

Silent Key.

It is with regret that we begin this week, with news of a silent key.

We have been advised of the passing of Peter Sturt VK2ZRT / VK2ZTV, on the night of Monday, February 19th, at the age of 71.

Peter began his journey in amateur radio in the Seventies, embracing new challenges and technologies, and becoming one of the founding members of The Newcastle Amateur Radio and ATV Group - now the Newcastle Amateur Radio Club.

Peter was instrumental in developing an ATV repeater based around a 4CX250B amplifier, which transmitted colour TV pictures across Newcastle, with noise-free images received over 100km to the west. He spearheaded development of early 2-metre radio repeaters, eventually situating them at Mount Sugarloaf, providing comprehensive coverage to the Newcastle area.

Peter's innovative spirit did not wane over the years; he was more recently involved with installation of DMR radio repeaters to provide coverage across Newcastle and the Hunter Valley. Peter also co-founded a successful communications business, a testament to his entrepreneurial spirit and interest in technical achievement.

While Peter's departure will be deeply felt by the many Radio Amateurs in the Newcastle and surrounding areas who admired and respected him, his legacy will endure through the countless lives he touched and the indelible mark he left on the amateur radio community.

Please pause with us now, while we remember Peter.

[pause 10 seconds]

Vale [va-LAY] Peter Sturt VK2ZRT / VK2ZTV.

*Advised by Spero VK2YHX
on behalf of the Newcastle Amateur Radio Club.*

[Play File: 14-E-ID1.wav]

In the news from Amateur Radio New South Wales for this week;

The ARNSW presentation program for 2024 started today, with the first of a two-part HF antenna presentation. Part two of the HF antenna presentation will be on Sunday the 28th of April, with further topics and presenters sharing their experiences.

We would like to thank those members that have responded to our recent calls to volunteer. We still need further volunteers for the VK2WI roster, and are also seeking expressions of interest from members interested in remote roles. Contact the office, or email news@arnsw.org.au for more information about the positions available.

General enquires can be directed to the ARNSW office via email, to office@arnsw.org.au, or by leaving a phone message on 02 9444 0123.

Tonight, we welcome listeners on the EchoLink “HAM” conference, and the Australian & New Zealand EchoLink Network. Callbacks will also be taken after tonight’s bulletin; our thanks to John VK3HJQ, and the Australian & New Zealand EchoLink Network team, for making this relay available.

ARNSW 2024 AGM

The 2024 AGM of Amateur Radio New South Wales will be a hybrid meeting, both online and here at VK2WI Dural, on Saturday the 13th of April.

At each AGM, either four or five board members stand down and are eligible for re-election, depending on the year.

To be eligible to be a board member, the constitution requires that you have been a member of ARNSW for a minimum of the past three consecutive years, as must your proposer and seconder. As you are standing to become a board member of a registered company, you will be required to obtain a director ID upon election, if you don't already have one.

This year, we have five board members standing down. While all are eligible for re-election, some may choose not to renominate. So, if you are an eligible member, please consider nominating for the board - bring your skills and passion for Amateur Radio, to help ARNSW continue to evolve and grow into the future. There's a link to a nomination form on the home page of the ARNSW website.

Nominations close 42 days prior to the AGM, at 10am on Saturday the 2nd of March 2024. This is also the closing date for notification of any Special Resolutions to be put to the members at the AGM. Note that if you are sending an item or nomination by mail, please post them in time to arrive by Friday the 1st of March.

*73 Eric VK2VE
Secretary, Amateur Radio NSW*

Weekly Solar and Geophysical Report

For the period of the 16th to the 22nd of February.

First, the summary of activity;

Dates across the columns are	16 th	17 th	18 th	19 th	20 th	21 st	22 nd
10cm Flux	169	170	157	152	153	170	173
Fredericksburg A-Index	3	4	4	1	5	3	6
Australian A-Index	4	2	2	0	4	3	4 estimated
T index	154	147	143	151	148	127	145

Solar activity was at R3 levels on the 16th, with 2 M-class flare and one X2.5; R1 on the 17th, with one M3.0 flare; R3 on the 21st with an X1.9 flare; and R3 on the 22nd, with one M4.7 and two X-class flares, the largest X6.3 at 2234UTC. HF fadeout was also observed on the 22nd.

