QUA FARC

JUNE 2020

Franklin Amateur Radio Club Inc NZART Branch 10

VOLUME 28 ISSUE 6

Committee
President: Mike Jane ZL1UOM
Vice President: Gary Landon ZL1WGL
Secretary: Tom McDonald ZL1TO Ph. 09 238 858
with: Ted Doell ZL1BQA, Durlene Griffin ZL1ULK, Peter Henderson ZL1PJH and David McNeill ZL1DW.
Club examiners: Ian ZL1PZ and Tom ZL1TO.

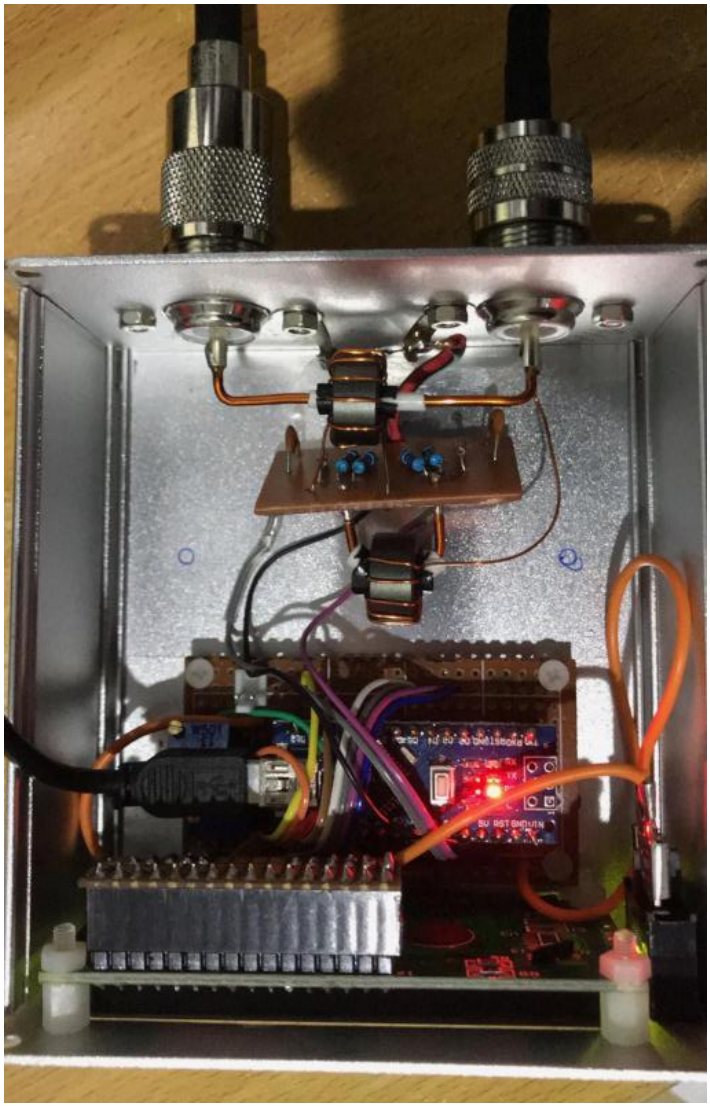
Web page: www.qsl.net/zl1sa/

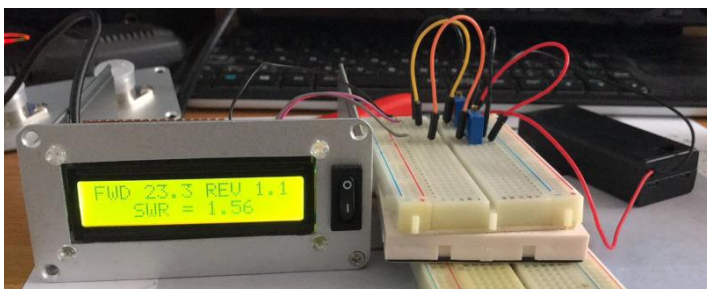
MEETINGS: The club meets on the third Tuesday each month, in the clubrooms, Stadium Drive Pukekohe, 7.30 pm. Visitors welcome.

The committee meets on the first Tuesday of each month (excepting January) at 7.30 pm in the clubrooms.
Subscriptions $20.00, family $30.00.

Nets every Sunday at 9.00 am on 3.700 MHz (controller ZL1UOM) and 9.30 am on the 146.900 MHz repeater (controller ZL1PZ). 2 metre frequencies are 145.775 MHz, then 146.625 MHz, and 146.900 simplex if repeaters off air.

Newsletter: Editor Tom ZL1TO tom.mcdonald@xtra.co.nz
A copy is sent to members and clubs in the Auckland area. Sent free of obligation by e-mail to anyone interested.





