

# Ham Hum

January/February 2008



The official newsletter of  
The Hamilton Amateur Radio Club Inc  
Branch 12 of NZART - ZL1UX



## Annual General Meeting

**20 February 2008**

**7:30pm**

**Club Rooms**

**88 Seddon Road**

**Next General Meeting : 20 February 2008.**

**Hamilton Amateur Radio Club AGM.**

**23/24 February : "Jock White"**

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2m net—Vacant

## **From the Committee**

### **NOAA Confirms Start of New Sunspot Cycle**

WASHINGTON (AP) — A new solar cycle is under way. The National Oceanic and Atmospheric Administration said Friday that the first sunspot of a new 11-year cycle has appeared in the sun's northern hemisphere.

The frequency of sunspots rises and falls during these cycles, and the start of a new cycle indicates they are likely to begin increasing.

Sunspots, areas of intense magnetic activity on the sun, can affect Earth by disrupting electrical grids, airline and military communications, GPS signals and even cell phones, the agency said. During periods of intense sunspot activity, known as solar storms, highly charged radiation from the sun may head toward Earth.

"Our growing dependence on highly sophisticated, space-based technologies means we are far more vulnerable to space weather today than in the past," said NOAA Administrator Conrad C. Lautenbacher, Jr.

Last April an international panel of solar experts forecast that Solar Cycle 24 would start in March 2008, plus or minus six months. The panel was split between those predicting a strong or weak cycle.

*{This cycle is expected to peak in late-2011 or mid-2012—Editor}*

### **ZL1NT—Silent Key**

We regret to have to advise that a much respected Life Member of the club, Basil J Hill (ZL1NT), passed away on Saturday 26th January 2008. Funeral arrangements to be announced later.

**Next Committee Meeting - 6 Feb 2008**

## **SB PROP ARL ARLP003**

### **ARLP003 Propagation de K7RA**

We've seen another seven days with no sunspots. After observing the first sunspot of Cycle 24, we hope to see more and more of these, signaling the beginning of the next sunspot cycle and the end of Cycle 23.

Dick Gird, K6PZE of San Diego, California wrote asking how to distinguish Cycle 24 sunspots from Cycle 23 spots. There are two features that differentiate spots from each cycle. Old Cycle 23 spots will appear near the Sun's equator. The first spots of Cycle 24 are at a high solar latitude, and will have magnetic polarity opposite of the old spots. Last week there was a brief appearance on January 11 by an almost-sunspot which disappeared by the following day. It appeared to be a Cycle 24 spot, which had polarity reversed from Cycle 23 spots, but it was near the equator, which is the wrong place for a new cycle sunspot.

Tom Schuessler, N5HYP of Irving, Texas wrote to ask about the differences between the geomagnetic A and K index. He asks, "I know that both of them are indications of the instability of the geomagnetic field. The K index is logarithmic and the A index is linear, and they track together -- kind of. K indexes are given every three hours while A index readings are for a full 24 hour period. Do the two indexes have different uses or tell a person different things about what to expect on the air?"

Based on three hours of magnetic data, a particular magnetometer or group of them is used to track the change in nanoTeslas, which are the international units for measuring magnetic flux density. K index is based on changes in the flux density over a 3 hour period, and the difference between the highest and lowest values at the magnetometer is converted to a semi-logarithmic scale that runs from 0 to 9, yielding a K index between 0 (very quiet) and 9 (extreme magnetic storm).



## **Hamilton VHF Net**

**The Hamilton Club, Branch 12, VHF Net is on 146.525 simplex.**

Tuesday 8pm (2000 NZT).

We are looking for a Net Controller for this club net. I want to hand it over to someone who'd like to help the VHF Net continue to grow.

- ZL1DGK

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## **Remember When? Remember Now.**

**By Norm Fusaro, W3IZ**

At one time or another we have all drifted back to happier, simpler times to help ease the stresses of life. While many professionals might agree that an occasional trip down memory lane is healthy and often therapeutic, few would recommend that we live in the past. Our human brains are wired to remember things that are comforting and suppress unpleasant memories. That is why we tend to use phrases like "the good old days" even if the time in reference was peppered with hardship.