Geomagnetic activity was low to moderate, remaining below warning threshold.

F2 critical frequencies in Southern Australia were generally enhanced by 15% from the 16th until the 20th. The 21st saw frequencies near predicted, and the 22nd saw enhancement of 20% during local night hours.

The forecast, issued on the 23rd of February, through until the 29th;

Solar activity is expected to be at R2 to R3. Active region AR3590 is a large and complex solar region, and is flare active. There is also an increased chance of CME activity.

Geomagnetic is likely to reach G1 levels during the week, due to earth-directed solar filament eruptions, and the chance of CME activity later in the week.

Maximum usable frequencies are likely to be depressed up to 15% around the 25th, due to CME-induced geomagnetic activity. Other days may see enhancement of up to 15% over predicted monthly values.

Data courtesy of the Australian Space Weather Forecasting Centre.

Solar Flux Index update

Here are the updated Solar Flux Index (SFI) figures for this week.

Having finished January, we had a;

Minimum of 126, Average of 167, and a Maximum of 196
With peak dates from the 9th to the 18th, and the 23rd to the 25th.

So far for February, we are expecting a;

Minimum of 136, Average of 173, and a Maximum of 208
With peak dates from the 7th to the 21st, and the 24th to the 28th

And looking ahead to March, we are expecting a;

Minimum of 155, Average of 167, and a Maximum of 180
With peak dates from the 4th to the 10th, and the 21st to the 24th.

Update with thanks to Noel, VK2FUL.

[using daily data updates from :
<http://www.swpc.noaa.gov/products/usaf-45-day-ap-and-f107cm-flux-forecast>]

[Play File: 15-E-ID2.wav]

Technical Feature

We now continue with our series, introducing various aspects of DMR. Last week introduced the “codec” for getting speech to and from a digital form. This week, Matt VK2FLY discusses the range and coverage of a DMR signal, and why it’s not quite what you might expect;

[Play File: 16-TF-DMR3.wav]

Duration: 4m43s

In: Someone told me...

Out:...talk groups and how they work.

[Transcript]

Someone told me DMR has a range limit. What about ducting? That's crazy talk.

Ok, let me explain. Hopefully, you remember from part one where I talked about TDMA, or Time Division Multiple Access. This is the feature that allows us to have two conversations simultaneously on the same repeater and frequency. However, there is a downside to this, and that's range. Now, don't tune out just yet! We, as radio amateurs, are some of the first citizen scientists, so let's honour our forebearers with a brief physics discussion.

The maximum coverage of TDMA systems is indeed influenced by range, which is dependent on the speed of light and the accuracy of the clock in the receiving radio. Remember the lighthouse analogy?

You need to know when to watch for the light to determine your location. Radios use a bit of a trick for this. When you first key up a repeater, the radio sends a transmission to the repeater, which receives the signal and then sends a signal back to the remote radio. This is called a handshake. Some radios will give a series of chirps at the completion of the handshake. This tells the users they are ok to begin talking. Like waiting for dial tone before dialling on an old phone. But I digress.

Upon receiving this signal, the remote radio synchronises its internal clock to the repeater's very accurate clock. From that point on, the remote radio knows when time slot 1 and time slot 2 and when it should transmit and when it should be silent. It doesn't need an extremely accurate clock; it just needs to maintain synchronization for the duration of the transmission.

You might be surprised to hear that this synchronisation happens every time you transmit from a remote radio into the repeater. On FM, you key up, your radio transmits, and keeps transmitting until you release the button. But this is not what happens with DMR. When you key a DMR radio, the radio does a few things in those milliseconds between when you key up and when you speak.

