made of seven islands, five of which are inhabited and four of which are accessible by air. The islands have an area of 152 km<sup>2</sup> (59 square miles). An untouched and mysterious land where white sand beaches clash with the intense blue of the lagoons, the Austral Islands are off the beaten track, offering a memorable and unique experience in French Polynesia.

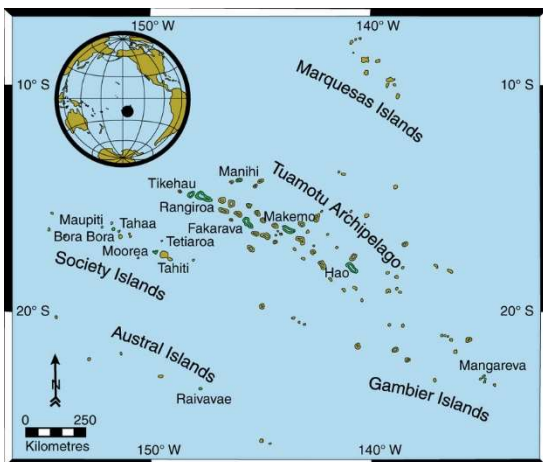


Figure 1 Austral Islands

The distance, not so large on an immense scale, is enough to project you into another universe. A world of Polynesian wonders, with superb, preserved scenery, a true South Seas experience, but also a world of encounters with the inhabitants who offered you an authentic and warm welcome.

The Austral Islands consists of two island groups:

- Tubuai Islands of: Maria, Rimatara, Rurutu, Tubui, and Raivavae
- Bass Islands of: Rapa, Marotiri

## Raivavae Island

We operated from Raivavae, 17.0 km<sup>2</sup> (6.9 sq miles), population of about 900 people. Languages spoken on the island include: French, Tahitian, Rapa, Austral and Polynesian languages. Raivavae is a “paradise” at the ends of the world, a word that in no way is an exaggeration in this context. It is a timeless place that nothing seems to perturb, spoil or tarnish. The incredible tranquility, so characteristic of the Austral Islands as well as the abundant natural and cultural riches, have slowly been getting the recognition they deserve, with the development of a growing yet measured tourism.



Figure 2 Raivavae Island

The island has a small airport which receives several Air Tahiti flights a week. There's a seaport which provides the residents with cargo services several times a month and also some tourism opportunities for people visiting each of the islands called on by the supply ship Tuhaa Pae IV.

There are no restaurants on Raivavae, although enterprising individuals may offer occasional restaurant service at their home.

There is little shopping, just a few general stores which sell the basic food items and necessities. The residents grow their own fruits and vegetables and fish are plentiful. There are no doctors, dentists or eye care professionals on the island. A nurse with tele-med access to Papeete is available for consultations. If required, air evacuation to Papeete is available. The only school has just over 100 students, kindergarten through about age 11. For their secondary education the children can go to boarding school in Tahiti.

The residents of this island live a spartan life style, without the conveniences many of us enjoy. There are no petrol stations, nor are there automobile repair shops. Petrol and diesel can be obtained at one of the few general stores, and there's a retired automobile mechanic on the island who can help with some repairs, but he does not have the technology to work on newer vehicles. We did see current model vehicles: KIA, Toyota, Ford, Citron to name a few, as well as many older vehicles. Motor, electric and push bikes are plentiful, and there is a bus service that runs between the island's four villages. Outrigger canoes dot the landscape and are used for transportation, fishing and recreation.

There are no motels or hotels, visitors to Raivavae stay at one of several pensions located around the island. We used Tama Raivavae Inn which is on the north side of the island and has beach access from three of its five bungalows. There is also a small apartment located across the road from the beach and the other two bungalows. Adjacent to Tama Raivavae on one side is a general store and on the other side a church.

Other than what they grow themselves and by fishing, everything is imported, making most items very expensive. There is a barter economy where the locals trade amongst themselves for labor, fish, or other commodities. Houses are generally small, there is no air conditioning as mains power is sold by the kilowatt hour and the user prepays at the “cash power” meter located at their property, mains power is very reliable (albeit expensive).

