

VK3AWS



WANSARC NEWS July

Western and Northern Suburbs Amateur Radio Club
(WANSARC)
Incorporated in Victoria

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A WIA Affiliated club

News and views from the Western and Northern Suburbs Amateur Radio Club VK3AWS—JULY 2007

IS THIS THE BIGGEST AMATEUR TOWER IN AUSTRALIA?



At 200 feet high (60 metres) **Ian VK3MO** has perhaps the best amateur tower in Australia? And forget about rotating the beams.....all four of them.....the actual tower is able to be rotated!!

Club member **Peter, VK3YSF**, had the opportunity to climb this beast recently. Read Peter's report on Page 2. Now, any tips on how to sneak this

NEXT MEETING FRIDAY JULY 6 2007.

Christmas in July meeting—at **Tina's Pizza Restaurant** commencing at 1900 hours.

Bring your family, your wife, your girlfriend, your partner, your friends, members, non-members, the more the merrier.

Tina's—Plenty Rd just north of Murray Road Preston on the west side—**LOOK FOR ALL OF THE CARS!!**

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Contributions for WANSARC news welcomed—contact the editor Mark VK3PI.

VK3MO Kyneton Calling by Peter VK3YSF

Twice in the last month I have had the pleasure of meeting Ian Williams VK3MO and his family, whom as it turns out is a cousin of my wife. Small world! As many in the amateur radio community know, Ian is a major player in the 20 metre band DX scene and operated one of the worlds leading antenna systems in Kyneton. Unfortunately the antenna systems including the famous rotatable mast and its four stacked cubical quad antennas were destroyed by an uncharacteristic serve storm.



My first visit with Ian in late May 2007 coincided with the installation of the second of the four, five element 20metre band mono-band yagi antennas on the newly replaced 60metre (200') rotatable mast. This is the most impressive amateur radio antenna system I have ever seen and that includes anything on the internet!

Photograph 1 shows Ian preparing to climb the mast to attach the yagi. The antenna is being hauled into position by a rope with pulleys at the top and bottom of the mast which is attached to a truck in the next paddock being operated by John VK3VN.

Photograph 2 shows yours truly **(That would be the red pixel just below the second yagi)** at the 150 foot level. At this time my wife, Colleen, yelled up that it was time to go! I responded *"just give me fifteen minutes to climb down."*

Oddly enough with the ladder on the inside of the tower I did not feel overly height exposed and it only took a

short while to feel comfortable and move around and enjoy the view!

Ian works fast and by my second visit two weeks later all the antennae were installed and he was well into installing the cabling.

Photographs 3 and 4 show the rotator motor and guy cable support. The guy cables are Kevlar as steel wire, even with sectionalising insulators, would distort the ideal radiation pattern of the yagi antennas. The guys are secured to sections of railway track concreted 3 metres into the ground.

The antenna switching system results in any one of the Yagi antennas being operated as a single antenna, or they can be operated as a phased array.

The effect of the ground on the various yagi antennas results in a slightly differing take off angle for each antenna and this may at times manifest its self as multi-path distortion for the receiving station. But when using a single yagi there is the opportunity to select the antenna with the optimum take off angle of radiation to target a particular station or location in the world.



All the tower sections have an 80mm face, but the leg diameters reduce. The lower sections use 50mm solid bar and reduce gradually to 37mm diameter on the upper sections)

The mast is designed to be self supporting. This means that the mast could have been assembled on the ground and then lifted into position. For economic reasons the first half of the mast was lifted into position by local crane operator and the final half of the mast was lifted into position by a large 200' crane brought in from Melbourne.



Yagi antennas were designed for optimum performance using EZNEC Pro Software.

As I say, Ian works fast and the last report I got was that as of Monday (11/06/2007) it is all connected and seems to performing well with good VSWR for all antenna combinations.

I found this comment on a UK amateur radio newsgroup: uk.radio.amateur

"Anyone who's every heard Ian, VK3MO on 14MHz ssb, using 1 watt to his stacked beams knows that output power is not everything.

.... he's usually S9 on whatever power he's using... the answer lies in the antenna., as we all know.

Peter, G3PHO

Ian's antenna system is a truly impressive engineering achievement.