Firstly, the radio sends a signal to the repeater, initiating the handshake. It essentially says, 'Hello, I'm a radio, this is my ID, can you hear me?' The repeater responds with crucial information. The first part of the handshake involves the clock, setting off the timer in your radio. From that point on, it can distinguish between time slot one and time slot two, as long as its clock remains in sync with the repeater's clock. This allows you transmit on one time slot while someone else is transmitting on the other time slot - two radios transmitting in turn without stepping on each other's transmission all within a gap of 30milliseconds.

The second part of the handshake involves negotiating other details like the repeater's radio ID. Smart radios also listen to the RSSI, or the received signal strength indicator. At this point, some radios may even decide to switch to another repeater with better RSSI, all while you're pressing the button.

But back to the physics.... When the handshake occurs, the remote radio starts its timer. But as the radio wave moves out from the repeater, time also ticks away. To us, it's negligible, but it affects when the radio perceives the end of time slot one and the start of time slot two. The longer it takes for the handshake to be received the closer it is to the window where the radio thinks the clock is just not accurate enough. This perception is proportional to how well the remote radio maintains accurate time from the initial synchronization pulse. For commercial radios, that's about 0.5ppm. Without delving into complex math, this essentially means the maximum range for DMR is around 100 km. Within the protocol there is a method of detecting this clock skew and when it does the radio ceases transmitting so as to not step on any other station. It will then typically send a channel unavailable signal (a beep) to the user.

So, when people ask why high-power DMR radios or repeaters with hundreds of watts aren't common, well it's because high power radios and repeaters would be useless with a 100km limit. 20 watt will easily traverse 100km in most conditions.

Next week it's back to operation with more about talk groups and how they work.

Foundations of Amateur Radio

This series, written and produced by Onno VK6FLAB, continues a weekly examination, of the building blocks of Amateur Radio.

[Play File: 17-FOAR103.wav]

Duration: 2m34s

In: The evolution of Amateur Radio...

Out: ...I'm Onno VK6FLAB

For more information about this series, including audio, transcripts and other useful amateur radio resources, Onno's website is; vk6flab.com; and you can contact Onno by email, to cq@vk6flab.com.

[WICEN News]

And now with this week's WICEN News, here's Richard VK2SKY;

[Play File: 18-E-WNS0225.wav]

Duration: 2m29s

In: WICEN is supporting...

Out: ... at wicen.org.au

[Transcript]

WICEN is supporting Dementia Australia's "Memory Walk and Jog" events throughout 2024. Today, we were active at Lake Burley Griffin in Canberra. Operators are now being sought for events in Cronulla and Penrith, on 10 March.

The Memory Walks are great "starter" events for new or rusty WICEN members, as they take only a couple of hours. WICEN also provides the radios for these events, so you don't even need to bring your own gear. Why not give one a go? You'll find a link to the events list in the text edition of this news.

To participate in any WICEN event, or just find out more about how you can use your Amateur Radio skills to benefit the community, you can email wicen.ops@vrarescue.org.

WICEN has a meetup here at Dural on the first Sunday of every month. Next Sunday, several Rural Fire Service units have been invited to bring their Operational Comms Vehicles, so we can see how they stack up against our VRA 62. We're also looking for inspiration for VRA 62's successor, currently in early planning. There will be a BBQ lunch, and WICEN members are invited to demonstrate their off-grid communications prowess for the visitors. If you wish to attend, RSVP to wicen.opsmanager@vrarescue.org.

WICEN nets take place every Sunday evening, using FM voice, DMR, P25, or HF voice, depending on the week. All WICEN members and other Amateurs are welcome to call in.

Next Sunday, the 6pm net will be on the Chatswood 2m FM repeater, 147.150MHz, with net controller VK2WIC; the 6.30pm net will be on WICEN's Kurrajong VHF DMR repeater, followed at 6.45pm by a net on WICEN's VRA P25 repeater.

WICEN NSW is a support squad of VRA Rescue NSW, specialising in tactical radio communications. In between activations, WICEN supports local community events: these provide practical training for members, and help raise the public profile of Amateur Radio.

