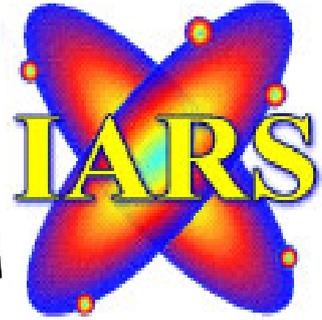


VK2AMW

THIS IS THE OFFICIAL JOURNAL OF THE ILLAWARRA
AMATEUR RADIO SOCIETY INC.

The PROPAGATOR



Issue 2 – Volume 12
May 2008

STOP PRESS

D-STAR

As we go to press the D-Star system has hit the Illawarra and Sydney. Thanks to a concerted effort by many members of the Illawarra Amateur Radio Society the Icom D-Star System is running a series of test transmissions. All we are waiting on to go live is the licence from the A.C.M.A.

Initial reports from users right across the Illawarra and Sydney show exceptional coverage even into the most fringe areas of the footprint. The 2 metre, 70 centimetre and 23 centimetre systems are proving the benefits of the digital technology. All QSO's are crystal clear and have to be heard to be believed.

Read on to hear what the D-Star Co-ordinator and club president have to say on the D-Star extravaganza.

Once the licence has arrived there will be an information session with a D-Star radio setup for everyone to have a look at.



Ross Hull Contest

Congratulations go to Brian VK2AH and Ted VK2ARA for a sterling effort in this years Ross Hull VHF/UHF contest. Both Brian and Ted entered the VHF-UHF 6 metre to 23cm section for single operators. Brian managed a 5th place with a total of 853 points and Ted not far behind in 6th place with 771 points. Well done from all of the members here at I.A.R.S.

IN THIS ISSUE

International Marconi Day	2
ANZAC Day Remembrance	2
Tech Topics – Duplexers / Diplexers / triplexers	3
Presidents Report	5
Arthur C Clark – The Clark Belt Silent Key	5
D-Star Team Report	6
Repeater Report	7
Technical Workshop Informa- tion	7
The H.F. Scene	8
Project Spot – W2IK's VHF Emergency Deployable Antenna	9
V12AMW60 – Special callsign	13

Acting Editor:

Ross Masterson
VK2VVV

I.A.R.S. Club Repeater Frequencies

2 Metres	
146.850 MHz }	
146.975 MHz }	Linked IRLP
146.675 MHz }	
147.300 MHz	EchoLink
146.7625 MHz	D-Star Voice
70 cm	
438.725 MHz	123.0 CTCSS
438.225 MHz	123.0 CTCSS
439.750 MHz	D-Star Voice
6 Metre	
53.650 MHz	
10 Metres	
29.620 MHz	
23 cm	
1273.950 MHz	D-Star Voice
1298.500 MHz	D-Star Data

I.A.R.S. TECHNICAL WORKSHOPS

The Technical Workshops are finally here. You may have heard about this initiative on the Illawarra Amateur Radio Society's weekly broadcast each Tuesday evening, or maybe from the WIA or Amateur Radio NSW news broadcasts. In a nut shell what we've done, is assembled several short amateur radio projects into a technical workshop for amateurs. Our workshop project manager is Paul VK2FE a very experienced kit and project builder.

The workshops will be held on a Sunday over the next month or two.

ANZAC DAY 25th April 2008

The Soldier stood and faced his
God,
Which must always come to pass.
He hoped his shoes were shining,
Just as brightly as his brass.
'Step forward now, you Soldier,
How shall I deal with you?
Have you always turned the other
cheek?
To My Church have you been
true?'

The Soldier squared his shoulders and said,
'No, my Lord, I ain't.
Because those of us who carry
guns,
Can't always be a saint.
I've had to work most Sundays,
And at times my talk was tough.
And sometimes I've been violent,
Because the world is awfully
rough.

But, I never took a dollar,
That wasn't mine to keep...
Though I worked a lot of overtime,
When the bills got just too steep.
And I never passed a cry for help,
Though at times I shook with fear.

And sometimes, God, forgive me,
I've wept unmanly tears.
I know I don't deserve a place,
Among the people here.
They never wanted me around,
Except to calm their fears.
If you've a place for me here,
Lord,
It needn't be so grand.
I never expected or had too much,
But if you don't, I'll understand.

There was a silence all around the
throne,
Where the Saints had often trod.
As the Soldier waited quietly,
For the judgment of his God.
'Step forward now, you Soldier,
You've borne your burdens well.
Walk peacefully on Heaven's
streets,
You've done your time in Hell.'

~Author Unknown~

From the Editor's Desk



Well,

What a month it's been for the club. It seems like only days ago we were putting the last issue of the Propagator together.

It's been a very rewarding month for the club too. I've no doubt you all well aware of the tremendous achievement this club has gained with the new D-star system.

This club, your club, bid for and was awarded one of the two D-Star digital systems to be installed initially in NSW. A lot of hard work went into the bid which started around this time last year. This is the sort of work your executive undertake behind the scenes every day to keep the club functioning. Each and every member of the Illawarra Amateur Radio Society can take pride in this project, it was a club initiative and a club achievement.

Our president, Tony, mentioned in his brief this month how our membership

is swelling. This I'm sure is attributed to the many activities, services, and projects the club provides for its members.

Latter this month Paul VK2FE will be starting his Technical Workshops, I ask you to come along and be part of these workshops, with your support these workshops will continue. There are details of the projects for the workshops elsewhere in this edition.

You will notice many new segments in this month Propagator. I hope one of the sections covers your aspect of interest in this diverse hobby. In hunting out the best people to prepare the new sections, I am honoured to say that not one person asked had any hesitation in offering their time to help. This is what makes this organisation such a great amateur radio club. The friendliness, camaraderie, and assistance offered by everyone in the IARS is commendable, thank you.

