Ham Hum

December 2017

The official newsletter of
The Hamilton Amateur Radio Club (Inc.)
Branch 12 of NZART - ZL1UX
Active in Hamilton since 1923

Next Meeting

9th December : 11:30am

Annual Club BBQ

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From the Editor

Our annual BBQ is scheduled for 9th December at 11:30am. The club will supply sausages. BYO any thing else you would like to have.

SB PROP ARL ARLP047

ARLP047 Propagation de K7RA

Outlook for the near term shows solar flux at 72 on December 1, 70 on December 2-7, 71 on December 8, 72 on December 9-12, 74 on December 13, 75 on December 14-16, 74 on December 17, 73 on December 18-20, 74 on December 21-22, 76 on December 23-29, 72 on December 30-31, 70 on January 1-3, 71 on January 4, 72 on January 5-8, 74 on January 9, 75 on January 10-12, 74 on January 13 and 73 on January 14.

Predicted planetary A index is 5 on December 1-3, then 32, 36, 18, 12 and 10 on December 4-8, 5 on December 9-10, then 12, 15, 12 and 8 on December 11-14, 5 on December 15-16, then 8, 25, and 10 on December 17-19, 8 on December 20-21, 5 on December 22-23, 15 on December 24, then 12 on December 25-27, 8 on December 28, 5 on December 29-30, then 35, 40, 28, 20 and 10 on December 31 through January 4, 5 on January 5-6, then 12, 15, 12, 8 and 5 on January 7-11, 8 on January 12-13 and 25 on January 14.

From F.K. Janda, OK1HH his geomagnetic activity forecast for the period December 1-27, 2017.
Geomagnetic field will be:
Quiet on December 2, 16, 23, 26
Mostly quiet on December 1, 8, 14, 17, 21, 24-25
Quiet to unsettled on December 3-4, 9-12, 15, 20, 27
Quiet to active on December 7, 13, 18
Active to disturbed on December 5-6, 19, 22

Amplifications of the solar wind from coronal holes are expected on December (1-2, 4,) 5, 7-8, 17-20, (21-22, 24-25). Remark: - Parenthesis means lower probability of activity enhancement.

A new video from Dr. Skov: **https://www.youtube.com/watch?v=1lbcSEM3Dtl**

Jeff, N8II, in West Virginia wrote: “Tonight, November 30, is pretty exceptional on the low bands. On 160 meters several Europeans, including SM3EVR in Sweden, and a G4 in Great Britain, are generating steady pile ups. The ARRL 160-Meter Contest starts tomorrow and USA big guns are flexing their muscles. I also managed a marginal QSO with S01WS, Western Sahara for a new country on 160. Several European stations were worked on 80 meter CW, including Norway and Lithuania.

“In the CQWW CW DX contest November 25-26, conditions overall were better than last year with no disturbances of consequence throughout and probably slightly lower solar flux. Last year was disturbed until around 1200Z Sunday.

“The 160-meter band was productive for the big guns the first night. I managed QSOs with Scotland, Ireland, Great Britain, and Hungary along with Caribbean and the north edge of South American running low power 100 W.

“Conditions on 80 meters could not have been much better through 0500Z the first night. I worked Iceland, Kaliningrad, Europe Russia, Ukraine, Lithuania, Latvia, and Macedonia and many other European countries along with several QSOs with West Africa (Canary Is, Morocco, and Madeira).

“Forty meters was in good shape to central, western, and southern Europe the first 3 hours first night. One Caribbean station claimed over 3600 QSOs on 40! Asian stations were very difficult to find and work for me including the Arabian Peninsula where I heard Oman and Saudi Arabia.

“Twenty meters was open very well to Russia before sunrise both days, and on Sunday I managed to get many to answer my CQs. I worked a RA9 station in Asia, but his zone was 16, the same as European Russia. I never heard any Russians from zones 17-19, which was very unusual. Every part of Europe was loud early on both days, but mainly only western Europe was workable by 1600Z and very few Europeans were worked past 1830Z. Many stations were active from West Africa, but I did not hear African zones 34 or 36.

“V6, Micronesia, was worked short path around 2100Z Saturday and V7, Marshall Islands, on Sunday. Australia was also worked long path in the 2000Z hour and New Zealand at 0130Z short path. Signals from the south were workable all day and peaked around 2100-2300Z.

“Fifteen meters was fairly marginal with only southern and western Europe the first day with a much better but fairly short opening Sunday around 1300-1415Z which included QSOs with many northern Europe countries including Estonia, Latvia, Lithuania, Belarus, northern Finland, Denmark, and Sweden. One southern Russian (R7) was worked and western Europe lingered past 15Z. African signals were good as were the Caribbean and South America. Several Hawaiians, New Zealand, Tonga, and Micronesia were worked in the Pacific.