## Planning and Preparation

Returning home from VP8PJ (South Orkney Islands) in March of 2020 we returned to the new world of Coronavirus travel restrictions and country closures. Trying to plan a future DX-pedition proved to be a frustrating experience. With most countries closed to international travel, the landing permit processes stopped and more importantly, with the loss of Braveheart, we saw no opportunities in 2020 and well into 2021.

When several EU countries announced they would reopen in mid-2021 we started searching the web for possible DX-pedition locations. Hoping to find an available entity we formed the core team of Rob N7QT, Gene K5GS, Walt N6XG and Steve W1SRD, each a member of the Perseverance DX Group (PDXG). Rob N7QT and Melanie N7BX had been to the Austral Islands on two previous visits, Rob contacted Tama Raivavae and asked about doing a DX-pedition in early 2022.

With it possible to make guesthouse reservations and French Polynesia open (with reasonable Coronavirus restrictions) we began the process of applying for a call sign and government authorization to import / export the radio equipment. The final authorization arrived on December 23, 2021, we booked nonrefundable airline tickets to Tahiti and onward to Raivavae. Fellow PDXG teammate Heye DJ9RR joined the team in January, 2022. Tama Raivavae had enough sleeping facilities and a pricing structure that made it possible for us to bring along our wives and/or partners. Three of the five ladies are licensed amateurs; Melanie N7BX, Doris K0BEE and Liz K6AOL.

An equipment and sourcing plan was established, and in January, 2022 several of us met in California to consolidate and pack the equipment. We had more equipment than reasonable to check as excess baggage so we contacted our San Francisco based customs broker and started the process to ship about 500 kg (1,100 pounds) of equipment, by air, to Papeete and later by cargo ship to Raivavae.

The equipment lineup included four Elecraft K3 transceivers, three Elecraft KPA-500 amplifiers, one Flex Power Genius (PGXL) amplifier and one Gemini DX-1200 amplifier. The antenna inventory included the NA4RR hex beam, monoband VDAs for 10m – 20m, two SteppIR BigIR/w 80m verticals, and an inverted-L for 160m.

With Coronavirus cancellation always a possibility and less than 3 months to prepare for the project we decided that the team would pay for this project themselves. There wasn't enough time to do a proper fundraising campaign and if we had to cancel all donations would have to be refunded. Instead, we posted a Donate link on the website offering free confirmations to donors and used the income to help pay for shipping, the team paid the difference, 585 DXers took advantage of the offer.

## Arrival

Most of the team traveled via United Airlines: San Francisco to Papeete, Tahiti. There were the usual Covid requirements: proof of full vaccination and a negative Antigen test. We met at San Francisco International Airport on April 12<sup>th</sup> and later flew Air Tahiti to Raivavae on April 15<sup>th</sup>. We arrived on the island after dark on Good Friday, the beginning of a four-day Easter holiday weekend.



Figure 3 Easter Services K6AOL Photo

Throughout the weekend the church next to our guest house was very busy with rehearsals and Easter services, several of the team attended church services and we watched the rehearsals when not on the radio. The locals were dressed for the holiday in brightly colored Polynesian clothing, wearing flowers, the services were accompanied by live music and singing. We were welcomed by the locals who were all very friendly and cordial.

## Sleeping Arrangement and Meals

Each team member had a bungalow with an ensuite, and one team member had the apartment. While small, they were comfortable and met our requirements. Tama Raivavae offers meal plans that provide two or three meals a day. Initially we selected the breakfast / dinner option. With the general store so close we assumed lunch would be available at the store. However, with the four-day Easter holiday the store would only be open for a few hours a day and is never open at night. We changed to a three-meal plan and remained with it throughout the project.