International Marconi Day

26th April 2008

International Marconi Day (IMD) is a 24-hour amateur radio event held annually to celebrate the birth of Guglielmo Marconi on the 25th April 1874. The IMD event is not a contest, it is an opportunity for amateurs around the world to make point-to-point contact with historic Marconi sites using HF communications techniques similar to those used by Marconi.

IMD is usually held on the Saturday closest to Marconi's birthday, when amateur radio stations are established and operated from original historic sites, or nearby. Communications techniques have changed significantly since the days of Marconi's first experiments, and today, the Internet has become the most widely used of all communications media. However, the spirit of IMD remains basically that of making point-to-point contact between two stations using only the HF bands.

This will be my last edition as editor of the Propagator, and I've enjoyed my short time immensely. I wish I had more time to devote to the magazine.

Your new editor will be Tracey Benko VK2FARM. I know the journal, in Tracey's capable hands will move along in leaps and bounds. Please support Tracey and the magazine, if you have any articles for inclusion send them to propagator@iras.org.au If there is a particular topic you would like included, or any interesting ideas please drop us a line, this is your magazine. If you would like to write an article, please let us know. Cheers for now.

VK2VVV
Ross Masterson



TECH TOPIC

Diplexers, Triplexer, Duplexers, What the.....

This month the Tech Topic is Diplexers, Triplexers, Duplexers, what they do, when to use them and how they work.

Each month we will try and find a piece of Technology associated with the hobby and have someone dissect it and write it up in a similar fashion to this. Got any ideas of some topics? Feel like doing an article for the magazine. Is there a piece of the hobby you just can't get your head around. You'll find the answers here to things like I.R.L.P. , echolink, A.P.R..S. T.V.I., beacons, packet, R.T.T.Y., filters or ever slow scan T.V.

Duplexers and their cousin the Diplexer (note they are not the same thing) are electrically simple filters. They allow us to transmit and receive on the same antenna at the same time, reject unwanted signals and in the case of the Diplexer feed two different signals to the same antenna.

Duplexer

Electrically a duplexer is a device using sharply tuned resonate circuits to isolate a transmitter from a receiver. This allows both of them to operate on the same antenna at the same time without the transmitter RF destroying the receiver. Note that there must be a separation of the transmit and receive frequency.

This is called the split.

On two meters the split is 600 kHz. On 70 cm the split is a much easier to do 5 MHz. On the 6 meter band the split is 1 Mhz, and on the 23cm band the split is 20 Mhz.

Diplexer

Diplexers are often mistakenly called duplexers. The common application for a diplexer is to connect a dual band mobile radio's two antenna connections to a common feed line and a dual band antenna. Diplexers are completely different and much simpler to build devices than a repeater duplexer. While duplexers use narrow pass bands and notches to work their magic, a diplexer is a simple high and low pass filter connected together.

Duplexers and Diplexers are very similar in name and somewhat in function and therefore are often the subject of heated debate and incorrect terminology.

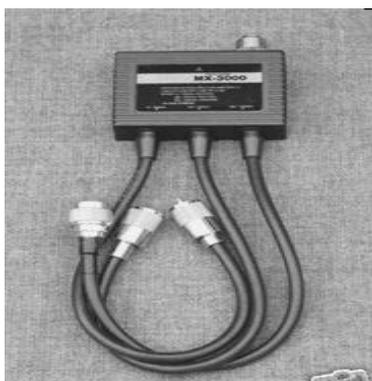
They perform similar functions but are not the same thing. Duplexers are used to separate two frequencies on the same band that are fairly close together, and Diplexers are used to separate two different bands for use on a single feed line and antenna system.

Triplexer

A triplexer separates 3 bands (eg 2m, 70cm, 23cm or maybe 6m, 2m , and 70cm) by using low pass, band pass, and high pass filters together.

DUPLEXERS ? - DIPLEXERS ? - TRIPLEXERS ? - What the !!

Duplexers are more complex to build and tune and are usually larger physically than Diplexers. Duplexers require more selective circuits often utilising physically large metal high-Q resonators to achieve the desired results. On the other hand Diplexers are much smaller physically since they are usually made up of simple low-pass and high-pass filter circuits designed to separate frequencies several megacycles apart and in different frequency bands. Highly selective circuits are not required to separate frequencies that are spread as far apart as two separate bands hence the smaller and simpler construction of Diplexers. A Diplexer, for instance, separates 2 meters from 70 cm when used on the same coaxial cable.



A Diplexer will enable you to use two antennas over the same coaxial cable and will allow you to receive on one band while simultaneously transmitting on the other band, if it is connected on the antenna side of the circuit.

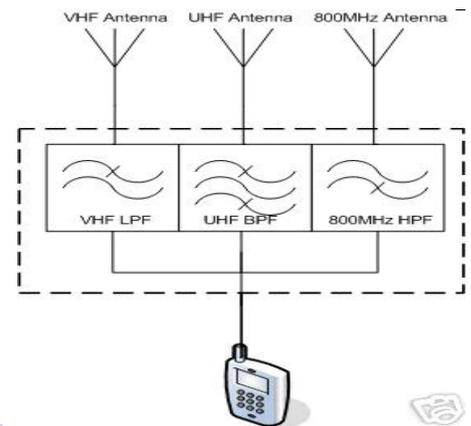
Conversely it may be configured on the radio side of the circuit to allow two transceivers operating on different frequency bands to share one transmission cable and antenna system. Simple pass filters present less than 0.2 dB insertion losses, are physically relatively small, and can typically separate the two bands of interest by 60 to 70 dB or more.