“Ten meters was barely open Saturday mostly only to the Sao Paolo, PY2 area and only a bit better Sunday to Argentina, Costa Rica, and Panama. There was sporadic E to Wisconsin and I worked a strong signal from British Columbia via either double hop Es or F2.

“I meant to mention about northern Europe 15M: This opening was very unusual for late Nov and SFI 72-73, probably the best to this area since the CQ WW SSB weekend a month ago.”

Scott Bidstrup, TI/W7RI, in Costa Rica wrote two weeks ago on November 17: “Bands down here in the single-digit latitudes are showing the effects of the approaching solar minimum. There hasn't been a single opening on six meters of any consequence since last September, and normally, we would be in the middle of our evening TEP season into South America by now. I've only seen a handful of FT8 decodes from South America, and by now the band should be busy with activity every night. Since the FT8 protocol permits signal detection at levels well below those of traditional methods such as CW and SSB, the utter lack of decode activity suggests that propagation via the evening TEP mode has all but stalled out. Two years ago, I was busy every night by now.

“On the HF bands, though, the approaching solar minimum has been good news for us here, as the solar ultraviolet and X-ray emissions that excite the D-layer and cause us our mid-day blackout on the HF bands, has been getting progressively weaker, and so the mid-day blackout has been shorter and less intense recently. There's been quite a bit of TEP activity on ten meters in the afternoons here recently. On just about every day, the 10-meter band has been open from here into CE, LU, CX and PY. But every day it's always the same stations, so there's little incentive to take advantage of it once you've worked them all several times. On 20 through 12 meters, though, there's been plenty of daytime DX from other regions to choose from, with the bands opening into Europe by 10AM and not closing to the Far East until after sunset.

“Twenty meters has often been open till late in the evening, occasionally even through the night, usually into North and South America with a smattering of Europeans, and 40 meters has been open almost around the clock without fail, often with some good DX, particularly in the early morning. The lower D-layer absorption means that we are frequently working the States in the middle of the day on 40, and every day, without exception, we can see FT8 decodes all day long, even with modest antennas. Even using weak signal modes, that was seldom possible just as recently as last year.

“The great blessing that FT8 has been for 160, combined with the lower D-layer absorption, means that grayline conditions have been workable for much longer than in the past, and several of my friends have worked some very respectable DX with very modest antennas on 160 including Mellish Reef and several African stations, using 80-meter dipoles tuned with a tuner.”

A possible future solar disturbance like the Carrington Event in the nineteenth cen-

tury is described somewhat breathlessly, over the top, and as if the event is actually predicted to happen in the next few minutes. Not sure I trust the source, but this one actually proposes a solution, a 100,000 ton coil sitting between Earth and our sun: **http://bit.ly/2BrEdbH**

For more information concerning radio propagation, see the ARRL Technical Information Service at **http://arrl.org/propagation-of-rf-signals**. For an explanation of numbers used in this bulletin, see **http://arrl.org/the-sun-the-earth-the-ionosphere**.

An archive of past propagation bulletins is at **http://arrl.org/w1aw-bulletins-archive-propagation**. More good information and tutorials on propagation are at **http://k9la.us/**.

Monthly propagation charts between four USA regions and twelve overseas locations are at **http://arrl.org/propagation**.

Instructions for starting or ending email distribution of ARRL bulletins are at **http://arrl.org/bulletins**.

Sunspot numbers for November 16 through 22, 2017 were 15, 26, 14, 0, 0, 0, and 0, with a mean of 7.9. 10.7 cm flux was 73.2, 76.4, 76.1, 74.4, 73.6, 73.2, and 73.4, with a mean of 74.3. Estimated planetary A indices were 14, 6, 6, 5, 8, 28, and 10, with a mean of 11. Estimated mid-latitude A indices were 11, 5, 5, 5, 7, 16, and 7, with a mean of 8.

Sunspot numbers for November 23 through 29, 2017 were 0, 0, 13, 15, 15, 14, and 12, with a mean of 9.9. 10.7 cm flux was 72.4, 74.1, 74.3, 75.5, 73.6, 71.9, and 72.6, with a mean of 73.5. Estimated planetary A indices were 9, 10, 7, 3, 5, 8, and 5, with a mean of 6.7. Estimated mid-latitude A indices were 7, 8, 4, 2, 4, 6, and 4, with a mean of 5.

PCB prices to rise on copper foil shortage, says broker

A shortage of copper and copper foil for use by the printed circuit board (PCB) industry is likely to send prices higher according to **Raymond Goh**, COO of Elmatica AS (Oslo, Norway), a PCB broker.