Above: A homebrew project using the Arduino micro processor. More about Steve's Power / SWR meter on page 3.

Club Notice Board

General meeting, Tuesday 16 June

Now that we are in Covid19 level 1 conditions the club can meet without any restrictions. So we will have a face to face meeting in June. After usual business the floor will be given to a show and tell. This is an opportunity for members to let us see the projects they have been working on during the lockdown. Alternatively members may show us a new piece of equipment they have acquired or simply show the result of research.

Welfare net

The welfare net continues, albeit with somewhat lower attendance, at 8.30 am daily (except Sunday) on the Bombay 690 repeater.

Franklin Junk Sale

Just in case you are wondering, this year's sale has been cancelled.

Mid-winter Dinner, Friday 17 July

As way of celebrating our release from restrictions that have been part of our pandemic response, there will be a dinner at Pukekohe Cosmopolitan Club on Friday 17 July. Smorgasbord 6 for 6:30 pm.

Congratulations

Life Member Ian ZL1PZ will clock up his century in early July. Ian has been a long supporter of the club, right from when he was part of the team that built the clubhouse in the 1950s. Ian's attendance at meetings is exemplary; he calls the two metre net on Sundays and remains a regular volunteer at car rallies, cycle races and the like when the club provides safety communications at such events.

Rally of New Zealand

This year was to have seen a return of the World Rally to include three days of racing in New Zealand. Regrettably the event has now been cancelled.

Break-In at Branch 86, Musick Point

Items stolen include an HP coaxial frequency meter, two Kenwood handhelds and an MFJ antenna tuner.

Minutes of Franklin Amateur Radio Club (Inc) General Meeting held on air 19 May 2020.

Chairman Mike ZL1UOM called for check-ins on Bombay 690 at 1930 hours.

Attendance: ZL1UOM, ZL1MFL, ZL1WGL, ZL1PZ, ZL1AQS, ZL1TZP, ZL1TO, ZL1BQA, ZL1LL, ZL1PJH, ZL1BBZ

Correspondence:

The Secretary reported there has been no further correspondence since the committee meeting on 5 May; namely newsletters from Branches 29, 65, 80 as reported in May QUA.

We would normally receive a Branch circular from NZART Business Manager / General Secretary in early April. Due to the COVID-19 lock down there has been no circular to date. Our remit decision can hopefully be made at the FARC June meeting.

There will be a face to face AREC Auckland Region meeting at Branch 29 at 1930 hours Thursday 21 May. Tom ZL1TO intends to be present.

Gary ZL1WGL reported that Positive Ageing Expo is cancelled in a message received earlier today.

Reports:

Peter ZL1PJH reported that 6 candidates are learning, presently at 8 words per minute at Farnsworth speed 16 words per minute. Thanks are extended to David ZL1DK who is teacher, and working 3.755 MHz daily at 7:30 pm.

Mike ZL1UOM reported that bent wires from the security fence have been found under the clubhouse. Empty cigarette packs beside the front steps. Tom ZL1TO said that he has shifted wires that vandals had tossed onto the grass, to under the clubhouse to avoid catching them in the mower. He had also collected litter from around the clubhouse this afternoon.

Reports were received. ZL1BQA / ZL1TO

Finance:

No expenditure this month. Reimbursement for power bills paid will be required after lockdown.

Power bill $46.03 for zero units.Water in credit $2.26

A list of club members with phone numbers is being readied for circulation to club members once a face to face meeting confirms the process.

The finance report was received. ZL1TO / ZL1WGL

General Business:

Peter ZL1PJH recommended that we take our time reverting to face-to-face club meetings. Bob ZL1BBZ commented that it is out of our hands for transitions between the COVID levels. Ted ZL1BQA thought we could not meet the present 10 person maximum. Gary ZL1WGL said that conditions are changing day to day and we do as the club members desire.

Ian ZL1PZ did not receive the agenda of tonight's meeting by email. The Secretary will post it imminently.

The meeting closed at 2010 hours.

Minutes of Franklin Amateur Radio Club (Inc) Committee Meeting held in the Clubrooms Stadium Drive Pukekohe 2 June 2020

Chairman Mike ZL1UOM opened the meeting at 1940 hours.

Attendance: ZL1UOM, ZL1TO, ZL1WGL, ZL1BQA, ZL1PJH

Apology: ZL1ULK, ZL1DW

Minutes of Zoom meeting 5 May 2020 approved. ZL1BQA / ZL1WGL

Correspondence:

Newsletters from Branches 03, 12, 13/25, 29, 80, 86.

We anticipate NZART Branch circular shortly – it was delayed for Covid19 lockdown. Our remit night could be June, July or August.

There was a face to face AREC Auckland Region meeting at Branch 29 at 1930 hours Thursday 21 May. Tom ZL1TO and ZL1LL attended.