On the other hand duplexers are most often used at repeater sites to connect the transmitter and receiver of a repeater station to a common feed line and antenna. When properly tuned, a duplexer will allow simultaneous operation of transmitters and receivers shar-

Duplexers are often mistakenly called duplexers.

ing an antenna system as close as a few hundred kilocycles apart on the same frequency band. Duplexers are often connected together to form combiners which allow different stations operating on the same band at different frequencies to share a common feed line and antenna system. Duplexers can have very large cavity filters which can be sensitive to temperature changes and become "detuned" from expansion and contraction of the metals with which they are made.

They sometimes require controlled environments because of this and the fact that their circuits are very sensitive high-Q circuits which must be held to high tolerances to operate efficiently.



Duplexers, depending on their function and design, can have up to several dB of insertion loss and provide only 50 to 60 dB of separation between adjacent frequencies on their band of operation. Larger cavities may be required for higher power operation and more cavities may be added for separation if necessary. So there you have in a nutshell, the actual differences between Duplexers and Diplexers, and Triplexers

Typical insertion loss of a diplexer or triplexer-

insertion loss : 0.2 db

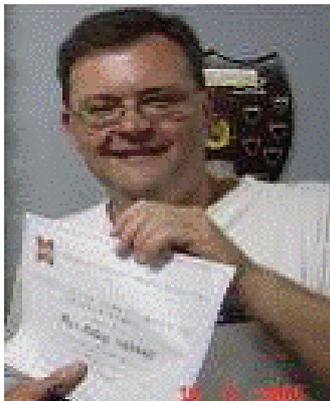
- separation of bands: 70 db

So, there you have it, a Duplexer, a Diplexer, and a Triplexer.



Presidents report May 2008:

G'day to one and all, and isn't the local scene hopping at the moment! I was sitting here trying to get some inspiration and got sidetracked using the 2metre D-Star repeater. I then realized that everyone would be happy to hear about the 2Metre, 70Centimetre and 23Centimetre systems which are currently up and on test from Maddens Plain. Coverage is very very good as is the quality and reliability and I have heard quite a few of the Sydney lads having a ball. Apparently even 23cm's is strong into the northern parts of Sydney! I want to say that the IARS D-Star repeater committee has done extremely well and I am very proud of all concerned. The members include Rob VK2MT Club Vice President, VK2VVV Ross Assistant Secretary, Steve VK2TSB Secretary, John VK2AAL, Neil VK2VNJ and of course me Tony VK2TS.



So what else is happening with the club? Next month is the 60th Birthday of the club callsign VK2AMW and the forming of our parent club (The Wollongong Amateur radio Club) that evolved into the Illawarra Amateur radio Society. We have progressed faster than any other club in the country!

Do you realize we now have a total of Eleven (11) Repeaters from 6Metres thru to 23 Cm's! That alone must be some sort of record.

As well as a bonza anniversary dinner and other club events we will also be activating a special event callsign for the occasion.

The special event callsign is VI2AMW60. Please see our website for information on how you can get involved with this historic event.

Our membership continues to grow so we must be doing the right thing for our members. Anyway that is enough from me, see you at the next club meeting in May.

Cheers from Tony Stone
VK2TS IARS president.

Death of Arthur C Clark.

He was a scientist, a philosopher and a prolific author, or co-author, but he will likely always be best known for his novel 2001: A Space Odyssey. He penned more than 80 books and 500 essays during his lifetime, including fiction and non-fiction.

Clarke was a futurist who seemed to live ahead of his time. Many of his ideas and theories became reality. His work was embraced by both the scientific and science fiction communities. He viewed the future as something to behold, not fear. Clarke served in the Royal Air Force as a radar instructor and technician from 1941-1946.

In 1945 Clark proposed satellite communication systems which in a geostationary orbit around the earth

could relay communications. This won him the Franklin Institute Stuart Ballantine Gold Medal in 1963 and a nomination in 1994 for a Nobel Prize. Clarke was knighted in 1998, Sir Arthur Charles Clarke, CBE

In 1945, *Wireless World*, published (Clarke's) landmark technical paper 'Extraterrestrial Relays', in which he first set out the principles of satellite communication with satellites in geostationary orbits--a speculation realised 25 years later. During the evolution of his discovery, he worked with scientists and engineers in the USA in the development of spacecraft and launch systems." He addressed the United Nations during their deliberations on the Peaceful Uses of Outer

Clarke's work, which led to the global satellite systems in use today, brought him numerous honours including the 1982 Marconi International Fellowship, a gold medal of the Franklin Institute, the Vikram Sarabhai Professorship of the Physical Research Laboratory, Ahmedabad, the Lindbergh Award and a Fellowship of King's College, London. Today, the geostationary orbit at 36,000 kilometres above the equator is named The Clarke Orbit or the Clark Belt by the International Astronomical Union."

Arthur C Clark 1917 – 2008

Vale: Sir Arthur C Clark.

REPORT FROM THE D-STAR PROJECT TEAM

By Vice President & D-Star Co-Ordinator
Rob McKnight VK2MT



Hi All,

The VK2RDS D-Star installation took place at Maddens Plains last Saturday the 3/5/08. In attendance were VK2AAL, VK2VVV, VK2VNJ, VK2TSB & VK2MT. Unable to attend, but with us in spirit, was VK2TS (an urgent last minute family situation arose preventing his attendance).

In dot point form.....