Goh said that the global output of copper is not increasing while demand for copper in lithium batteries for automotive applications is and that as a result a current

shortage of copper foil will persist. On top of this China is planning to ban the importation of electronic waste, a significant source of recycled copper, Goh said.

Although others will undoubtedly continue to recyle electronic waste China's exit would represent a disruption to the process creating a temporary decrease in copper supply.

Elmatica advises its customers to place orders early and plan for longer lead times particularly leading up to and beyond the Chinese New Year period in February 2018. Customers should also approve more than one type of laminate, in relation to copper thickness and insulator material, and several PCB manufacturers, to help cope with spot shortages.

http://www.eenewseurope.com/news/pcb-prices-rise-copper-foil-shortage-says-broker-0?news_id=100032

• Our thanks to **Stephen, G7VFY** for spotting this item

Fun With Sub-Woofers

Recently I was given this sub-woofer, I'm not sure where it came from, but it definitely looked like it had spent some time in a rather damp environment (Sitting on the nature strip, hoping for a new home?) This is not the first one of these devices to come my way. I've now got a sub-woofer on all my sound systems, bar the radio shack, that is till now. As it will probably be buried under a bench in my workshop/ radio shack, it's less than pristine look is not a problem.

These units are usually intended to be used as part of budget home cinema system, providing you with 5.1 channels of audio. 5.1 channels means 5 normal channels plus a sub-woofer, as in two front speakers, two back speakers, a centre speaker (usually placed directly under the screen, and the sub, which can be placed off to one side, as the human ear cannot tell where sub-audio is coming from. Electronically, this unit seemed to have no problems, however the box had quite a few rattles, probably due to glue failure after been un-loved & damp for so long – or maybe that's just how it was built in the first place (that would not surprise me) Anyway, with the integrated amplifier module, and port tube

removed, I had sufficient access to apply liquid nails to most of the joints, I was surprised by just how much of this glue I was able to push into the joints with my finger, the tolerances of the joints in the box were truly horrific, as in you could park a bus in them – Not good!

One common problem with 99% of home theatre equipment, bar the expensive top

of the line equipment, is audio quality; the amps in this unit looked extremely cheap and nasty, with some obvious cost cutting applied. Normally most discreet component amplifiers have what is known as a Zobel network? on their output, this is to make sure the amplifiers are stable at very high frequencies, and do not oscillate, the circuit board had room for the inductors, but they had been left out, replaced by wire links. – yea, cheap'n nasty.

The other problem with these units is the 5 supposedly full range speakers that come with them, usually they are quite small, and only reproduce the upper frequencies. I had previously acquired several sets of these, with the idea of putting a sound system into my caravan, they all sounded crap, an NEC communications speaker (as in commercial 2way) I had sounded far better – scary. The end result is a system that reproduces all the bangs, booms and gunshot noises in the movies, but murders the dialog – end result; out it goes – onto the nature strip.

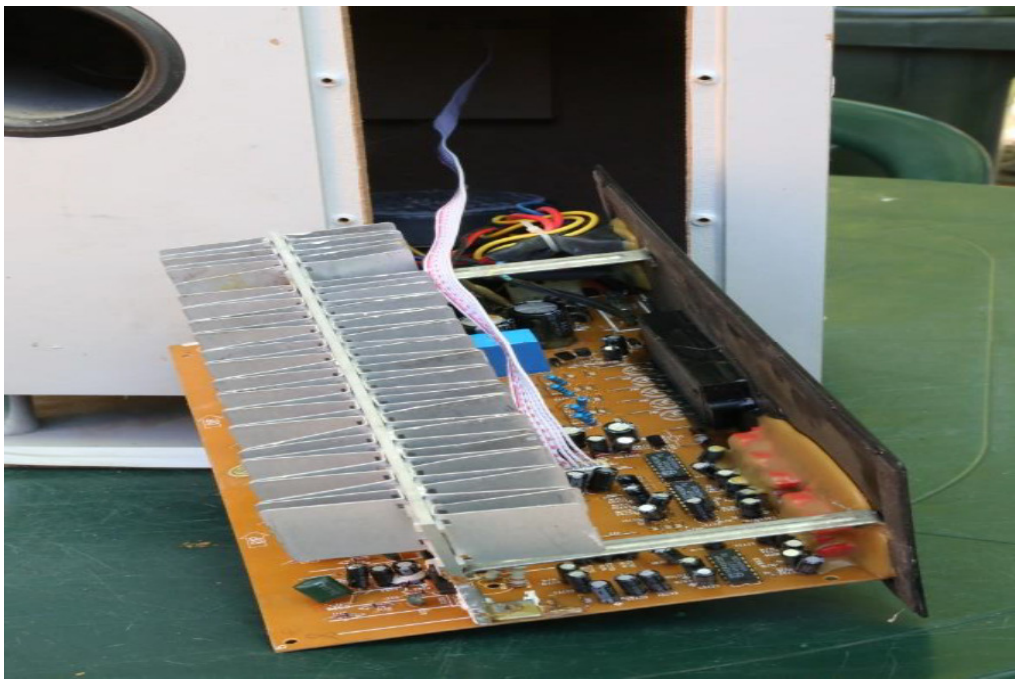
At one point I was going to bring one of those satellite speakers down to the club rooms to serve as a remote speaker on the club's new Yaesu FT950 HF rig, but none could reproduce a good spoken word – So how on earth do the drongo's who make this crap expect them to satisfy a TV viewer, Forget the news, or comedy shows etc., be happy with bangs, booms and ricochet gunshots type movies only. (Don't get me going about the speakers in small LCD TV's)

