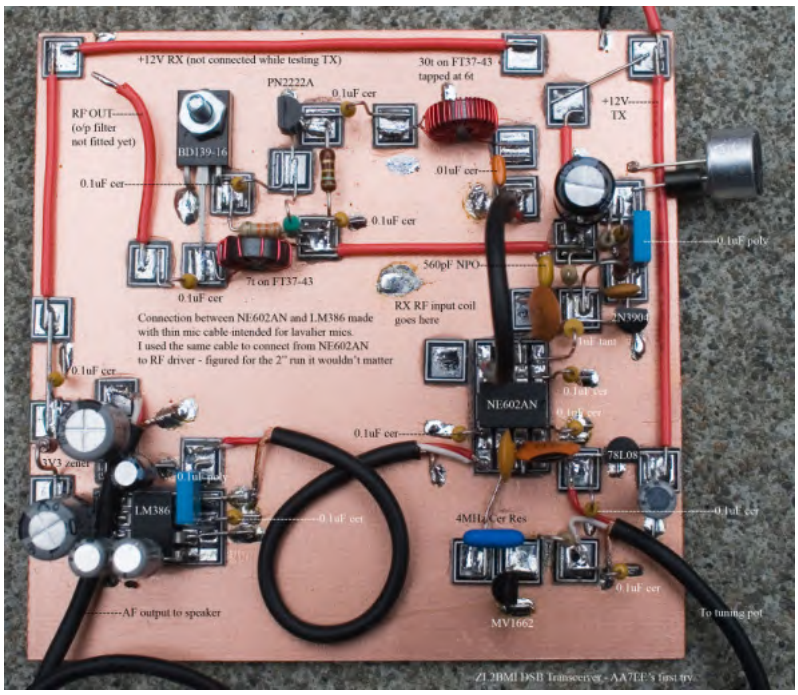
Ham Hum

April 2013

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

Hamilton Amateur Radio Club Inc.
Serving the Hamilton Community for over 80 Years
ZL1UX



Next Meeting :

Wed 17th April

7:30pm

Contact Details

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Colin McEwen	ZL2CMC	849 2492	
QSL Manager:			
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2m net—Phil King	ZL1PK	847 1320	zl1pk@nzart.org.nz
NZART Examiners:	ZL1IC, ZL1PK & ZL1TJA		

From the Editor

I'm told that everyone had a great time at the NZART Jock White Memorial Field Days. The results aren't out yet, but we always seem to do well in amongst all the social activity.

As the AGM is all over for another year, your subs are due. Reminders with the sub forms will be heading your way soon.

Next Committee Meetings - 3rd April & 1st May

The K7RA Solar Update

29/03/2013

Solar activity was down this week, with the average daily sunspot number at 49.6, less than half last week's figure. The average daily solar flux dropped 22 points to 97, and geomagnetic activity was quiet also. Sunspot numbers for March 21-27 were 60, 54, 56, 45, 56, 41 and 35, with a mean of 49.6. The 10.7 centimeter flux was 106.1, 100.9, 98.2, 96, 92.6, 92.4 and 93, with a mean of 97. The estimated planetary A indices were 12, 4, 11, 5, 4, 3 and 14, with a mean of 7.6. The estimated mid-latitude A indices were 11, 2, 10, 6, 3, 2 and 9, with a mean of 6.1.

The predicted solar flux is 95 and 100 on March 28-29, 105 on March 30-31, 110 on April 1-3, 115 on April 4, 120 on April 5-7, 125 on April 8-10, 120 on April 11-13, 115 on April 14, 110 on April 15, and then it drops below 100 for April 20-24. The predicted planetary A index is 22, 18 and 8 on March 28-30, 5 on March 31-April 22, then 8, 18, 15 and 8 on April 23-26, and dropping down to 5 through the end of April and into the first week in May.

Lee Gordy, W4KUT, of Cartersville, Georgia, wrote to say he just finished reading Carl Luetzelschwab's article "**The Sun and the Ionosphere**" (in the March 2013 issue of *QST*) for the third time: "For me, it's consoling to know that knowledgeable professionals such as Carl Luetzelschwab are having exciting difficulties rounding up Ol' Sol's secrets. There's a fine and mystical line between prophesy and prognosis, and the even bigger consolation prize I've taken away from Carl's informative writings is a closer understanding of songwriter Joni Mitchell's wonderful composition, *Both Sides, Now*: 'It's cloud illusions I recall, I really don't know clouds, at all.' Regarding the Sun, we can literally see 'both sides now.' And it just seems like the more we know about it, the less we really know! I was there for Solar Cycle 19. It was mystical and magical, and I have every hope that I'll experience a like ionospheric folly before I send my final SK. Who knows, maybe this cycle will have another peak, and we'll hear non-stop, worldwide 10 and 6 meter activity. In the meantime, it's fun to try and outguess solar mojo. It's a big part of the infectious excitement and thrill of Amateur Radio."