A full breakfast was served at 7AM, fresh picked fruits, pancakes and/or eggs, various breads. Lunch was served at 1PM, sandwiches were my usual lunch although there were other choices. Dinner at 7PM varied, from fresh fish, steak, pork and Italian. Usually there were two different main courses to choose from, accompanied by fruits and a desert of cakes, cookies, ice cream, etc. All meals included bottled water, various fruit juices, tea, and coffee. The fresh fruit was grown on the property, mango, banana, and grapefruit.

The general store sold beer, canned sodas, fruit drinks and snacks as well as other foodstuffs. Being of French culture there were baguettes both at the store and at Tama Raivavae, as were beer and wine available for purchase. Fresh water on the island is provided by capturing rainwater in large tanks. For showers and washing we used piped in rainwater, and we drank bottled water. Each bungalow had a western toilet, small sink and a shower.

## Operating Setup

Tama Raivavae has three small bungalows (buildings) on the beach. Two were used for sleeping and the third was the radio shack. Since we were using kilowatt (plus) amplifiers for the low bands, we were concerned about the mains power having enough capacity in a single bungalow. As a precaution we brought a fifteen-meter heavy duty extension cord and ran it from the adjacent bungalow to power the second station.



Figure 4 Radio Shack K6AOL Photo

On the morning of Saturday, April 16<sup>th</sup> we began setting up the radios and antennas. During the setup several team members reported receiving electrical shocks when touching or connecting coax connectors, as well as when touching pieces of equipment. After a brief discussion we concluded that there was a grounding (earthing) deficiency with the mains power distribution system.

That evening we mentioned the problem to Dennis (the guest house owner) and asked about hiring an electrician. Being the four-day Easter holiday there was little chance of that happening, we then suggested that a ground rod be installed. Dennis recalled the same problem with a ham radio team years earlier, he said they installed a ground rod near the front of bungalow #2. After dinner, there we were, with flashlights, searching through years of undergrowth and mature plants for the elusive ground rod. Steve W1SRD had a bright headlamp and spotted a very tarnished ground rod sticking out of the earth. Walt N6XG cleaned the corrosion, ran cables to the two radio positions in bungalow #1, and the electrical problem was resolved. Several thousand feet of coax was run to the antennas and radio operations began.

## On the Air

We began operating on April 17<sup>th</sup> with Robin WA7CPA making the first contact. Over the next few days, the remaining antennas were installed, including the 160m Inverted-L.



Figure 5 Rob N7QT K5GS Photo

We were met by excellent propagation, with the Solar Flux Index approaching 170 during our stay. The HF bands were alive with callers. Not unexpected, the most popular bands were 20 and 17 meters. However, as the days went on the high Solar Flux brought 12, 15 and 10 alive with unbelievable worldwide pile-ups. K6TU's propagation tools were available free of charge from our website.

The 160m band proved to be disappointing with only 333 contacts. After the initial installation testing, we didn't hear many signals on 160. We swapped out the radio, no change. We then removed the 160m band pass filter, still nothing on the amateur band. We heard some faint signals on the broadcast band which was an indicator of what was to come. As the SFI rose productivity on 160m diminished. We eventually decommissioned the 160m antenna and converted it to an 80m antenna where we made 1,595 contacts. During our stay the A index hovered around 10 which isn't optimal for the low bands.

The SteppIR BigIR was the workhorse for 40m and 60m. We had a limited amount of available antenna space, but were able to extend our antenna space by using beachfront property owned by the church. The furthest antenna (on the church property) was the SteppIR at about 60 meters (200 feet) from the operating building with the hex beam a close second. We used RG-8 and RG-8X coax cable and connectors that were donated by DX-Engineering.



Figure 6 Hex Beam Assembly Team N7BX Photo

With all parts being premeasured and precut the NA4RR hex beam, a newcomer to our projects, was amazingly easy and fast to assemble. After inspecting each band with a Rig Expert no adjustments from the factory specifications were required, the antenna performed admirably.

The Flex Power Genius (PGXL) and Gemini DX-1200 amplifiers, also newcomers to our projects. Several of the team owned a PGXL so we were comfortable that it would perform well, and it did just that. A DX-pedition is about the best test bed for any piece of radio equipment. Two weeks of near continuous operation, occasional operator errors such as wrong filter or no antenna connected to the amp, mains power fluctuation or dropouts will quickly uncover equipment shortfalls.

