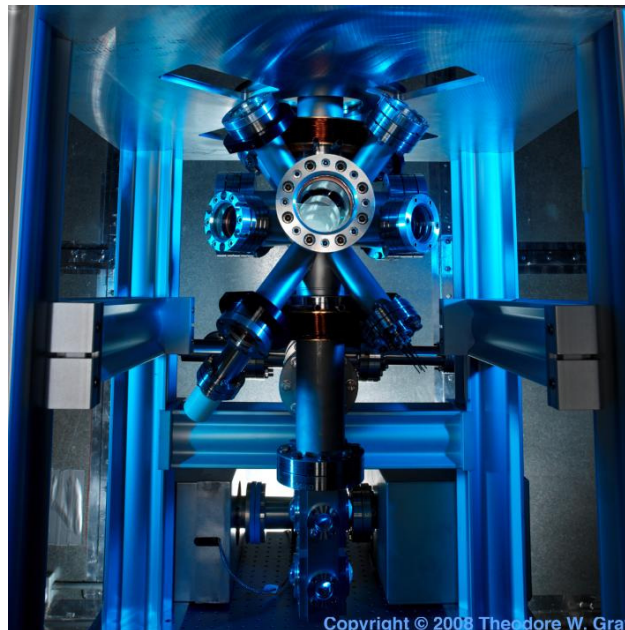


Ham Hum

September 2014



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



Next Meeting 17th September

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From the Editor

The main news this month is that we, Branch 12, will be hosting the NZART Annual Conference in Hamilton on Queens Birthday Weekend 2015 (May 30th to June 1st 2015). See page 7 for more details.

In this issue is an article taken from the Waikato Times newspaper on our Annual Market Day and the hobby in general. A very good article.

Also, I've included some brief notes on WWV and WWVH taken from a NIST article. While the modern highly accurate method for setting time is via GPS signals, I think that listening to WWVH (or WWV) is still accurate enough for most Amateur Radio activities.

**Next Committee Meetings -
3rd September & 1st October**

SB PROP ARL ARLP034

ARLP034 Propagation de K7RA

Solar indices and outlook are stronger this week. Average daily sunspot numbers rose 19.7 points to 114.6, while average daily solar flux increased 25.7 points to 138.8. Average daily estimated planetary A index dropped from 7.4 to 4.3. This compares the August 14 to 20 period against the previous seven days.

The day with the greatest geomagnetic activity was Tuesday, August 19 when the planetary A index was 17. This was caused by a weak CME, but according to Spaceweather.com the inner magnetic structure "contained a region of south pointing magnetism that partially cancelled Earth's north pointing magnetic field." This opened a crack in the magnetosphere, and solar wind poured through, triggering unexpectedly brilliant aurora.

The outlook for solar activity has improved. A week ago the average predicted solar flux for the next ten days, August 22 to 31, was 121. Now based on the Thursday, August 21 prediction the average solar flux for the same period has risen to 149.5, a robust increase of 28.5 points.

Predicted solar flux is 140 on August 22 to 26, 150 on August 27, 160 on August 28 to 30, and 165 on August 31. Flux values then drop to 125, 130, 125, 120, 115 and 110 on September 1 to 6, 105 on September 7 to 9, 100 on September 10 and 110 on September 11 and 12. It meanders a bit, and then rises to 140 on September 24 before declining again.

Predicted planetary A index is 8 on August 22, 5 on August 23 to 28, 8 on August 29, then 5, 12, 10 and 8 on August 30 through September 2, 5 on September 3 to 5, 8 on September 6 and 7, 10 on September 8, 5 on September 9 to 14, 12 and 14 on September 15 and 16, then 8 on September 17 and 18, and 5 on September 19 to 23.

F. K. Janda, OK1HH predicts the geomagnetic field will be quiet to unsettled August 22, active to disturbed August 23, quiet to unsettled August 24, mostly quiet August 25, quiet to active August 26 to 29, active to disturbed August 30, quiet to active August 31, mostly quiet September 1 and 2, quiet to unsettled September 3, quiet September 4 and 5, quiet to unsettled September 6, quiet September 7, mostly quiet September 8 and quiet to unsettled September 9.

Jon Jones, N0JK reports a late season e-skip opening on August 16 around 0015

UTC. AA6YQ (FN42) was very loud on 6 meters across the south and Midwest.

Several stations in Washington State heard the VE8WD six meter beacon on 50.02 MHz from Yellowknife, NW Territories at 0220 to 0249 UTC on August 20. The distance was about 1100 miles.