Lee must be referring to the Solar TErrestrial RElations Observatory project, or **STEREO**, which does allow us to observe both sides of the Sun, with real time images, too, updated every few minutes.

Bill Tynan, W3XO, of Kerrville, Texas (grid square EM00kd) wrote: "March 15's coronal mass ejection apparently caused a major north/south opening on 6 meters. On Sunday, March 17 at 2122, I worked HC5VF; he was S-9 with 50 W. I did not hear any Central American stations, so my conclusion is that it was via F2, not

multi-hop Es. I rule out trans-equatorial propagation (TEP), as Ecuador is above the magnetic equator. “Then, beginning from 2154 to 2256, I worked several Argentinean stations. I also heard a Uruguayan station, but did not work it. These could have, of course, been TEP since they are south of the geomagnetic equator. But since they followed so closely on the Ecuadorian station, it makes me wonder.”

All times listed are UTC, unless otherwise noted.

Power Amplifier ‘Heals' Itself After Laser Blasts

Date : 18 / 03 / 2013
Author : Ron Grunsby - RF Globalnet

Indestructible electronics are a step closer to reality thanks to engineers at the California Institute of Technology (Caltech), who have developed what they are calling “self-healing” integrated chips. The team from the High-Speed Integrated Circuits laboratory in Caltech's Division of Engineering and Applied Science repeatedly blasted tiny power amplifiers with a high-power laser, vaporizing many of their components, then watched the chips develop their own work-arounds in less than a second.

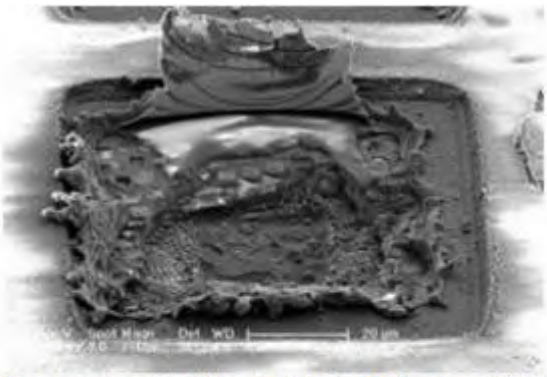
The chips are so small that 76 of them, including the amplifier and everything needed to heal it, can fit on one penny. The amplifiers developed by the team use on-chip sensors that monitor temperature, current, voltage, and power. These sensors send the information to a custom application-specific integrated circuit (ASIC), which is a central processor on the same chip that functions as the system’s "brain." The ASIC evaluates the information it receives from the sensors about the amplifier’s performance, decides what adjustments need to be made to the system’s actuators, and makes those changes. The unit was designed to get to the optimum state for all actuators in any situation without outside intervention.

The benefits of this approach go beyond overcoming severe damage. These amplifiers used about half as much power as those without the self-healing capability, and performance was more predictable and reproducible, according to the team, who formed these conclusions after testing 20 chips. In addition to working around damage to parts of the circuits, the amplifier’s self-healing can repair:

Static variation due to differences across components
Long-term aging problems that arise over time as use changes the internal properties of the system
Short-term variations caused by changes in load, temperature, and differences in

supply voltage

Funded by the Defense Advanced Research Projects Agency (DARPA) and the Air Force Research Laboratory (AFRL), the capability was demonstrated on a power amplifier for millimeter-wave frequencies. Since chips operating at these high frequencies are useful for next-generation communications, imaging, sensing, and radar applications, showing successful self-healing here should mean that it also can be done in less cutting-edge electronic systems.



Here is some of the damage Caltech engineers intentionally inflicted on their self-healing power amplifier using a high-power laser. The chip was able to recover from complete transistor destruction. This image was captured with a scanning electron microscope.
Credit: Jeff Chang and Kaushik Dasgupta

While the appropriateness of the term "self-healing" is open to debate — since it's more of a work-around than an actual healing or even repair — the promise of this technology is indisputable. From fixing the smartphone you dropped on the floor at home to repairing battlefield damage to critical electronics, this advancement has the potential to save money and lives.

http://www.rfglobalnet.com

Results of the 2013 Council Election

NZART President

Vaughan Henderson ZL1TGC 514 votes

John Andrews ZL2HD 210 votes

Vaughan Henderson is by the above result, duly elected President.

Northern Region Council – No election required

Stephen Hayman ZL1TPH

Phil King ZL1PK

Neill Ellis ZL1TAJ

Central Region Council – No Election Required

Warren Harris ZL2AJ

Fred Johnson ZL2AMJ

Ted Linney ZL2TB

Midlands Region Council

Stuart Watchman ZL2TW 154 votes

Phil Holliday ZL3PAH 134 votes

Ann Fraser ZL3TNT 43 votes

Stuart Watchman and Phil Holliday are duly elected as Midland Region Councillors.