- ◆ We met on-site at 0900Hrs & left just after 1700Hrs.
- ◆ All existing analogue equipment was first removed & then reinstalled more tightly gaining an extra 2 units of rack space.
- ◆ The new power controller was then installed to allow remote control of the power to all rack equipment.
- ◆ The D-Star controller & all repeaters were then installed above.
- ◆ Above the D-Star repeaters, the rack mount computer server was installed.
- ◆ Space was left above this for the SDSL modem or link equipment.
- ◆ Right at the top of the rack we mounted the two Motorola 35A site chargers.
- ◆ The two VHF cavity filters were installed on rack struts above.
- ◆ The four rack mount UHF cavity filters were installed at the top of the next door rack.
- ◆ The five heliax cables were all dressed to the side of the rack with their tri-plexers & the cables then routed thru slotted duct.
- ◆ All the power cables were dressed in slotted duct on the other side of rack.
- ◆ At 1600Hrs the 2m, 70cm & 23cm DV D-Star repeaters were all turned on & were in immediate use from D-Star users waiting on the side.
- ◆ Signal strengths were very good to & from users all over Sydney & Wollongong.
- ◆ Signals are very comparable, if not better than the equivalent analogue repeaters.
- ◆ No desense is apparent on any of the three D-Star repeaters.
- ◆ 23cm DD (digital Data) transceiver is not on the air as there is presently no antenna & there isn't any internet connectivity at the moment anyway.
- ◆ Cross band contacts were initiated & proven to be seamless.

Regards,
Rob – VK2MT

Important

Club

Dates

20/05/08	7.30 pm	....	Club Broadcast with Jack VK2XGD on Coastlink repeaters
27/05/08	7.30 pm	....	Club Broadcast with Jack VK2XGD on Coastlink repeaters
03/06/08	7.30 pm	....	Club Broadcast with Jack VK2XGD on Coastlink repeaters
10/06/08	7.30 pm	....	June Meeting of the I.A.R.S. at Industry World Visitors Centre, Coniston.
10/06/08 – 30/06/08		....	Club use of special call sign VI2AMW60
17/06/08	7.30 pm	....	Club Broadcast with Jack VK2XGD on Coastlink repeaters
24/06/08	7.30 pm	....	Club Broadcast with Jack VK2XGD on Coastlink repeaters
28/06/08	7.30 pm	....	Anniversary Dinner at the Illawarra Master Builders Club

I.A.R.S. TECHNICAL WORKSHOPS

The workshops are about to commence. They will be held in Oak Flats industrial area. At Rivers Solar Pty Ltd workshops at 1 / 4 Mineral Road, Oak Flats NSW 2529.

The workshops dates will be advised at the May club meeting then broadcast on the VK2AMW club news on Tuesday evenings at 7.30pm. The information will also be re broadcast on the Sunday Club news section of the VK2WI news sessions.

The workshops will start with a safety briefing, then a description of the project, a study of the circuit, so we all understand what we are about to construct, a tutorial on correct soldering techniques, a tutorial on electronic component identification, and then the construction of the project.

At the end of the day you will be able to walk away from the session with a working project. The workshops will be tailored for both entry level participants and seasoned constructors alike. The first workshop project will be a 'tape measure antenna'. The Second project a 'differential time of arrival radio direction finding unit' and the third will be a CTCSS tone decoder to fit into an amateur rig to allow access to repeaters using sub tones. Further projects will be announced at the conclusion of these workshops.

The cost of attending the workshop is free. There will be kits of parts to buy at the workshops so you don't have to bring any parts. The kit's will be very economical with a discounted price for IARS members. All tools will be provided, or you can bring your own. We will also have a sausage sizzle for lunch on the day, with the sausage sanga's and cold drinks available for a 'friend of the family price'. Support the club by buying your lunch here.

You will have to register to attend the workshop. You can do this by sending an e-mail to :- technical_workshops@iars.org.au or attending the IARS club meeting on Tuesday May 13th. The workshops are open to all amateurs whether you are a member of the Illawarra Amateur Radio Society or not.

Please direct all enquires to the e-mail address above.



By John Bennett

The Repeater Report

To say the repeater committee has been busy of late would be an understatement. The major project undertaken has been the installation of the 4 d-star repeaters VK2RDS. That is the new 2 metre, the new 70cm, and the new 23cm voice repeaters as well as the new 23cm data base station.

The three repeaters are on line periodically for test transmissions. The 23cm data base station is not yet online, this is stage two of the project and will be activated in the near future when the SDSL data stream has been linked to the Madden's Plains site.

We are waiting for the licence to be issued by the ACMA before we can go live 24 / 7 with the digital system. So far we are receiving excellent reports on the foot print that is being achieved with the D-Star Digital Network. Signal reports have been received from Marulan in the South West, the Blue Mountains in the West, South past Nowra, and way into the Northern suburbs of Sydney.

You can find details of the new frequencies on the club's Internet site, as well as setup details of the D-Star radios available. Just on the radios, I've heard of computer dongles that are now available to allow the D-Star to be decrypted on a P.C. and even home brew projects on the way. So the D-Star should be available to the home brewers shortly.

There have been no issues at the Mt Boyne site VK2RBT.

There have been no issues at the Saddleback mountain site VK2RIS. Late last month we had an overnight outage when a power supply failed at Knight's Hill which effected VK2RUW 70cm repeater, VK2RBZ 2 metre repeater and echolink node, and the linking of VK2RBT, VK2RIS, and VK2RMP. A new power supply was fitted the following morning and services were restored.

VK2RUW the 70cm repeater on 438.225MHz has been removed to the workshop to have a CTCSS tone encoder installed. This has been necessary due to the continued interference from LIPD's devices. The sub tone when fitted will be 123.0Hz. All our 70cm repeaters now have a 123.0Hz tone installed. The repeater will be back online soon. If your radio can not transmit a sub audible tone or you do not have it set to 123.0 Hz you will not be able to key the repeater. Paul VK2FE has a project coming up soon in his weekend technical workshop to manufacture a sub tone decoder to help overcome this problem.