Check out the DX maps at <http://n3tug.com/dxmap.php>. You can look at real time contacts on 10, 6 or 2 meters, giving a picture of propagation around the world. Right now at 1300 UTC the sun is rising over the West Coast of North America, and I am looking at a large number of 6 meter contacts all over Europe. I switched to 10 meters, and I can see contacts between Europe and Ethiopia, Thailand, Algeria and Saudi Arabia.

For more information concerning radio propagation, see the ARRL Technical Information Service web page at <http://arrl.org/propagation-of-rf-signals>. For an explanation of the 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>.

Sunspot numbers for August 14 through 20 were 108, 119, 99, 121, 92, 84, and 89, with a mean of 114.6. 10.7 cm flux was 102.7, 113.1, 112, 115.1, 110.6, 111, and 118, with a mean of 138.8. Estimated planetary A indices were 4, 5, 3, 7, 5, 17, and 6, with a mean of 4.3. Estimated mid-latitude A indices were 5, 6, 4, 9, 5, 14, and 7, with a mean of 3.7.



‘Ham’ radio fans descend on Hamilton

*{Article and pictures taken from Waikato Times (Fairfax) on 13th August 2014—
Editor}*

Written by Louis Houlbrooke

The century-old hobby of amateur radio has life in it yet, with up to 200 enthusiasts descending on Hamilton this weekend for an annual market.

Robin Holdsworth, 76, is organising the event. He has been an amateur or “ham” hobbyist since he was 15.

OUT & ABOUT

There was plenty to see, swap and talk about at the Hamilton Radio Club market day at Hamilton Table Tennis Club on Saturday. *Waikato Times* photographer Nick Reed was also tuned in.



Treasure hunt: Noel Morris, of Waikato, sorts through some spare parts.



Done deal: Kris Smalowski, of Tauranga, gets a good deal on some parts from Rotorua's Ted Bretherton.



Looking at the options: Visitors to the radio club market day check out some of the electrical components.

He says even with the advent of the internet, ham radio still has a place in New Zealand.

"There's a lot of competition from computers and iPhones and other stuff'. Skype is another one that's taken away the glamour of talking overseas. But there's nothing quite like listening to someone talking to you directly on the radio," he said. "Your own aerial, your own equipment, and he's doing the same at his end. He could be a Russian, he could be from England or America or whatever. It's a real buzz."

While some might not see the appeal of old-school radio in the internet era, ham radio is still helpful in situations where computers are useless.

"They all rely on interconnections, and they can be broken at any place," said Holdsworth.

Ham radio operators even played a part in the aftermath of the Christchurch earthquakes.

"They were the go-to people for emergency communications in the first instance

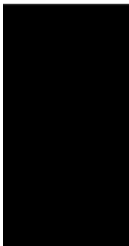
OUT & ABOUT



Catch up: Ron Badman, Waikato, Ralph Boshie, from Auckland, and Rose Motion, of Tauranga, take some time out to chat at the market day.



Keen operator: Richard Milne travels from Wellington every year to attend the radio club market day.



Looking at the options: Visitors to the radio club market day check out some of the electrical components.



On the monitor: There were plenty of radio components for visitors to the market to share, swap or buy.

because the cell phone stations were clogged up, the phones failed, and who else was left? The amateur people.”

The Hamilton Amateur Radio Club also helps with safety and co-ordination of events like the Kairangi Hill Climb, the Bridge to Bridge Water Ski Classic, and the North Island School Cyding Champs.

The dub hosts classes for aspiring ham operators and contests in which operators compete with each other and other dubs, racing to make international contacts in set time limits.

But perhaps the main motivator for dub members like Holdsworth is the chance to trade and restore classic radio gear - some members maintain working sets from as early as the 1920s.

Vintage transmitters and oscillators can be worth hundreds of dollars, but Holdsworth said Saturday's market isn't about profits.

"It's a communal gathering, people horse trade, sometimes for 50 cents or a dollar, they'll dicker and bargain to get their lowest price.

"I can't say with any certainty that I'll make any money on the Saturday morning. In fact, usually I don't, because I'm buying as much as I'm selling."

Saturday's event takes place at the Waikato Table Tennis Stadium, 10am to 1pm. Twenty stallholders are confirmed so far.

Louis Houlbrooke is an AUT communications student.