Southern Region Council – No election required

Terry Thomas ZL4TAE

Scrutineers for this election were

Mark Gooding ZL2UFI Upper Hutt Branch President. Steve Morgan, Debby Morgan.

The above positions become effective 1 June 2013.

Evan Sayer

NZART Returning Officer

20 March 2013

Subscription Information

Update 2013-Mar 20

Anyone interested in Amateur Radio is welcome to join the New Zealand Association of Radio Transmitters Inc. (NZART)

The subscription year is 1 January to 31 December (a calendar year).

Subscription Rates Are:

Standard Subscription: $99.00

Student Subscription $45.00

Family Subscription $129.00 (standard + $30.00)

Overseas Airmail $125.00

Overseas Surface $100.00

Subscriptions are due by 31st December for the following year, that is, paid in advance.

Standard subscription rate applies to Transmitting, Non-Transmitting, Associate and Branch member.

Family Maximum is $129 for a total subscription

New members joining late in the year may do so with their subscriptions proportional on a quarterly basis (pro rata) to the annual subscription, unless the full year set of Break-In is requested.

Student Members are those who are under the age of 25 years who are in full-time study at a school or tertiary institute. There is no rebate for Student member subscriptions.

Concessionary rates may be available on application to the Business Manager. All applications will be considered confidential.

http://www.nzart.org.nz

http://www.nzart.org.nz/assets/membership/NZART_Membership_form_2013.pdf

Review of 70 cm Bandplan

Updated: 2013 March 12

In response to concerns expressed by a significant number of radio amateurs NZART Council has resolved that there is to be a review of the New Zealand band plan for the 70 cm band. A copy of the current NZART plan is available with the link at the bottom of this page.

At the NZART Council Face to Face Meeting in Wellington on Saturday the 16th of February a working group was formed comprising of Councillors Warren Harris ZL2AJ, Neill Ellis ZL1TAJ and Phil King ZL1PK with members of FMTAG David Andrews ZL2SX, Doug Ingham ZL2TAR and Terry Thomas ZL4TAE. It is intended that it also be discussed at the 2013 Technology Convention over Easter in Auckland.

Submissions are invited from all NZ radio amateurs so that this can be achieved. Please send all submissions either by e-mail to 70cmreview@nzart.org.nz or by posting to "70 cm Bandplan Review, NZART HQ, PO Box 40525, Upper Hutt 5140."

All submissions should contain your callsign and contact address.

Some matters you might like to consider in your submission are:

Any issues with the current plan with a solution if possible.

Amateur Television operation in the 70 cm band including both Digital and Analogue and the effects on weak signal operators on the band (Satellite, EME and DX).

Interference to 70 cm operations from Low Interference Potential Devices allowed under the GURL.

70 cm Repeater inputs being in the frequency range of the Low Interference Potential Devices.

Compatibility of our plan with the Wireless Institute of Australia plan, noting that Australia has an additional 10 MHz of spectrum (see link below).

Compliance with the IARU Region 3 plan (see link below for details).

Any significant usage or suggestions for future usage that is not covered in the current plan.

Please make your submissions by **20th April 2013**.

CLICK HERE FOR FULL BACKGROUND INFORMATION

DynaCube to explore the South Atlantic Anomaly

SA AMSAT report that after launch, **DynaCube**, a one-unit CubeSat being constructed by Interns at the Denel Dynamics Engineering Academy, will be exploring the South Atlantic Anomaly during orbits over the area.

It is hoped the Cubesat will launch in late 2013 or 2104. The Southern African Amateur Radio Satellite Association (SA AMSAT) say the cost of a launch for this 1U CubeSat could be as high as 1,300,000 Rand (£92,000 or $140,000).

The South Atlantic Anomaly (SAA), off the coast of Brazil, is an area where the Earth's inner Van Allen radiation belt comes closest to the Earth's surface dipping down to an altitude of 200km This leads to an increased flux of energetic particles in this region and exposes orbiting satellites to higher than usual levels of radiation. The effect is caused by the non-concentricity of the Earth and its magnetic dipole.

The South Atlantic Anomaly is of great significance to satellites and other spacecraft that orbit the Earth at several hundred kilometres altitude; these orbits take satellites through the anomaly periodically, exposing them to several minutes of strong radiation, caused by the trapped protons in the inner Van Allen belt.

The team, all engineers who graduated from various universities in South Africa, spent last year working on the project to gain practical experience before they are assigned to various departments in the company. The Interns were tasked with designing, manufacturing and commissioning a 1U Cube Satellite and its associated ground support systems.