So if they are so bad, how on earth do I/you get any use or joy out of them? - Easy.

First off, toss the satellite speakers (assuming they are as I have described them), second, ignore the 5 supposedly full range channels, Apart from far too much distortion etc., quite often they are filtered, to suit the small speakers supplied with them, so even if you connect a decent set of HiFi speakers, they will sound like the small speakers they are replacing – yuk.

I had this sub/home theatre amp setup for testing in the back yard, being driven by my iPad, when a mate came visiting. So he could hear what I was playing (rather than just hearing boom, boom, boom), I connected a three way speaker to one of the channels. Darn, I thought that speaker has a dead woofer, as only the mid-range & tweeter were working. No, it was fine; it was the in-built filter I just described biting me.

What I use is a normal, decent quality HiFi amplifier with a pair of decent sounding



full range speakers. The output from this amp is then used, via an attenuator, to drive the “Sub” jack on the subwoofer for some extra bottom end punch, when the music you’re listening to calls for it.

If on the other hand, I’m listening to a podcast, the news, or ABBA, etc., with little bottom end, I don’t even think of turning on the subwoofer.

So why do I connect it (via an attenuator) to the HiFi amp output (as in speaker out)?, Its so that the audio level from the sub follows the main amp’s volume. If I connected it up to the input of the HiFi amp, then I would have to adjust two volume controls – a right pain….

At one stage I did try connecting to the output of the volume control, but the level was insufficient, plus the stereo to mono mixing network load, applied the high-ish impedance of the output side of the volume control was seriously compromising the stereo separation. Yes, I could have built a buffer amp, but I decided to just use the main power amps as the buffer.

In my case, with a mid-powered amp (40W/channel) I found two 4.7K resistors, one to both Left and Right, with a 1k resistor from the mid-point to ground did the job. I built this network inside the HiFi amp, with a single RCA socket as the output for the sub.

It could be built external to the amp (In fact, pre-built units are available, look at car

audio), but I thought the internal solution to be cleaner, and less trouble prone, than having two sets of leads pushed into the speaker output terminals of my amplifier. Do this part 'properly', in a proper box, etc., not just some parts wrapped up in electrical tape. If a short should occur you risk blowing your HiFi amp, not a good outcome. Hence me building it inside my amp.

Paul VK3TGX

The ARRL International Grid Chase

A new and exciting operating event will kick off on January 1, 2018, at 0000 UTC (New Year's Eve in US time zones), when the ARRL International Grid Chase gets under way. The year-long event hopes to build on the success of the highly successful 2016 National Parks on the Air (NPOTA). The objective is to work stations on *any* band (*except* 60 meters) in as many different Maidenhead grid squares as possible, and then upload your log data to ARRL's Logbook of The World (LoTW). Registration in LoTW is free, and it costs nothing to participate
Many hams are familiar with grid squares from the VHF/UHF and satellite realms, and everyone lives in one. ARRL's VUCC is based on grid squares, and some contests on HF, VHF, and UHF also use them as a scoring factor.