To find out more, check out the WICEN NSW web site, at nsw.wicen.org.au

WICEN is also on Facebook, and on X; there, you can find photos and information about recent and upcoming WICEN activities. Links are in the text edition of this news.

For information about other WICEN groups around Australia, visit the web at wicen.org.au.

[Memory Walk and Jog Events: <https://www.memorywalk.com.au/find-an-event>]

[WICEN NSW web site: <https://nsw.wicen.org.au/>]

["National" WICEN on Facebook: <https://www.facebook.com/groups/124735400158>]

[WICEN NSW facebook at <https://www.facebook.com/WICENNSW>]

[WICEN NSW X at <https://twitter.com/wicennsw>]

Club News

We start this week with news from the Oxley Region Amateur Radio Club.

The Club's next meeting is the March General meeting, 2pm on Saturday the 2nd of March at the SES Building in Port Macquarie. Then there's the March coffee morning, 10am on Thursday the 14th at Brooklyn's Burger Bar, Thrumster; followed by the Friday Night Get together at 7pm on Friday the 15th, in the SES Building, Port Macquarie.

The club's very popular 2024 calendar will be available at all upcoming Club gatherings.

The next Foundation Licence training and assessment weekend will be held once the new arrangements with ACMA are in place. Candidates for the Foundation Licence and for assessments for all grades of licence can register their interest via the contact form on the ORARC website.

There are two club nets each week; the mid-week net from 7:30pm on Thursday nights, and the weekend net at 9am Sunday mornings. Both are on the VK2RPM 2 metre repeater, 146.7MHz with a 91.5Hz sub-audible tone for access, and on EchoLink as VK2RPM-R. Members and visitors are encouraged to participate in the club on air nets as often as possible.

For more information about the Oxley Region Amateur Radio Club, visit the website at orarc.org. The site contains a wealth of Amateur Radio items in addition to club information. The January 2024 issue of the club's bimonthly newsletter "Oxtales" is now online, and past issues are on the website as well. The club is also on Facebook; just search for Oxley Region Amateur Radio Club.

*From Henry VK2ZHE
For the Oxley Region Amateur Radio Club.*

[Play File: 19-E-ID3.wav]

Central Coast Amateur Radio Club

The club rooms at Kariong are open on Saturdays from 10:30am, and as always, members and visitors are most welcome.

The club's regular monthly meeting will be held at 1pm next Saturday. Details will be emailed to members early this week.

At the VK2RAG Somersby repeater site, the 6-metre repeater, D-Star, Rad-Net DMR and 2m EchoLink, 70cm and 23cm, are all fully functional. The WICEN UHF MMDVM is still having problems.

The Somersby WebSDR is online at websdr.ccarc.org.au; its configured to listen on 6 metres, 2 metres, 70 centimetres and 23cm.

The Club's Weekly net is on Thursday Nights at 8pm. It's on the VK2RAG 2 metre repeater – 146.725MHz with a 91.5Hz sub-audible tone, and on the CCARCNSW and HAM EchoLink conferences. It is also live video-streamed on the club's Facebook page.

You can find out more about the CCARC, including information on upcoming social events and all the details we can't tell you about here; on the web at ccarc.org.au – by phone, 02 43402500 – or social media, search Central Coast Amateur Radio Club; remember to "like" to follow for updates.

73 Alan VK2MG

Publicity Officer, Central Coast Amateur Radio Club.

Blue Mountains Amateur Radio Club

The Club's regular monthly meetings are on the first Friday of the month at 7:30pm. The next meeting is on the 1st of March at the clubrooms, 4 Moore Street Glenbrook, in the Blue Mountains – doors open from 7pm.

The clubrooms are also open twice a month from about 10am, on the morning of the first and third Saturdays – unless otherwise noted on the Club's Facebook page.

Visitors and prospective new members are always welcome.