Depending on how you look at it, ham radio like the automobile, has either hardly changed over the last 100 years or has advanced dramatically because of technological progress. Today's automobiles are loaded with safety features and convenience gimmicks yet the basic car is still a wheeled vehicle that burns fossil fuel in an internal combustion engine in order to transport passengers from point A to point B. In comparison radio operators still modulate and demodulate electromagnetic signals to communicate with stations near and far. Computer processing and micro electronics play a big part in how these illustrations have evolved, but have things really changed?

Amateur Radio is just one of many sectors where we see state-of-the-art technology blended with traditional concepts. A trip to any marina

will find modern sailboats made from composite materials and loaded with the latest navigational electronic devices but the basic component, harnessing energy from the wind to propel a vessel, has not changed in the thousands of years since its discovery. I am sure that you can think of your own examples where the application of modern technology has reshaped an old-fashioned idea, but the point is that while it is nice to remember and replicate things from the past, we live in the present.

Many people have an image of Amateur Radio as a nostalgic remembrance of another time when radio seemed to be magical when in fact it has always been cutting edge and futuristic. This portrayal of ham radio is reinforced by radio amateurs themselves through their reluctance to accept change and their insistence on preserving old technologies. The propensity to look back is not as prevalent in other activities as it is in Amateur Radio. When I go fishing I don't run into any anglers sporting woven rattan creels and bamboo fishing poles yet there is not a day that goes by when I am not reminded that "real radios glow in the dark" or some other witty reference to bygone times. How far back do we want to go to be authentic before it becomes absurd? "If it ain't spark it ain't radio?"

Years ago companies like Heath provided a way for many to get involved with Amateur Radio through kit building. The radio kit was less expensive than factory produced gear and, depending on the skill level of the builder, the finished products performed pretty well. Maintenance and repairs were easily performed because the builder had an intimate knowledge of the circuitry. Today, mass production and robotic manufacturing processes help drive down the cost of electronic equipment and in many situations make replacing a device more cost effective than repairing it. A current manufacturer of Amateur Radio that started life as a kit company quickly experienced a similar evolution. After a few short years of producing kits, the company found that they could offer a better product at a lower cost by providing assembled circuit boards populated with surface mount components. Assembly is a matter of plugging-in boards and configuring systems similar to how a computer is built. Digital electronics has allowed the experimenter to trade-in the soldering iron for computer software codes and the term home-brewing, once a common ham radio activity, has now given way to a more descriptive phrase -- soft-brewing.

Developers like Joe Taylor, K1JT have completely re-written the rules when it comes to EME, meteor scatter and other exotic digital modes once reserved for the eccentric radio amateur. Today many hams employ WSJT

software with modest stations to ricochet information to one another via the lunar surface. Other software experimenters are developing new modes and tools for the radio amateur to exploit the power of digital processing. Commercial interests are able to offer feature packed equipment that is relatively less expensive than gear offered in the past, and hams are finding applications for this stuff that could only be imagined a short time ago.

Amateur radio has many examples of innovation and creativity. Sometimes an idea can be ahead of its time. Take for instance an article that appeared in the July 1934 issue of QST that suggested "International Round Table Nets and Globe Circling Relays" using an elaborate network of tape machines and relays to remotely control HF stations as far as 200 miles away so that the ARRL broadcast could be made simultaneously in all 48 United States. We are able to do that exact thing today using Voice over Internet Protocol (VOIP) but there are some who will argue that this is not "real" radio. Phooey!

ARRL founder Hiram Percy Maxim, W1AW was a forward thinker who moved in the same circles as Edison, Ford and Firestone, people who changed our world. Maxim was innovative and has many inventions to his credit. When the spark gap transmitter used at Maxim's station 1AW, could no longer generate radio signals it was replaced by a modern transmitter that used vacuum tubes. When asked if there were plans to repair the spark gap transmitter Maxim acknowledged the position of employing modern technology when he remarked "The voice of the spark set at 1AW will not be heard again." (QST, January 1923, pg 14)

Maxim was always looking beyond the horizon. Displayed in a showcase at ARRL headquarters is the Elser-Mathis cup. This trophy was inspired by Col Fred Johnson Elser, W6FB and SCM Lt Cmdr Stanley Mathes, K1CY after Elser learned of Maxim's fascination with the planet Mars. The unique wooden cup is waiting to be awarded to any radio amateur for the first Amateur Radio Contact between Earth and Mars. I am certain that "tongue may have been firmly planted in cheek" when this award was conceived but I believe that this trophy may be awarded to some radio amateur in my lifetime.