On Saturday 3rd May, we had a planned 8 hour outage of the 2 metre, 70cm, and 6 metre FM repeaters at Madden's Plains VK2RMP. This was to facilitate the installation of the D-Star system. All repeaters were removed and replaced in the rack, all wiring was replaced and re routed in cable tidy ducting. The services were back on the air by 5.00 pm. We presently have a minor problem with a commercial service causing intermittent keying of the 2 Metre VK2RMP service. We are aware of this issue and have a fix in the pipe line. This should be effected very soon.

That's it for this month, see you all at the club meeting.

John.

CONGRATULATIONS

**Well done Bob Bunting
VK2FNRB who after a lot of
hard work is now VK2NRB**

The H.F. Scene

By Brian Farrar
VK2AH



The following is from VK2AH and stations heard or worked from the principality of BEAUTIFUL BULLI.

From the Log Book VK2AH

March worked TX5C, KH6ND, H44MS, all on 40 M. Also HI3C on 20M.

April Worked EA3BOX ON 40 AND 9A9A, on 20M. The bands have been POOR to say the least.

HEARD ON THE HF BANDS. USING ONLY A G5RV

40M. DL1AXC 54: ZL1CKK 59:, IK6CWQ 55:, ZL1AMO 59:, EA4BQN.

ZL1CKJ 55. EA6BC 55 just too much noise to work.

Most mornings I've spoken to the following stations. VK3AJK, VK3RS, VK3TCT, VK3LM, VK3FSMT AND VK3FJFM. SOME DAYS SIGNALS OVER 59+ .

If these conditions keep up I should have many stations logged for the special event call of **VI2AMW60**.

So come on members get behind this special event and get your name on the roster sheet and work the world. If NOT on the roster, and just don't say YES I will and NOT turn up!

Any member that has NOT got HF gear can contact me and come to my place and use the MIGHTY G5RV aerial during the special event call sign.

BUT PLEASE DO NOT JUST ARRIVE, CONTACT ME. I will keep one radio on 146.850 for you to arrange a time. My MOB is 0415 430 676.

NB THE FOLLOWING HAVE BEEN HEARD BUT NOT WORKED.

Most mornings good signals on 40. Afternoons some days good signal from Europe HEARD ZS4S on 20m The last few days here has been nothing but noise. I did make contact with Mike VK2ZQ/8 Tuesday afternoon but got caught up on the computer talking to ZS land so did not have much to say.

Wednesday 07/05/2008 heard but did not work the following. VK5KGP, VK5BC, VK5ZK, VK7KDR, VK3KCA, VK3JGH, VK3HTP, VK4HEC all workable signals on 40 M.

FROM THE LOG OF VK2BHO WORKED ON CW.

UY5QJ 20m, HA3OD 30m, EA6NB 30m, KF8DD 3.5, G4RJG 40m.

Until next time good DX and look out for the SPECIAL EVENT CALL VI2AMW60 ON THE BANDS, SO SPREAD THE WORD.

Brian VK2AH



PROJECT SPOT

This months project is from Bob Hejl (W2IK). It is called the "VHF QUICK-STIC" antenna. I stumbled across Bob's web pages on the www while looking for something a few months ago. I was intrigued to read about what he's accomplish in our hobby, and look at some of the great projects he's designed. Bob was one of the first responders to arrive at the World Trade Centre disaster and set up emergency communications. I urge you to have a look at his web site. <http://hometown.aol.com/alonestaryank/webpages.html> . It's a fascinating read. Bob has given us permission to reproduce several of his articles in part or in full. Here is the first "The VHF Quick-Stik Antenna". There will be more in the months ahead. Thanks again Bob.

VHF EMERGENCY DEPLOYABLE ANTENNA

Design by Bob Hejl - W2IK

all rights reserved c2006

Design may NOT be copied or used in any form or part thereof without written permission

Feel free, however, to build your own. email: W2IK

This is an emergency deployable VHF and UHF antenna that is stored in a pvc sewer tube (which also acts as it's lower base) is under **1220mm** yet expands to a whopping **4.8 metres plus**. It is so effective that I've built 15 units but kept only 4 to loan out.

NO TOOLS NEEDED TO ASSEMBLE IN THE FIELD.

LIST OF MATERIALS:

965 mm inch length of 12.5mm CPVC (cream colored, not the PVC white)

965 mm length of 19mm CPVC (cream colored, not the PVC white)

CPVC is used because the two different sizes nestle in each other better than the two different PVC sizes.

45mm CPVC "T"

45mm CPVC Coupler

45mm TV "Twin Lead"

1117mm 14 gauge, stranded/insulated, THHN type wire

100mm 22 ga stranded, insulated wire

1- 6mm-brass nut

1- 6mm- brass screw 38mm length

1- 6mm- brass screw 65mm in length

1- 6mm- brass wing nut

1- 6mm - washer

1- 3 section telescoping pool pole (915mm blue colored available at Bunnings)

75mm sewer pipe (PVC, white thin wall) 1092 mm long

1 - 75mm sewer pipe pvc end cap

1- 75mm sewer pipe-screw cap adaptor

1- 75mm sewer pipe screw cap

457 mm of RG-8X cable

1- female barrel connector (SO-259)

5 minute clear epoxy

2- small self tapping screws size #6 x 15mm pan head

5 small scraps of foam rubber

CPVC cement - (all purpose or CPVC, not PVC only)

2- 450mm bungie cords

electrical tape, sandpaper, soldering iron or light gun, solder, hand tools (wirestrippers, hacksaw and screwdrivers),



Take the 1092mm long x 75mm pvc sewer pipe and clean off both ends. Coat one end of the pipe with the all purpose cpvc/pvc cement and quickly install the 75mm end cap by pressing it on to the end. You must do this quickly as the solvent (cement) dries very quickly. Apply the same cement to the other end of the pipe and install the threaded sewer cap adaptor in the same manner.