In touch: Robin Holdsworth (call sign ZL1IC) loves the buzz of making contact with like-minded amateur radio enthusiasts around the world. Photo: Chris Hillock/Fairfax NZ



NZART Conference 2015

Branch 12 have offered to run the NZART Conference in Hamilton on Queen's Birthday weekend 2015. It will commence with registration checkins on Friday 29th May and conclude on Sunday 31st May. Mark it in your diary now! As usual the NZART AGM will be held on the Saturday morning, with AREC, and other groups having meetings on the Saturday or Sunday. We are also planning to have a number of forums on the Sunday, which will hopefully be of interest to all. The venue

will be the Te Papa Racecourse, with Hamilton Caterers looking after our inner needs. A small committee has been setup to make it happen.

This information is hot of the press, as it was only decided by the committee last evening (Thursday 21st) to run with it, as all the ducks lined up satisfactorily. Further details will be released in upcoming issues of HamHum.



NIST—WWV & WWVH

This info is taken from “NIST Time and Frequency Radio Stations : WWV, WWVH and WWVB” available at <http://tf.nist.gov/general/pdf/1969.pdf>

The National Institute of Standards and Technology (NIST) provides standard time and frequency information through three radio broadcast stations that are routinely used by millions of customers. The stations, WWV and WWVB, located near Fort Collins, Colorado, and WWVH, located on the island of Kauai in Hawaii, are the only radio stations located in the United States whose sole purposes are to distribute standard time and frequency information.

In December 1922, it was decided that the station's purpose would be the transmission of standard frequency signals, as a reference standard for other radio broadcasters. The first tests of WWV as a standard frequency station were conducted on January 29–30 of 1923, and included the broadcast of frequencies from 200 to 545 kHz. By March of 1923, WWV was broadcasting frequencies from 125 to 2000 kHz on a monthly or weekly schedule. The accuracy of the transmitted frequency was quoted as being “better than three-tenths of one per cent.” The output power of the station was 1 kW.

By 1932, it was clear that the station had become part of the national infrastructure, and so work began on making the signals accessible to more Americans, by relocating the station and designing new transmitters and antennas in order to increase the coverage area. The station was moved in December 1932 to a Department of Agriculture site near Beltsville, Maryland. By April 1933, the station was broadcasting 30 kW at 5 MHz, and 10 and 15 MHz broadcasts (at 20 kW output power) were added in 1935. The 10 and 15 MHz frequencies were chosen as harmonics or multiples of 5 MHz. By this time, the station frequency was controlled to within about 2 parts in 10⁸. In June 1937, standard musical pitch (A440), second pulses, standard time intervals, and ionosphere bulletins were added to the broadcast. The 15 MHz carrier was replaced by a 20 MHz transmission, although 15 MHz was restored in

May 1940.

From 1955 to 1958, WWV played a key role in the definition of the atomic second. During this period the United States Naval Observatory (USNO) in Washington, D.C. and the National Physical Laboratory (NPL) in Teddington, United Kingdom made simultaneous common-view measurements of the signals broadcast from WWV. The USNO compared the signal to an astronomical time scale (UT2), and NPL compared the signal to the new cesium standard they had just developed. The data they collected helped the USNO and NPL equate the length of the astronomical second to the atomic second, and led to the atomic second being later defined as the duration of 9,192,631,770 cycles of the cesium atom.



WWV transmitter building.

In 1966, WWV was moved to its current location, near Fort Collins, Colorado [17]. The LF station WWVB had gone on the air in July 1963 near Fort Collins, and it was decided that WWV would share the same 390 acre (158 hectare) site. On December 1, 1966 at 0000 UTC, the station in Greenbelt, Maryland went off the air, and the new station simultaneously went on the air in Fort Collins.

The current site is about 80 km from the Boulder laboratories where the national standards of time and frequency are kept. The proximity to Boulder and the use of atomic oscillators at the transmitter site originally made it possible to control the transmitted frequency to within 2 parts in 10¹¹, a factor of 10 improvement. Today, the station's frequency is controlled to within a few parts in 10¹³.

In April 1967, WWV began broadcasting Greenwich Mean Time (GMT) instead of local time, and began its current format of using Coordinated Universal Time (UTC) in January 1974. The time announcements were now made every minute, instead of every 5 minutes, beginning on July 1, 1971, the same date when the current form of the digital time code was added. The station broadcast the first "leap second" in history in June 1972.