I would like to think that if Mr. Maxim were here today he would be very happy to see that Amateur Radio and the ARRL have stood the test of time and continue to attract newcomers to the hobby nearly 100 years since the League was founded. However I would not be surprised if The Old Man

shook his head in bewilderment to find that we have spent much time and energy worshipping the past instead of looking ahead to the future.

It may be comforting to stroll down memory lane and fire up the vintage radio for the evening. The warm glow of the tubes and the refreshing aroma of heat radiating from the chassis will create soothing reflections and transport you back to a time when there was no internet, e-mail or cell phones. As you blow smoke rings from your briarwood pipe and replicate the authenticity of what you refer to as "real radio," try to remember that the icons of technology that you pay homage to were once state-of-the-art, modern appliances that filled the dreams of many. As much as Amateur Radio owes to its past, adoration of vintage radio should not take away from Amateur Radio's future.

-W3IZ

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## **SB SPCL ARL ARLX008**

### **New Prefix for Bosnia-Herzegovina Officially Announced**

In response to a request from the Ministry of Communications and Transport of Bosnia and Herzegovina in August, the International Telecommunication Union (ITU) withdrew the call sign prefix allocation T9A-T9Z for Bosnia and Herzegovina and made a new allocation, E7A-E7Z. The change was made initially on a provisional basis under authority of the ITU Secretary-General and was confirmed by the 2007 World Radiocommunication Conference to be effective November 17, 2007.

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## Antenna VSWR Testing.

It is important that any aerial that is used on a transmitter should have its SWR (Standing Wave Ratio) checked. If the SWR is too high the aerial will require alteration or tuning to attain an acceptable SWR reading. If the SWR is too high it can and quite likely will (albeit over time), cause serious damage to, or total failure of, the transmitter.

An Aerial is actually a transducer, it converts an AC electrical energy to an electromagnetic radiation (radio signal) or vice versa depending upon if it is connected to a transmitter or a receiver. In a lot of cases (except professional equipment) it will be connected to a transceiver and does both jobs depending upon the state of the PTT in the transceiver.

The aerial has an efficiency, usually it is quite efficient at radiating the electrical signal presented to it by the cable between the transmitter, this efficiency is usually represented by a SWR ratio. VSWR or Voltage Standing Wave Ratio is a measurement of two representative voltages. One Voltage represents the power being delivered from the transmitter (to the aerial), the other Voltage represents the power being reflected back from the aerial (power not transmitted by the aerial). SWR is a representation of the ratio of the two powers.

Less frequently people may represent ISWR, where Current represented by the I is used to measure the power present, this is unusual at VHF and UHF frequencies, but more common at LF, MF and HF frequencies. In either case they do reasonably accurately represent the SWR ratio present.

Most SWR meters will have a calibration where the user calibrates the needle movement on Forward Power for Full Scale Deflection of the needle on the meter. Usually there will be a Red "Set" marking at the end of the scale, and the adjustment will be labeled "Set" also. There may be a single meter where a switch is used to switch between the two readings, or two meters may be present on the SWR meter.

The switch on single meter devices could be labeled Calibrate and Measure, Set and Measure, Forward and Reverse, Forward and Reflected or any other similar combination.

The SWR is generally read off a scale from 1 to 3 or higher, representing an SWR of 1:1 to 3:1 etc. Often the scale will go Red past an SWR ratio of 3:1 as this is likely to damage the transmitter.

Note that there is always some reflected power, but it can be so low that the SWR meter being used can't detect it. Don't worry about this though, as if it is so low that the meter can't detect it, that has to be a good thing. This situation is known as an SWR of 1:1 although technically it will be close to 1:1 but not actually 1:1, lets not worry about that, it's still very good.

Some SWR meters can also measure the power and will have switches to select SWR or Power. Usually the Forward/Reverse switch will still work the same way with Power being displayed on a different scale rather than SWR ratio.

From this point on I will be describing the operation of a VSWR Meter on a piece of coaxial cable between a transmitter and it's aerial.