Take the blue, 3 section telescoping pool pole and remove the vinyl handle by slitting it and peeling the handle away. With the pole completely collapsed (handle section will now descend into the rest of the pole, but leave it about 25mm out), measure from the top (where the handle was) to the wider bottom exactly 1042mm and mark that distance with a line on the wider section. Using a hacksaw, trim off the excess below the mark. You will be cutting through all three telescoping sections at this point. When you have made the cut, extend the top two sections about 75 mm and lock in place. Roughen up the wider end by sanding away most of the blue on the lowest 38mm as seen below. This end now needs to be pressed into the "inside" of the 75mm screw cap as shown. Make sure it fits very snug and that the end of the pole will now "square out" to conform to the square of the cap. Now remove the pole from the screw and roughen up the inner squared section of the PVC screw cap by sanding it. This, plus the rough pole end will allow epoxy to adhere.



Mix a goodly portion of epoxy and coat the inner square of the screw cap and the end of the pole and press the pole back into the squared cap. Put the cap, with the pole, on a flat surface and using a level adjust the pole so it seats vertical to the cap. Then pour the rest of the epoxy around the pole-to-cap gap and allow ample time for the epoxy to set. See below. When the epoxy has hardened, drill two small pilot holes in the screw cap and install the small self tapping screws size #6 x 15mm pan head into the cap as shown below. This adds strength to the bonded pole to cap joint. When you deploy the antenna, this pole/cap combo gets flipped around (pole now outside the tubing) and screwed into the storage tube which now acts as a base for the antenna!

BUILDING THE ANTENNA

Take the 6mm x20 hex nut and sand all sides (top and bottom and each hex side) so the sheen is taken off just a bit. Now take the 1120mm insulated 14 ga THHN (Thermoplastic High Heat-resistant Nylon-coated) wire and strip away 3mm and solder this carefully to one of the faces (top or bottom) of the nut . Make sure the wire doesn't impede any of the threads or the outer side.



Snake the 1120mm of wire through a 965mm length of the 12.5mm CPVC tubing. Roughen up the inner portion of the tubing near where the nut will sit. Epoxy the nut so it's pressed into the tubing but **flush** with the end of the tubing as shown. Do not get any epoxy on the nut threads.

Let the epoxy set. With the wire dressed out of the other side of the tube, stuff several small pieces of foam rubber into the tubing while holding the wire. Make sure that several pieces, at different depths are inserted. The last piece of foam rubber should be about 200mm into the tubing. No piece should be shallower than that as you will be trimming from the top during the antenna tuning process. The excess wire should not be trimmed at this time.



Put this piece aside.

Take the 432mm length of twin lead and at one end strip off 3mm exposing each wire. Bend the wires together and solder. Refer to picture on the left.



Measuring exactly **38mm** from this connection, remove 1.5mm of insulation from each wire in the twinlead by melting to expose the wires. At this point, solder one end of the coax with the centre conductor going to one wire and the shield going to the other as

shown below. Make sure the coax shield doesn't touch the side where the centre wire is soldered.



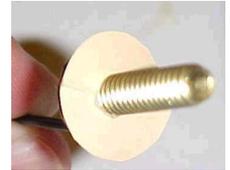
Mark at the other end (top) of the twinlead which wire from it is soldered to the centre of the coax. Dress the coax down the 38mm to the shorted end and carefully tape this as shown. **DO NOT** twist the coax or twinlead. At the other end of the twin lead, cut off one inch of the **ONE** wire that is connected to the coax **braid** side leaving the centre web insulation and the other wire intact. Expose 12.5mm of the wire you've marked that is attached to the **centre** of the coax cable by removing the insulation around it. Put this assembly

1. Take the 38mm brass 6mm x20 screw and slip a 6mm washer over it. Making sure that the screw seats exactly in the centre, solder the washer in place.

2. After the solder has cooled, take the short piece of 22 ga wire, remove 6mm of insulation off one end and solder it to the brass screw head leaving the wire in the screw head slot as shown below



3. So, now you have a screw with a soldered washer and a wire soldered to the top. Now cut a cardboard circle slightly wider than the inner diameter of the 19mm CPVC tubing and cut a centre hole so the cardboard washer fits snugly on the screw .



Screw this assembly on to the nut/top CPVC section that you've made earlier. Refer to the photo to the left. This will flatten out the cardboard washer.

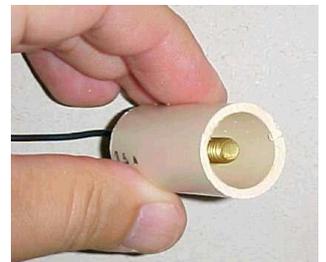
Cut off a 50mm length of the 19mm CPVC from the length you have yet to use and sand the ends to remove any burrs. Also sand the inner 12.5mm of one end. Slide the smaller CPVC with the screw assembly into this small piece by inserting the 12.5mm CPVC length in FIRST starting on the side of the short CPVC you've sanded on the inside until a depth 12.5mm beyond the screw head is reached. (refer to photo on right)



Insert a shim of cardstock around to fill the small gap between the smaller CPVC and the sleeve as shown in BLACK on the photo to the left. This keeps the entire assembly straight after the epoxy has set so you'll be able to easily unscrew the top (thinner section) from the lower section.