Positive Ageing Expo 2020 is cancelled.

Mike Jane noted there is a new amateur in Waiuku.

Correspondence received. ZL1BQA / ZL1WGL

Finance:

No expenditure this month. Reimbursement for power bills paid will be required.

Power bill $50.68 for zero units May has been paid.

Watercare $0.85 on estimate – to reimburse Treasurer.

Reimbursment cheque for $144.76 to Tom ZL1TO. ZL1WGL / ZL1BQA

The Secretary was asked to write to each club member seeking approval to publish phone numbers.

The finance report was received. ZL1WGL / ZL1BQA

Reports:

AREC: We have three teams sorted for the car rally on Sunday 2 August; ZL1ULK, ZL1PJH, ZL1BBZ.

The regional meeting on 21 May heard embargoed information on recently announced funding. David ZL1MR transfers his responsibilities to Andy ZL1COP, and takes over as National Training Officer.

Gary ZL1WGL suggested we compile a list of equipment available to each AREC member.

CW Training: Peter ZL1PJH reported that the group is up to 10 words per minute. There are still six in the group.

General Business:

Mid-Winter Dinner. The meeting agreed that we have a dinner on 17th July. We could invite Papakura Radio Club and do some kind of celebratory recognition of Ian ZL1PZ who will have reached 100 years old on 2 July. Ted ZL1BQA suggested that an item be produced for Jim Meachan to include in the June National Broadcast. Tom is to book Pukekohe Cosmopolitan Club, for Friday 17 July, and to let Northern Councillor know what is happening.

Jock White Field Day. Result of Hastings Trophy category was first Papakura, second Manawatu.

The meeting closed at 2145 hours.

NEWSLETTERS FROM OTHER BRANCHES

03. (May) AGM tentatively 27 June. Gel cell storage battery. Club's STSP repeater set up for members only during lockdowns.

12. Cover photo Collins 75A-4 receiver. Propagation report from K7RA. Amahi file server software. Landline sounder.

13/25. (May) Cover photo Backyards on the air – mobile. Napier meets 3 June with digital modes demonstration. The 'Clacka' land line morse sounder. ZL4T contest station selling some of its older technology.

29. Obituary to Stan ZL1TSG. Packet radio project using Raspberry Pi.

65. Meetings but no project nights during lockdown. Morse training continues. Run lithium-ion batteries at 30% to 80% charge. Murder hornets. Remaining universe ordinary matter has been found. SpaceX lauches to ISS. ZL1JLM vertical antenna matching unit.

66. David Probine speaks 11 June on supercapacitor buffers in electric vehicles. List of internet resources on microwaves. Additions to trading table stock.

80. In person meeting 10 June, with mini junk sale. Net moved to Mondays 8.00 pm 3.605 MHz. Progress with earth station.

86. (June) Cover photo valves at Bletchley Park and Musick Point. Allan ZL1AUW hospitalized. *I have a little Satnav.*

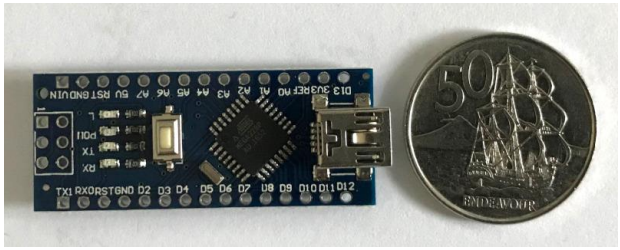
Straight Key Night winter edition

I hope to work you 8-9pm on Sunday 14 June! Please feel free to contact me with any questions.

Neil Sanderson ZL1NZ SKN Manager <neil@zl1.nz>

Arduino

The Arduino Nano, one of the varieties available pictured next to a coin for size reference.

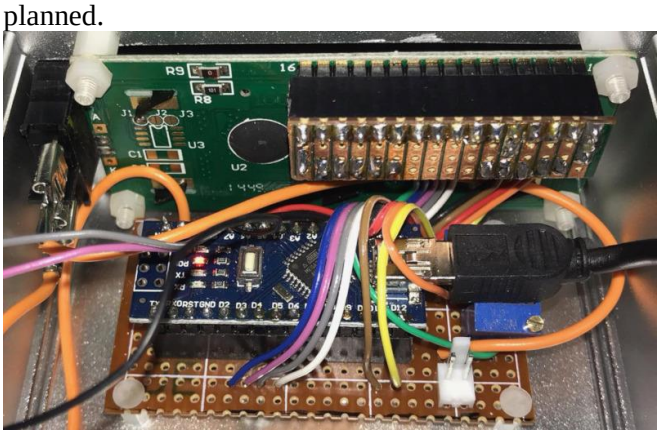


The Arduino is a small Single-board Microcontroller, and shouldn't be confused with a Raspberry Pi. Microcontrollers provide multiple inputs and outputs which allow interaction with the real world, through both Digital and Analog signals. Digital representing either ON or OFF, and Analog representing a continuous variable range (ie temperature, voltage etc.).