Our goal is to obtain minimum reflected power, represented by the lowest SWR ratio. Generally accepted SWR ratios follow: Below 1.3:1 excellent, below 1.5:1 good, below 1.8:1 fair, below 2:1 acceptable. Above 2:1 consider tuning the aerial, above 2.5:1 recommend tuning the aerial as damage to transmitter is possible and above 3:1 damage to the transmitter is likely.

When measuring SWR it is important to ensure transmissions are kept as short as practical until you know the ratio present will not damage the transmitter (This will also minimise any potential interference to other radio users). If the SWR is too high, look for the reason why, if you can't find the cause find someone you can ask for assistance. Only continue to operate the transmitter if summoning help in an emergency when the VSWR is above 3:1 as it risks damaging the transmitter.

Try to measure the SWR as close to the aerial as practical. This may not be possible in a lot of installations as often there is only a short piece of cable between the aerial and the transmitter, in that case don't worry about it as there is very little loss in the cable. When there is a lot of loss in the cable it is very important the SWR is measured at the aerial end of the cable. An example follows:

Lets look at a total aerial failure where 60% of the power is lost in the coax cable between the transmitter and aerial. An SWR meter at the transmitter will measure 100% forward power to the aerial, only 40% of that power will be present at the end of the coax where the aerial used to be (as 60% was lost in the cable). All of that 40% will be reflected back to the transmitter as

there has been a total aerial failure. So the reflected (or reverse) power measured on the SWR meter will be 40% of the 40% or 16% of the transmit power. This represents an SWR of 2.333:1 which gives the impression the aerial is still ok and isn't likely to damage the transmitter. This is true, the SWR won't damage the transmitter, but no power is being transmitted, therefore the radio can't transmit (or also receive if it was a transceiver).

If you measured the SWR at the aerial in the above example, you would know immediately that you had a serious problem. Note that this generally only applies with significant cable length!

Ok, an aerial's length is directly related to the frequency of operation. Likewise the type of aerial affects the likely minimum SWR you can achieve. Skilled technicians will usually easily achieve acceptable SWR in most circumstances. People less familiar may have difficulty. I will try to describe a technique that may help achieve the best practical SWR.

Try to get the expected SWR achievable with your aerial, this should be available from the supplier or manufacturers website. In a lot of cases it will be supplied on a specification sheet supplied with the aerial, or may even be printed on the side of the aerial. Check the aerial manufacturer does not state the aerial is pre tuned or that they specify not to cut the aerial. Look for instructions on how to cut the aerial when tuning it.

If practical and more than once channel is installed in the radio, we can compare the SWR on the different frequencies. This will be very valuable in determining if the aerial is too long or too short. Note that the channel number does not necessarily relate to frequency, this is especially true with VHF Marine transceivers, you will need to know what transmit frequency each channel is. With PRS (UHF CB) transceivers ensure duplex is turned off as it will make Ch 1 to 8 transmit on 31 to 38.

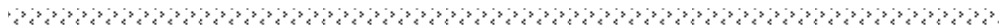
If the SWR is higher (worse performance) on a higher frequency then the aerial is too long. Conversely if the SWR is higher on a lower frequency then the aerial is too short. Ideally the SWR minimum will be similar to what the manufacturer specifies on a frequency near the centre of the operating range of the transmitter and it will rise in SWR as the minimum and maximum frequencies are approached.

It's all a bit of gamble if only one transmit frequency is used. Essentially the aerials are generally supplied slightly too long and will need a little cut

## Upcoming Happenings & Events

<i>Date</i>	<i>Happenings &amp; Events</i>
28th January	HF Net, 3.575 MHz, 19:30
29th January	VHF Net, 146.525 MHz, 20:00
<b>2-3 February</b>	<b>DX Weekend Contest</b>
<b>3rd February</b>	<b>HQ Infoline due</b>
4th February	HF Net, 3.575 MHz, 19:30
5th February	VHF Net, 146.525 MHz, 20:00
<b>6th February</b>	<b>Business Meeting</b>
11th February	HF Net, 3.575 MHz, 19:30
12th February	VHF Net, 146.525 MHz, 20:00
<b>16-17 February</b>	<b>ARRL International CW Contest</b>
<b>17th February</b>	<b>HQ Infoline due</b>
18th February	HF Net, 3.575 MHz, 19:30
19th February	VHF Net, 146.525 MHz, 20:00
<b>23-24 February</b>	<b>Jock White Memorial Field Day Contest</b>
<b>24th February</b>	<b>NZART Official Broadcast, 20:00</b>