The Clubs has several weekly nets – we have details in “Activities on the air” later in this bulletin – and a new net time, Sunday nights at 8pm. On the 1st and 3rd Sunday of the month, the net is on the Club's 6 metre repeater, and on the 70cm repeater on the second and fourth Sunday.

The Club's Foundation Classes resume in April, and Upgrade classes start on the 21st of February and continue on Wednesday nights, both on Zoom and in-person at the Glenbrook clubrooms.

With a 98% pass rate, the Club's courses and exam days do fill-up quickly; please contact Club secretary, Irene VK2VAN via email to; secretary@bmarc.org for class dates, to register, or for more information.

More information about the club can be found on the website, at www.bmarc.org.

*Steven VK2TSG
President, Blue Mountains Amateur Radio Club.*

Fisher's Ghost Amateur Radio Club

The next meeting of the Club is the Annual General Meeting. It is on this Wednesday the 28th of February, in Block M at the Campbelltown School of Performing Arts, Beverley Rd. Campbelltown, commencing at 7:30pm. The AGM will be followed by the Monthly General Meeting.

All financial members are encouraged to attend the AGM to vote for their 2024 committee; and, as usual, visitors wishing to learn more about the hobby of amateur radio are most welcome to attend.

The Club's weekly net, on Thursday evenings, starts at 7:30pm on the Club repeater, VK2RFG. The repeater frequency is 438.65MHz. It has a negative 7MHz input offset and a 91.5Hz tone is required for FM access. It's also accessible via EchoLink.

To find out more about the Club's activities, visit the website at fgarc.org.au; the club is also on Facebook, search for VK2FG.

Submitted by Peter VK2PR

On behalf of the Fisher's Ghost Amateur Radio Club.

St George Amateur Radio Society

The next gathering of the Society will be on Wednesday the 6th of March. After more than 20 years at the Kyle Bay Scout Hall, the Society will now be holding their gatherings at Mortdale RSL club. The Club is in Macquarie Place, a 5-minute walk from Mortdale railway station. The club has excellent dining facilities and members are encouraged to arrive early for a bite to eat before the gathering.

This gathering will be the annual show and tell event. Most amateur radio operators have other hobbies besides radio – and this is a good opportunity to show others what they find interesting. If you can't bring an item along, bring some photos on a USB stick to display on the big TV screen.

Listeners are also reminded of the Society's weekly voice net on Thursday night at 8pm on the VK2RLE 2 metre repeater at Engadine – 146.8 MHz with a negative 600kHz offset and no subtone. There is also a digital net on Tuesday evening at 8pm, with various slow scan TV modes and other data modes.

All are invited to the next gathering of the Society, at Mortdale RSL club, 7:30pm on Wednesday the 6th of March.

Details about all of the Society's repeaters, along with the Society's other activities, are on the website, www.sgars.org.

*73 de Peter VK2EMU
Publicity Officer, St George Amateur Radio Society.*

Waverley Amateur Radio Society

Last Wednesday's monthly meeting featured a great talk by Tony VK2KZ on the Sun, and how sunspots affect things here on earth. It was a fascinating presentation.

After the very successful project day in February assembling a frequency source using an Arduino, the March project will be adding an encoder to the unit to make changing frequency easy by the twist of a knob; so, bring your tools and your project along next Saturday, the 2nd of March for the next stage, to be led by Fred VK2WS.

Weekly nets continue on Monday evenings, at 8pm on the VK2RBV repeater in the CBD on 438.1125 MHz with a -5.4 MHz offset and 91.5 Hz tone for access; net controller is usually Richard VK2XRC or Bob VK2NRC.

The club's new email reflector based on the groups.io platform now has over 70% of members on board. Any members who haven't yet found it, go to groups.io and search for Waverley Amateur Radio Society.

Wednesday lunchtime get togethers, continue from Midday in the RSL bistro; these now adjourn after lunch to the ANZAC room for some practical activities.

Other activities – including monthly meetings – are continuing both in person and on Zoom. See the society's website for details.