All systems have been tested and are now ready for integration. Although the Interns have come to the end of their year and will start their careers in various departments of Denel Dynamics, they are dedicated to completing the project in their free time. Currently three of the group have obtained their amateur radio license.

DynaCube will operate on Amateur Radio frequencies which were coordinated by the IARU Amateur Satellite Advisory Panel with a downlink of 145.980 MHz, an uplink on 435.050 MHz and a tracking beacon on 145.840 MHz.

Read the full SA AMSAT story and listen to an interview with members of the DynaCube Team at
http://www.amsatsa.org.za/DynaCube.htm

Southern African Amateur Radio Satellite association (SA AMSAT)
http://www.amsatsa.org.za/

Upcoming Happenings & Events

Date	*Happenings & Events*
1st April	HF Net, 3.575 MHz, 19:30
2nd April	VHF Net, 146.525 MHz, 20:00
5th April	**NZART HQ Infoline**
6-7 April	**NZART Low Band Contest**
8th April	HF Net, 3.575 MHz, 19:30
9th April	VHF Net, 146.525 MHz, 20:00
13-14 April	**NZART Thelma Souper Memorial**
15th April	HF Net, 3.575 MHz, 19:30
16th April	VHF Net, 146.525 MHz, 20:00
17th April	**Club General Meeting**
19th April	**NZART HQ Infoline**
20th April	**KDMG RTTY 80m**
22nd April	HF Net, 3.575 MHz, 19:30
23rd April	VHF Net, 146.525 MHz, 20:00
27th April	**KDMG RTTY 40m**
28th April	**NZART Official Broadcast**
29th April	HF Net, 3.575 MHz, 19:30
30th April	VHF Net, 146.525 MHz, 20:00

3rd May—NZART HQ Infoline

3rd May—NZART Sangster Shield

4th May—Wanganui Junk Sale

15th May—Club General Meeting

17th May—NZART HQ Infoline

26th May—NZART Official Broadcast

1-3 June—NZART Conference—Masterton

2nd June—NZART Conference Official Broadcast

7th June—NZART HQ Infoline

8-9 June—NZART Hibernation Contest

21st June—NZART HQ Infoline

30th June—NZART Official Broadcast

1st July—NZART Memorial Contest

27th July—Waitakere Sprints SSB

3rd August—Waitakere Sprints CW

3-4 August—NZART Brass Monkey Contest

2nd September—NZART Doug Gorman Memorial Frequency Measurement Contest

5-6 October—NZART Microwave Contest

7th September—SPAM Nostalgia Night

1st October—NZART/WIA Oceania Contest SSB

2nd October—NZART/WIA Oceania Contest CW

3rd November 2013—ZL1AIH Straight Key Night

1st December 2013—KDMG Twin Sprint PSK & RTTY 80m

7-8 December 2013—NZART Field Day Contest

AREC Event Operators Page

WRC Rally NZ/ Possum Bourne Rally	June 2013	Organiser : ZL1DK
Please contact the Section Leader with your team information and he will pass it on to Auckland.		

Rollo's Marine Bridge to Bridge Water-Ski Race	October 2013	Organiser : ZL1UPJ

Position		Saturday Operator	Sunday Operator
Base			
Start Boat			
Rescue Boat			
X-Band			
A.	Ngaruawahia/Taupiri		
	Start/Finish at Point		
B.	Ngaruawahia Ramp		
C.	Ngaruawahia W/S		
D.	Horotiu		
E.	Pukete Ramp		
F.	Days Park		
G.	Fairfield Bridge		
H.	Malcolm St		
I.	Narows		
J.	Field Days		
K.	Between Pipe and F/Days		
L.	High Level Bridge		

Kairangi Hill Climb	September 2013	Organiser : ZL1IC

Position	Operator
1.	
2.	
3.	
4.	
5.	

School Cycling	July 2013	Organiser : ZL1IC

Position	Operator	Position	Operator
1.		5.	
2.		6.	
3.		7.	
4.		8.	

Colville Connection	March 2014	Organiser : ZL1PK

Position	Primary Operator	Secondary Operator	Other Operator
Base			
Stony Bay			
Fletcher Bay			
Hill 1			
Hill 2			
Fantail Bay			
Stand By			

For Details about and to help with these events, contact the person indicated as the organiser for the event. See Page 1 for their contact information.

Club Information

Contacts :-

Business Meeting:	1930 First Wednesday of each month 88 Seddon Road, Hamilton
General Meeting:	1930 Third Wednesday of each month (except Jan) 88 Seddon Road, Hamilton
Homepage:	http://zl1ux.tripod.com
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:	615.250 Ch39 (off air)

Cover Photo: ZL2BMI DSB Transceiver as made by AA7EE http:// aa7ee.wordpress.com

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Hamilton 3240