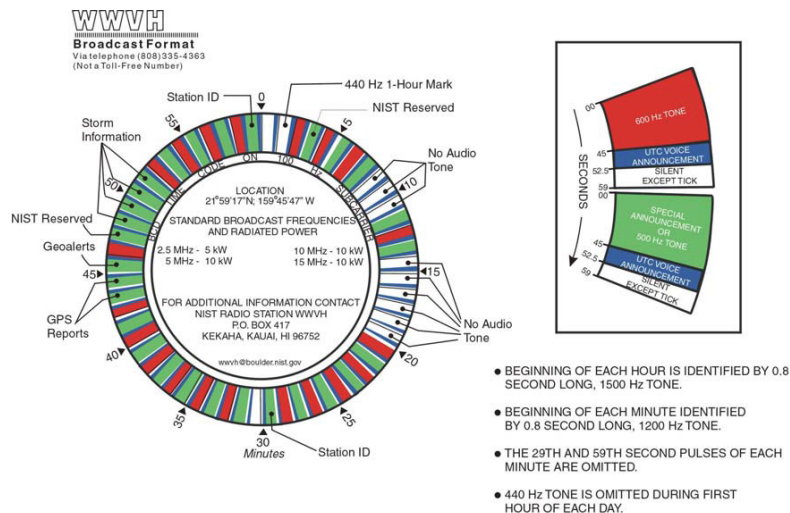
15 MHz antenna at WWVH (Kauai, Hawaii)

WWVH began operation on November 22, 1948 at Kihei on the island of Maui, in the then territory of Hawaii (Hawaii was not granted statehood until 1959). A meeting of the International Telecommunications Union (ITU) held in 1947 resulted in agreements that standard frequency stations would be allocated 2.5, 5, 10, 15, 20, and 25 MHz, frequencies already used by WWV. NBS then made the decision to build WWVH as a second standard frequency station to be operated simultaneously with WWV. The second station would increase the service coverage area, would allow NBS to determine the amount of accuracy obtainable in synchronizing two or more standard frequency stations, and would also allow NBS to develop methods for operating separate stations on the same frequency. The Hawaii location was chosen to maximize the coverage area and to prevent interference to existing users of WWV services

Many changes took place when the station moved to Kauai. The ERP was increased to 10 kW on 5, 10, and 15 MHz, and 2.5 kW (increased to 5 kW

shortly after wards) on 2.5 MHz. A new 2.5 kW 20 MHz broadcast was added (but later turned off in February 1977). Voice announcements began every minute, and a woman's voice, that of Ms. Jane Barbe, was used for the announcements. Also, the station began transmitting a digital time code for the first time, and the telegraphic time code was discontinued. The station was now offering services nearly identical to those provided by WWV.

The original omni-directional towers were vertical steel structures made by Rohn or Collins, similar to the WWV antennas. However, due to the high humidity and salt spray from the nearby ocean, these towers required much more maintenance and upkeep. Beginning in 2001, these antennas were replaced by free-standing fiberglass masts (also known as whip antennas), manufactured by Valcom Ltd. The new monopole antennas are made up of several hollow, tapered epoxy-fiberglass sections, which are joined together end-to-end with threaded bronze ferrules. Embedded in the epoxy-fiberglass sections are strips of copper extending the length of each section, usually in a spiral and connected to the threaded ferrules. The top section is capped either with a bronze corona sphere or a hoop shaped capacitive element. The base of the bottom section flares outward to meet the mounting flange. The embedded copper strips end at the feed point about 46 cm above the flange, thus the bottom 46 cm of the mast forms the base insulator. No guy cables are required. {see picture on page 12}





4-5 October—NZART Microwave Contest
10th October—NZART HQ-Infoline
24th October—NZART HQ-Infoline
26th October—NZART Official Broadcast
2nd November—NZART Straight Key Night
7th November—NZART HQ-Infoline
21st November—NZART HQ-Infoline
30th November—NZART Official Broadcast
6-7 December—NZART Field Day Contest
28 Feb/1 Mar 2015—NZART Jock White Memorial Field Days
30 May/1 Jun 2015—NZART AGM & Conference (Hamilton)

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

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88 Seddon Road, Hamilton

General Meeting: 1930 Third Wednesday of each month (except Jan)
88 Seddon Road, Hamilton

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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 146.675MHz -600kHz split
Repeaters: 438.725MHz -5 MHz split
ATV Repeater: Off air pending channel changes

Cover Photo: NIST F1 cesium atomic clock.

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