You can keep up to date with the Waverley Amateur Radio Society on the web, at vk2bv.org. On the site you can also find out more about kits available, update your membership details, and use the contact form to send in any enquiries.

*73 from Eric VK2VE
Broadcast Publicity Officer*

[ID4 and Activities on the air]

[Play File: 20-E-ID4-AOTA2.wav]

Duration: 5m33s

In: [IDENT 4]

Out: ...the office phone, 02 9444 0123.

[Transcript]

I'm Mathew VK2YAP.... And I'm Stuart VK2BMX.

It's time for your quick trip around the bands for this week, with; activities on the air.

Daily;

Manly-Warringah "early bird" net, 6:30am on or near 3690kHz LSB; if that's too early, the "morning" net is from 8am on or near 7189kHz.

Amateur Radio Central West Group lunchtime net; 1pm on VK2RCW.

Mondays;

Westlakes ARC net 9:30am on 40 metres, 7115kHz, VK2ATZ Portable.

Great Lakes Radio Club net 7pm on VK2RGL; 147.1MHz with 91.5Hz tone, EchoLink VK2RGL-R.

Hunter Radio Group VK2AWX News 7:30pm, on 146.975MHz.

The **Blue Mountains ARC** D MR Net at 7:30pm on Brandmeister 50520, hosted by Ben VK2AFK.

Amateur Radio Central West Group net at 8pm on VK2RCW.

Lightning Net 8pm on 1860kHz, net control Steve VK2STG.

HADARC net 8pm on VK2RNS, 147.25MHz

Waverley ARS net 8pm on VK2RBV, 438.1125MHz with 91.5Hz tone. Activities online and on air; see website.

Tuesdays;

National VKDMR Net: starts at 8pm on Talkgroup 505.

Blue Mountains ARC net from 8pm, 3543kHz.

St George ARS digital net, 8pm on 146.8MHz

Illawarra ARS 80m net at 8:30pm, 3666kHz.

[...continues]

Wednesdays;

Westlakes ARC net 9:30am on 7115kHz. 2 Metre nets throughout the week, see website for details.

Hunter Radio Group net 7:30pm, on 146.975MHz and EchoLink node 1474.

HADARC 8pm on 3608.5kHz

Blue Mountains ARC 8pm on VK2RBM, 147.05MHz, 123Hz tone.

Amateur Radio Central West Group from 8pm on 3653kHz.

Armidale District ARC net 8:30pm on 3633kHz.

Thursdays;

Illawarra ARS net 12pm; VK2RMP 146.850 and VK2RUW on 146.675.

Fishers Ghost ARC net 7:30pm on VK2RFG, 438.65MHz with -7MHz offset and 91.5Hz tone; also, on EchoLink.

Oxley Region ARC 7:30pm on VK2RPM 146.7Mhz with 91.5Hz tone.

St George ARS 8pm, VK2RLE 146.8MHz.

The **CCARC weekly net** from 8pm on VK2RAG, 146.725MHz with 91.5Hz tone, and EchoLink.

Fridays;

Morning tea with HADARC 9am on 7106kHz.

Westlakes 9:30am on 7115kHz.

Amateur Radio Central West Group at 8pm, VK2RCW.

Saturdays;

Westlakes Stone the Crows net; 6am on 3588kHz.

Illawarra ARS net 9:30am on VK2RMP and VK2RUW.

Snowy Mountains ARC net 7:30pm on Southeast network; VK2RFS 146.75MHz, VK2RSE 147.375, VK3RDH 146.625, and EchoLink.

Sundays;

Westlakes DMR Net from 8:00am, usually on Talkgroup 3802.

Oxley Region ARC from 9am, VK2RPM.

WICEN NSW nets; 6pm on Chatswood 2m or Kurrajong 70cm repeater, 6:30pm on DMR or HF, and 6:45pm on P25. Check website for details.

*Don't forget to get your activities on the air here... send us through the details of your activity!
Email the details, to news@arnsw.org.au... or leave a message on the office phone, 02 9444 0123.*