**1st March—Paengaroa Junk Sale**  
**1-2 March—ARRL International SSB Contest**  
**8th March—Kona Colville Connection**  
**8-9 March—RSGB Commonwealth Contest (CW)**  
**9th March—HQ Infoline due**  
**10th March—Closing date March/April Break-In**  
**15th March—Wellington Radio Expo**  
**23rd March—HQ Infoline due**  
**30th March—NZART Official Broadcast, 20:00**  
**5-6 April—Low Band Contest**  
**30th May-2nd June—NZART Conferance**  
**7-8 June—Hibernation Contest**  
**2-3 August—Brass Monkey Contest**  
**16-17 August—International Lighthouse/Lightship Weekend**  
**4-5 October—Microwave Contest**  
**6-7 December—Field Day Contest**



## **Te Puke Amateur Radio Club Inc**

# **Annual “Junk Sale”**

Paengaroa Community Hall  
1st March 2008 (Saturday)

For more information please contact Syd Rowe (ZL1LWR)  
7-533-1029 or [sydrowe45@hyper.net.nz](mailto:sydrowe45@hyper.net.nz)

## Hamilton Amateur Radio Club Incorporated

# Annual General Meeting

Date: 20 February 2008  
Time: 7:30pm  
Location: Club Rooms  
88 Seddon Road

Business: Accept report(s), Elect Officers and Committee, Set Subscription rate and appoint Auditor.

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### >> NEW ON-LINE APPLICATION SYSTEM (IOTA)<<

The new on-line application system went live for all IOTA participants in late September after initial testing. It has proved hugely popular with some 250 submissions and 17,500 cards processed to date. The Software Team continues to work on enhancements and these will come forward over the next few months. The dynamics of working the new system have inevitably led to consideration being given to a number of changes to the programme's written provisions and procedures last detailed in the 2007 IOTA Directory. These are likely to be small in scale and mainly of a tidying-up nature to take account of the new software's current and future capabilities. They will be published on the RSGB IOTA website in due course but notice is given here to alert participants that some interim changes have been made pending final decisions that amend the 2007 Directory.

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## Upcoming AREC Events

Please mark these dates on your calendar and/or diary

The club has 2m handheld radios for use on events like these which means YOU can help out.

### **Kona Colville Connection 2008**

8th March 2008

Contact ZL1UD if you want to help. Using HF & 2m (simplex & repeater).

ZL1AVR (reserve), ZL1CNM, ZL1DGK, ZL1IC, ZL1KK, ZL1KN, ZL1LD, ZL1PK, ZL1TCE, ZL1TNO, ZL1TXQ (reserve), ZL1UD, ZL1UPJ, ZL2TW already booked in.



### **Twin Rivers Water Ski Race 2008**

12th April 2008.

Ngatea to Paeroa.

### **WRC Promo Day**

29 June 2008, Mystery Creek

### **WRC Rally 2008**

29-31 August 2008, Mystery Creek

Names of primary operators to ZL1UD via eMail. Reserve your spot quick. Possibly moving from checkpoints every 5km to every 3km.

For Details about and to help with these events, contact :-

Tony Case ZL1UD [zl1ud@nzart.org.nz](mailto:zl1ud@nzart.org.nz) or

David King ZL1DGK [zl1dgk@nzart.org.nz](mailto:zl1dgk@nzart.org.nz)

## Club Information



### Contacts :-

**Business Meeting:** 1930 First Wednesday of each month  
88 Seddon Road, Hamilton

**General Meeting:** 1930 Third Wednesday of each month  
88 Seddon Road, Hamilton

**Homepage:** <http://welcome.to/zl1ux>

**eMail:** [branch.12@nzart.org.nz](mailto:branch.12@nzart.org.nz)

**HF Net:** 3.575MHz LSB 1930 Mondays

**VHF Net:** 146.525MHz simplex 2000 Tuesdays

**STSP** 145.325MHz -600kHz split

**Repeaters:** 438.725MHz -5 MHz split

**ATV Repeater:** 615.250 Ch39

*Cover Photo: AGM notice*

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