With the assembly held in place as shown, mix and pour epoxy into the sleeve (covering the screw head assembly). The cardboard washer keeps the epoxy from oozing to the other side. After the epoxy has completely set, remove the shim card and carefully unscrew the assembly. The cardboard washer can remain in the assembly.

You are now left with what's pictured to the right. You'll need this assembly later.



From your unused stock of 19mm CPVC, measure and cut a section exactly 533mm long. On one end, cement the coupler to the tubing as seen below.



Trim here —>

Take the CPVC "T" connector and on the opening which is at right angles to the other two holes, trim off 6mm as shown. This is where a connector will be installed.



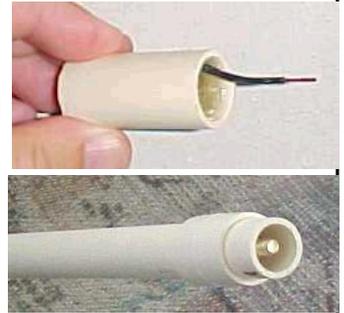
Now cement this "T" (un-trimmed side) to the other end of that 533mm length of CPVC tubing as outlined at the end of "Part 2", On the other side of the "T" (un-trimmed side), cement a 300mm length of 19mm CPVC.

After completing the above two steps, snake the twinlead/coax assembly through the remaining unused "T" hole (the one you've just trimmed) and make it travel up the longer section as shown.



NOTE: PAST THIS POINT, YOU MAY WISH TO REFRAIN FROM CEMENTING THE CPVC WHERE INSTRUCTED IN CASE YOU NEED TO MAKE ANY CORRECTIONS TO YOUR WORK. AFTER THE ANTENNA IS COMPLETED AND TUNED YOU CAN CEMENT ALL REMAINING JOINTS (Just don't forget any)

The end of the twinlead should protrude beyond the coupler you installed earlier. Now, carefully trim away some of that 22 ga wire from the screw/wire assembly leaving about 50mm of that stranded wire, strip off 6mm of the insulation and solder that end to the exposed wire you have on the end of the twinlead. When this is done, tape the joint and overlap so it makes a good cover. Slide several pieces of foam rubber down inside the long length of tubing at varying depths with one just an inch above the top where you've just made the connection. SLOWLY pull back on the coax until the twinlead and it's connection start to ride down in the tubing. You can then cement the top screw assembly to the tubing's barrel connector. When you have completed this it will look like the picture to the right.



Cut a 1/2 piece of the 19mm CPVC tubing from your remaining stock and sand both ends flat. Sand, to roughen, the inner section of this piece. Laying it flat on a piece of card stock, place the barrel connector exactly in the middle of the tubing and pour epoxy into the gap as shown. Be careful not to get epoxy on the exposed threads.

After the epoxy has set, peel off the card stock and clean away any epoxy to this underside. File to expose some of the outer metal. This will be the inner side of the connector where you will attach the short coax that you soldered to the twinlead.

To make the coax-to-barrel connection, gently pull the coax in the "T" to remove any slack and trim it to leave about 50mm beyond the "T". Carefully strip away 19mm of the outer insulation of the coax to reveal the braid. Separate the braid from the centre insulation and centre conductor and twist the braid so it forms a uniform "wire looking" section. Strip off 6mm from the centre conductor insulation and VERY carefully insert and solder this to the inner section of the barrel using as little solder as possible so it doesn't flow through the barrel and out the other end. Then, solder the braid to the outer metal of the barrel. (All of this is done on the FLUSH side of the barrel so you'll have the other end to connect your regular coax to). When you are happy with the results, and are sure that the coax braid isn't touching the centre, put a small bit of tape around the braid. You can now cement this into the "T" as shown above.



Taking this finished assembly, insert it (short side down) into the telescoping mast so it fits in about 150mm. Drill a 6mm through both so you can fit in that last 6mm x 20 brass screw through them and attach the wing nut on the end. This will hold your antenna to the masting during deployment.

TUNING THE ANTENNA

Taking the top (thin CPVC with nut assembly) screw it into the lower section. Combined, this is the two piece radiating part of your antenna. You still need to trim down the top section to tune to 146 mhz. Do this by placing the antenna and it's attached pool pole to a space not near any objects. Connect a length of coax jumper from the antenna's connector to an antenna analyser. Tune the analyser to measure the lowest SWR. This will probably place it at somewhere around 136 mhz or so depending upon how accurate you were when you attached the inner coax to the twinlead. (If the SWR doesn't change with frequency it might mean your connections aren't properly made) By trial and check, slowly trim off from the top of the antenna 12.5mm at a time, cutting both the CPVC and the THHN wire inside. You might end up trimming as much as 200mm or so, until your meter reads an SWR of about 1:1.5 (or below) at 146 mhz. This process may take a bit of time, but it needs to be done properly. Once you have the SWR down to a reasonable level, stuff a small bit of foam rubber on the tip of the antenna and coat the top with epoxy. You will end up with an antenna that is about 14mm from connector to top. Your antenna is completed and you are read to set it up.

STORAGE AND ASSEMBLY

Unscrew the top (thinner) CPVC tubing of the antenna from it's lower section. Slide this section into the pool pole assembly and install the screw and wing nut to keep it stored in the pole. You can then drop the two bungee cords into the PVC Sewer pipe and then add the lower antenna section and the pool pole (mast assembly) screwing the cap to store the contents. This makes the entire package stored in a 1200mm section of PVC for storage and transport. It may take a few attempts to learn how to store it all without having to force anything. You might also wish to coat the threads of the PVC cap with candle wax so it screws easier. To deploy, unscrew the cap and dump the contents. Reverse the cap/masting and screw it back into the PVC threaded area with the pole facing out. Remove the top section which was stored in the masting. Screw the two antenna sections together. Add coax to go to your radio. Slide and secure the antenna into the masting and hold in place with that screw and wig nut. Stand the entire assembly near any vertical post and bungee it to secure. Raise the telescoping sections until it's reached it's maximum height and tighten. (Do not over-extend the sections but leave about 150mm nestled in each and mark those lengths with a marker as "stop points") You are now good to go.... deploy where you like in

NOTES FOR CLUB SPECIAL EVENT CALL SIGN VI2AMW60.