The Gemini DX-1200 arrived just before we left home, so it came to the island as excess baggage with only minimal testing before leaving home. We did have one problem with the Gemini that impacted HF operation. But since the amp was brought along for Low Band operation it wasn't a serious problem. Its performance was as expected, consistent full output with the heat and fan noise we have come to know with all solid-state kilowatt amplifiers.

The DX-1200 was returned to the factory where the problem was quickly identified and repaired. Since this writing it's been back in the USA and performing perfectly. We purchased an additional DX-1200 for future projects. Its weight, size and performance make it a good DX-pedition amplifier. As usual, the Elecraft equipment K3 transceivers and KPA-500 amplifiers performed flawlessly.

The HF VDA antennas were home built using Spiderbeam fiberglass poles as was the 160m inverted-L.



Figure 7 VDAs K5GS Photo

The hex beam was at an elevation of about 7 meters (25 feet) using a Spiderbeam aluminum push-up mast. The radial system for the vertical antennas was designed by Heye DJ9RR.

Antenna setup was routine. We experienced three days of high winds which damaged the hex beam when a tree stump used as a guy anchor pulled out of the ground. One spreader tube was broken but quickly replaced with an exact replacement spare part.

During the same wind storm, the high surf floated a log onto the beach, possibly striking an in-water VDA guy anchor. With the combination of wind and surf (and maybe log) the antenna fell over. It was restored to service

after the storm subsided.

Radio operators worked in four-hour shifts, four on eight off and rotating every few days through the twenty-four-hour period. Three Lenovo X-230 (i7) laptops were networked together running N1MM and WSJT-X. While most of the FT8 callers understood the Fox / Hound concept, many did not. During each FT8 operating period there were a number of people calling below 1,000hz (not in F/H mode). We transmitted general messages indicating Fox / Hound was required. But still, too many callers didn't understand the F/H protocol.

Similar to our experiences on previous DX-peditions, as SSB and CW faded FT8 would remain active for more hours, sometimes many more hours. It seemed as if there was a constant demand for FT8. We received several e-mails from Europe that indicated people were making FT8 contacts with a wire antenna and low power.

Speaking of e-mails, we did not have a pilot team for this project. We did read e-mails on the island, which is unusual for our team. Most of the e-mails offered advice and many boosted morale. Several weren't welcomed and indicated the sender was unaware of how DX-peditions actually operate.

## Statistics

MODE/BAND	160 m	80 m	60 m	40 m	30 m	20 m	17 m	15 m	12 m	10 m	TOTAL QSO	TOTAL %
CW	0	281	0	1742	1586	2951	1737	1722	3417	3270	16706	30.82 %
FT8	333	1261	421	2564	3568	4332	5574	2538	3036	2929	26556	49 %
SSB	0	53	0	872	0	1699	1359	2798	1905	2252	10938	20.18 %
<b>TOTAL QSO</b>	<b>333</b>	<b>1595</b>	<b>421</b>	<b>5178</b>	<b>5154</b>	<b>8982</b>	<b>8670</b>	<b>7058</b>	<b>8358</b>	<b>8451</b>	<b>54200</b>	<b>100 %</b>
<b>TOTAL %</b>	<b>0.61 %</b>	<b>2.94 %</b>	<b>0.78 %</b>	<b>9.55 %</b>	<b>9.51 %</b>	<b>16.57 %</b>	<b>16 %</b>	<b>13.02 %</b>	<b>15.42 %</b>	<b>15.59 %</b>	<b>100 %</b>	