Microcontrollers (like their computer cousins) can be a useful tool for the Ham. The Arduino is readily available at minimal cost in a number of forms depending on how many inputs and outputs are required. Many of you have probably heard of the Bitx and uBitx HF QRP transceiver kits, these kits use an Arduino Nano to control the VFO and various other functions.

Nearing the end of the level 4 lockdown, I came across a web page that used the Arduino in a SWR / Power meter. As I'd like another SWR / Power meter this got me thinking and with a little more research found more information, and decided that I'd make one based on one by KN9B (https://sites.google.com/view/kn9b/digital-swr-meter). So I looked through the boxes of bits I have here and found all the parts bar the two diodes required to put one together. As I didn't have the exact display KN9B was using, the code (program) needed to be modified to suit the one I had.

The first step was to assemble the display and Arduino circuit, load the modified code and test it. All worked as planned.



The next step I bread-boarded a test rig to emulate output voltages from the sensing circuit (Stockton Bridge) for both forward and reverse RF power, and connected them to the Arduino. Fortunately, no puffs of smoke. The display showed Forward Power, Reverse Power and the SWR. I was able to vary the voltages applied and see the displayed power and SWR figures change as expected.

Once the diodes arrived, the sensing circuit was completed and tested. The analog input to the Arduino must be between 0 and 5 volts, I needed to ensure that at 100 W from the rig I'm not going to exceed 5 volts into the Arduino.

Initial testing showed the output voltages from the circuit at 100W were 6.18V in both Forward and Reverse directions. This is too high to directly input to the Arduino. A voltage divider brought down the output voltages to 4.3V at 100W giving a small safety margin. I then connected the sensing circuit to the Arduino and turned it on, 100W carrier from the rig read 42 W on the display. A further minor code edit had the display reading correctly. Next for SWR reading checks, placing it in line with my commercial cross needle SWR meter I tried it on the bands, and found I had good correlation between the two meters. It works!

Now comes the hard part, that is to get it to work on SSB, this needed a bit more coding. It took me longer than I was expected, but after a number of code changes, I finally got it to read correctly on SSB with good correlation to my commercial meter. Covers on and one project complete.

Steve ZL1TZP

Raspberry Pi - Part 2

My first Raspberry Pi project for Ham Radio

A number of years ago I heard about a mode called D-Star and became interested. At the time, the most economical way to get onto D-Star was using a PC, a small piece of hardware call a DV Dongle and software (DVTool), ie no transceiver required.

The DV Dongle is a USB device that has the required Ambe chip in it to decode the Digital signal.

I purchased one of these devices, so that my start into D-Star didn't require a Transceiver. Saying that, most contacts made using it were with other Hams most of whom were using a D-Star Transceiver.

As I learnt more about D-Star and made a few friends in Japan, I decided it was time to buy a transceiver, I purchased an Icom ID-51, a dual band D-Star handheld transceiver. I soon found that the closest D-Star repeater was not reliably accessed from my QTH using a handheld. This of course was a problem, I had a new handheld and wanted to use it.

I soon learnt about Hotspots. Hotspots are personal simplex repeaters with an internet connection, thus allowing the user to access the world wide D-Star network.

My next step was to build one using a Raspberry Pi.

The first Hotspot I built was a Sound Card Repeater.

To build one requires;

1. A Raspberry Pi. (I used a first generation Raspberry Pi B)
2. A transceiver. (a D-Star capable transceiver is not required, but it does require a 9600 Baud data port for best performance, as used extensively for packet radio in the day)
3. A USB to audio dongle. (as the Raspberry Pi doesn't have a mic input)
4. An interface. (between Raspberry Pi and Transceiver)
5. Software. (I used the Western Digital OS image which includes all required applications)

Because this Hotspot uses a standard Ham Transceiver the output power is that of the rigs transmitter, anything from a few watts to 10s of watts, and is called a High power Hotspot.

How does a Hotspot work?

Most Hotspots are simplex, it does not receive on one frequency and re-transmit on another frequency as most repeaters do. What it does do is receive a D-Star transmission from your rig and direct it through the internet to it's destination, which could be another hotspot or a D-Star repeater anywhere in the world. The Raspberry Pi and the software it is running receive the D-Star transmission and processes the signal for re transmission, either to the internet (TX from you) or to the Transceiver (RX to you).

Next month more on the Raspberry Pi and Ham radio.

Steve ZL1TZP

My sound card repeater