This **Special events call sign** has been issued by ACMA to the IARS for use from 10th June 2008 until 30th June 2008.

This club call sign can be used by any qualified IARS Inc Club member who has been made part of the special event roster. The only restriction is that all special event operators must use the licence conditions suitable to their own personal licence grade. In other words a Foundation Licensee or Standard Licensee must only use the modes, frequencies and power levels that their amateur licence authorises.

This excerpt below was taken from the ACMA web page.

'This Amateur station is a club station and must be operated in accordance with the *Radio communications License Conditions (Amateur License) Determination No. 1 of 1997* that equates to the qualifications held by the operator of the station.'

'The licensee of a club station must keep a mandatory log book in which the following must be entered:

- Chronological record of all transmissions including and this must be in UTC. If you are unsure of how to calculate UTC then ask for help. UTC is the time at Greenwich England and is Ten hours behind Australian Eastern Standard time.
- Frequency and type of emission used;
- The Station(s) communicated with;
- The Name and Call sign of the qualified person operating the station. This will assist if an error occurs.

Of course we also need logs for QSLing. Logs can be kept electronically or on paper, as per attached, it's up to the operator to supply extra copies if needed.

If electronic then the program must be able to export the details in ADIF format.

Logs must be returned to **TONY VK2TS** before the **JULY** meeting. **No later ---Please!**

QSL INFORMATION:

Postal address: IARS, PO Box 1838 Wollongong, New South Wales. Australia 2500.

Suggest on air for stations to look up details on qrz.com or www.iars.org.au.

A Stamped Self Addressed Envelope must be received for a card to be dispatched within Australia.

Overseas stations must provide a self addressed envelope along with One IRC or Two (\$2) US for a card to be returned.

NO QSL'S will be accepted via the Bureau.

Club members can work VI2AMW60 on air and exchange their QSL cards at a club meeting.

Please give QSL information, say, every 5 contacts or so. All QSL'S are to be received by 31/12/08.

To maintain the historical aspect of the celebration, contacts must only be on Simplex or via Satellite. No operation of VI2AMW60 is to occur on Repeaters, IRLP or Echolink.

ROSTER OF OPERATORS.

This roster **MUST** be adhered to so that the special event call is NOT heard on the same **MODE** at the **SAME** time, on any band.

(The call can be on the **SAME BAND AT THE SAME TIME. BUT NOT IN THE SAME MODE**).

(IE. CW or Voice is ok but **VOICE AND VOICE** on the SAME band is a NO,NO).

I would suggest that **145.425**, or **145.475** be a liaison frequency so that those operating the call can keep in touch with one another just in case they would like to change bands for a while

NOTES FOR CLUB SPECIAL EVENT CALL SIGN VI2AMW60.

CALLING PROCEDURE.

Voice transmissions only.

CQ,CQ this is special event station VI2AMW60, celebrating 60 years of Amateur Radio in the Illawarra.

Or Celebrating 60 years of the call sign VK2AMW.

CONTROL STATION.

Tony VK2TS is the holder of the special event call at his QTH, and so is the Control station for the event.

If you cannot work, your rostered time, contact Tony on 0404 839 465. If he misses your call please leave a voicemail so he can call back. Anyone needing additional roster allocations, contact Tony.

Thanks must go to Brian VK2AH for his major input writing up the rules for engagement so we produced this version...
Thanks Brian!

Note: THE SPECIAL EVENT CALL IS NOT A CONTEST STATION.

**Club members using the special event call sign, not only have themselves on show to the rest of the HAM world; they also have the reputation of the IARS at stake.
So please make us all proud.**

And most importantly of all have fun with.....

Fold here so you can have the call sign in front of you to remind you what your call is for this event.

VI2AMW60

*The Official Journal of the
Illawarra Amateur Radio
Society*

Postal Address:
P.O. Box 1838
Wollongong NSW 2500
Email: iars@iars.org.au

*'The Illawarra Amateur Radio Society'
The progressive amateur radio club.*

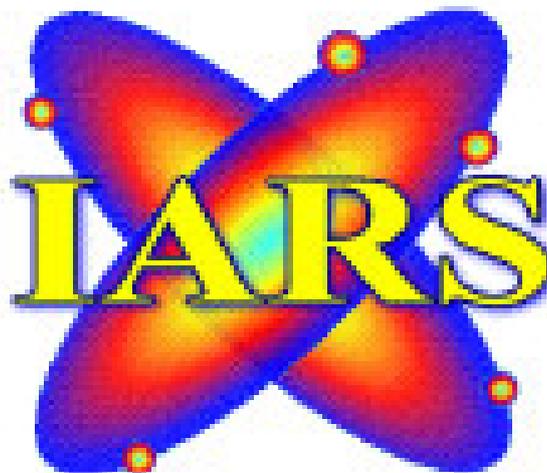
**I.A.R.S. www site:-
www.iars.com.au**



The Illawarra Amateur
Radio Society Inc, is an
affiliate of the
Wireless Institute of
Australia.

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Treasurer:	John Lawer	VK2KEJ
Secretary:	Steve Benko	VK2TSB
Assistant Secretary:	Ross Masterson	VK2VVV
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Issue 2 – Volume 12
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