CONTINENT/BAND	160 m	80 m	60 m	40 m	30 m	20 m	17 m	15 m	12 m	10 m	TOTAL QSO	TOTAL %
AFRICA	2	4	2	16	14	40	27	25	47	46	223	0.41 %
ASIA	175	567	1	2235	1535	2526	2051	2232	1981	1945	15248	28.13 %
EUROPE	3	207	211	709	1852	3802	3157	1089	1274	860	13144	24.25 %
NORTH AMERICA	143	749	195	1999	1613	2342	3140	3354	4739	5289	23563	43.47 %
OCEANIA	9	62	10	149	97	204	137	190	135	121	1114	2.06 %
SOUTH AMERICA	1	6	2	70	43	68	158	188	181	190	907	1.67 %
Not Determined	0	0	0	0	0	0	0	0	1	0	1	0 %
<b>TOTAL QSO</b>	<b>333</b>	<b>1595</b>	<b>421</b>	<b>5178</b>	<b>5154</b>	<b>8982</b>	<b>8670</b>	<b>7058</b>	<b>8358</b>	<b>8451</b>	<b>54200</b>	<b>100 %</b>

Figure 8 TX5N Statistics

The numbers speak for themselves; with two stations operating 7x24 and excellent HF propagation, 54,200 contacts with 152 DXCC entities, with the on-line log our dupe rate was a reasonable 2.98%. While Europe did well on 30m, 20m and 17m, they fell behind on 15m, 12m, and 10m. To the surprise of many, Asia and Europe were only a few percentage points from one another's total. Clearly, 15m, 12m, and 10m were Europe's shortfall.

Not unexpected, FT8 continues to dominate the bands, with SSB losing the most ground. Typically, CW is usable long after SSB fades, but FT8 continues on long after CW fades. Coupled with the real fact that even the most minimally equipped stations can now get in the FT8 log, it's no surprise that FT8 continues to dominate.

HF propagation to North America was spectacular, the pile-ups were wide and deep but productivity was always excellent. Asia pile-ups were equally strong and disciplined. The European pileups were somewhat challenging.

## Time to Leave

After fourteen days on the island, it was time to leave. We began dismantling the stations on Thursday, April 28<sup>th</sup>. Progress was good and by sundown we had most of the equipment packed away. Our flight the next day was at 1PM and with the airport only 20 minutes away we kept one station on the air through the night.



But all good things must come to an end. At sunrise on the 29<sup>th</sup> with the last QSO in the log, Jim N2ZZ, we took down the remaining antenna, backed up the logs and finished packing equipment for shipment. After a wonderful breakfast we left for the airport at 11AM. The flight to Papeete made a refueling stop at Tubui.

Figure 9 L-R N7QT - K5GS K6AOL Photo

the airport at 11AM. The flight to Papeete made a refueling stop at Tubui.



## Back in Papeete, Tahiti

With time to relax and now in a more traditional setting we did some shopping and had a look around Tahiti. The team discussed the previous two weeks and concluded we met our objectives and had some fun. We hope it was a good experience for those of you chasing us in the pileups. We enjoyed hearing from people who contacted us, be they a mega-station looking for a full house or a new DXer confirming their first Austral Island contact. A consistent theme from the many who wrote was they had “fun” chasing TX5N, and we had fun working you.

## Wrap Up:

As mentioned earlier, for this project there was no fundraising campaign. Three American DX clubs sent unsolicited donations: Spokane DX Association, Mile High DX Association and the Northeast Wisconsin DX Association. Corporate sponsors included: DX Engineering, SteppIR, K6TU Propagation Tools and NA4RR Hexagonal Beam Antenna.

Through our website 585 DXers made a donation to help pay for our shipping costs, which came in several thousand dollars above the donations received.

Managing the QSL and LoTW program is Tim M0URX. Tim has processed over 2,400 OQRS transactions, some included a donation. Since many people only want an LoTW, by popular request, we reinstated the Express LoTW option from TX3X. This option returns the LoTW within 48 hours of processing the request. Using this option, the DXer may also request a (free) buro card, this option has proven to be a very popular choice.

We were happy to provide DXers an ATNO and/or band fills, and logging thousands of FT8 contacts for those seeking a contact. Until the next time, thank you for your interest in TX5N Austral Islands 2022.

Where are we going next?