The Maidenhead grid square system divvies up the entire globe into 324 fields, each containing 100 grid squares 1° latitude × 2° longitude in size. With 32,400 potential grid squares, it's not likely that anyone will run out of challenges, even though some grid squares are surrounded entirely by water or are in areas that are uninhabited or difficult to access.
If you don't know your grid square, David Levine, K2DSL, has anonline calculator. Just enter a postal address, ZIP code, or even a call sign, and his site will tell you the grid square for that location. For example, enter "W1AW" and the site will return "FN31pr." For the purposes of the ARRL International Grid Chase, though, just the two initial letters and the two numbers that follow (e.g., FN31) are all you'll need to know. Once you get active in the chase and

start uploading your log data, each new grid square contact confirmed through LoTW will count toward your monthly total. Getting started is simple. Turn on the radio and just call CQ or "CQ Grid Chase" or listen for others doing the same. Make a contact, exchange grid squares, log it, and move on to another. At the end of each month, your totals on the Grid Chase leader board will reset to zero, although the system retains these to determine top finishers in various categories at the end of the year.

Any contact you make in 2018 can count toward your Chase score; it doesn't have to involve an exchange of grid squares. As long as the other operators also participate in LoTW, you'll get credit automatically when they upload their logs. This means that contest contacts also count, as will contacts with special event stations or other on-air activity that uses LoTW to confirm contacts.
Some radio amateurs live in sparsely populated grid squares, and if you're one of those, you could find yourself handling a pileup! Expeditions to hard-to-reach or rare grid squares undoubtedly will evolve. You also can travel to one of those grid squares yourself. Some vehicle or handheld GPS units can be set to display when you are in a particular grid square. Apps are available for smartphones or tablets, such as *Ham Square* for iOS devices or *HamGPS* for Android devices.
There are no restrictions on modes or bands, as long as they are legal. Satellite contacts are valid for the Chase. The event is open to all radio amateurs.
Full details of the ARRL International Grid Chase will appear in the December 2017 issue of *QST*. The digital edition is available on Friday, November 10.
For more information, contact the ARRL Contest Branch. Read more.

AO-91 Commissioned, Declared Open for Amateur Use!

AMSAT-NA's latest Amateur Radio CubeSat, RadFxSat (Fox-1B), now known as AO-91, has been opened for general use. AMSAT Engineering officially announced that AO-91 was ready for use at 0650 UTC on Thanksgiving Day, November 23. AMSAT VP of Engineering, Jerry Buxton, N0JY, turned over operation to Mark Hammond, N8MH, and AMSAT Operations during a contact on the AO-91 repeater during the pass over the Eastern US, AMSAT said in a bulletin.

The latest CubeSat in the Fox series was launched on November 18 from Vandenberg Air Force Base in California. Telemetry is downlinked via the DUV subaudible telemetry stream, which can be decoded using FoxTelem https://www.amsat.org/foxtelem-software-for-windows-mac-linux/ software.

A 1U CubeSat, RadFxSat (Fox-1B) is a joint mission of AMSAT and the Institute for Space and Defense Electronics (ISDE http://www.isde.vanderbilt.edu/) at Vanderbilt University. AMSAT constructed the rest of the satellite, including the spaceframe, on-board computer, and power system. The Amateur Radio package is similar to that currently on orbit on AO-85, with an uplink on 435.250 MHz (67.0 Hz CTCSS) and a downlink on 145.960 MHz. -- Thanks to AMSAT News Service

Source:

The ARRL Letter

Upcoming Happenings & Events

Date	*Happenings & Events*
2-3 December	**NZART Field Day Contest**
4th December	HF Net, 3.575 MHz, 19:30
5th December	VHF Net, 146.525 MHz, 20:00
8th December	**NZART HQ Infoline**
9th December	**Annual Club BBQ**
11th December	HF Net, 3.575 MHz, 19:30
12th December	VHF Net, 146.525 MHz, 20:00
17th December	**NZART Official Broadcast**
18th December	HF Net, 3.575 MHz, 19:30
19th December	VHF Net, 146.525 MHz, 20:00
25th December	HF Net, 3.575 MHz, 19:30
26th December	VHF Net, 146.525 MHz, 20:00

17 January—Combined Club General/Committee meeting

24-25 February—NZART Jock White Field Days

For more information on any of the above please contact myself or any committee member.

Club Information

Contacts :-	
Business Meeting:	1930 First Wednesday of each month except January 88 Seddon Road, Hamilton
General Meeting:	1930 Third Wednesday of each month (except Jan) 88 Seddon Road, Hamilton
Homepage:	http://www.zl1ux.org.nz
eMail:	branch.12@nzart.org.nz
HF Net:	3.575MHz LSB 1930 Mondays
VHF Net:	146.525MHz simplex 2000 Tuesdays
2m Repeater:	145.325MHz -600kHz split
STSP Repeaters:	146.675MHz -600kHz split 438.725MHz -5 MHz split
ATV Repeater:	Off air pending channel changes

Cover Photo: Picture acquired from https://ke2yk.com/2013/12/

Sender	Hamilton Amateur Radio Club (Inc) PO Box 606 Hamilton 3240