73s

Peter Miles VK3YSF

vk3ysf@optushome.com.au



Facts & Figures

Total tower weight = 6000 kilograms

Each guy ring assembly = 200 kilograms

Antenna mast height: 60mtr (200ft)

Antennas: 4 five element 20metre band mono-band yagi antennas 44ft booms

Antenna switching: Each antenna can be switched in separately or all four can be feed in phase.

Rotator motor: 240VAC, single phase 3/4 Horse with a double worm gear box.

Antenna mast **can rotate 360° in about a minute.**

Mast guys 14mm diameter Kevlar with a polyester jacket to provide UV protection. Breaking load is **8000kg** with low stretch.

Feed line and phasing harness are 1/2" heliax

Total Array gain is 20dBi @ 6.1 degrees. The vertical beam width is 7 degrees with -3dB points of 3degrees and 10 degrees.

Antenna switched with vacuum relays

Wilfred puts PNG Amateur Radio back on the map



Wilfred P29PG/VK3DWA, shows local PANGTEL members and budding amateur enthusiasts Amateur Radio during P29 CQ Day, an initiative organised by Wilfred on May 19, 2007. Wilfred logged club members Bob VK3EL and Derek VK3AOF during operations from the PNG National Parliament Building. Other stations included VK4, VK5, VK6, JA and 6K5 stations. Wilfred is also actively promoting the establishment of FM radio stations. WANSARC is proud to have Wilfred as an active member and is supporting Wilfred's application to become an accredited WIA examination assessor.

UNDERSTANDING "MOVING PICTURES" Part 1

Simply defined, "resolution" refers to the number of lines of picture image displayed on screen. The greater the resolution, the greater the picture quality. For example, a standard TV signal displayed on a standard TV set consists of 480 lines of resolution. HDTV (high-definition) signals, on the other hand, contain more than 700 lines -- hence their superior quality.

"Native" Resolution

Portable home-theatre LCD and DLP projectors both come in different "fixed" resolutions. That is, every projector has a set maximum resolution it can display, this is set by the internal LCD or DLP panel and is called the Native resolution. A projector's Native resolution rarely matches the exact resolution of the incoming signal. Therefore, the projector must first resize the signal's image internally, through [scaling](#), to map it onto its own fixed-resolution LCD or DLP panel.

There are projectors that offer flexibility between **WXGA** and **XGA** by offering a **hybrid resolution** of 1280 x 768 - widescreen (16:9 WXGA aspect) width of 1280 by video (4:3 XGA aspect) height of 768. this offers flexibility between these aspect ratios without scaling of the signal giving the pure image.

What are wvga, svga, wsvga, xga, wxga, sxga and uxga?

These are the main standards of resolution. The resolution is the number of 'pixels' that the projector is capable of displaying. Pixels are the dots that make up the image on your screen.

SVGA, XGA, SXGA and UXGA are terms that describe common resolutions used by computers and projectors. The table below shows you the number of pixels that are displayed in each common resolution and the resolutions of a 16:9 image on a 4:3 native aspect ratio projectors and a 4:3 image on a native 16:9 projector.

Resolution (native)	Pixels (H x V)	Total Pixels	Increase over VGA	Recommended Usage
VGA	640 x 480	307 200		obsolete
WVGA (4:3 image)	640 x 480	307 200	1.00	Not recommended for 4:3 projection
SVGA (16:9 image)	800 x 450	360 000	1.17	Lowest widescreen resolution
WVGA	854 x 480	409 920	1.33	Entry level Widescreen projectors
WSVGA (4:3 image)	725 x 600	435 000	1.42	Not recommended for 4:3 projection
SVGA	800 x 600	480 000	1.56	Data projectors
WSVGA	964 x 544	524 416	1.71	Home Cinema up to 90 inch screen
XGA (16:9 image)	1024 x 576	589 824	1.92	Widescreen Data and home cinema higher brightness
WXGA (4:3 image)	960 x 720	691 200	2.25	Home Cinema and data
XGA	1024 x 768	786 432	2.56	Data and Home Cinema where Extra Lumens are Needed
WXGA	1280 x 720	921 600	3.00	High Definition Home Cinema up to 140 inch screen
SXGA (16:9 image)	1280 x 720	921 600	3.00	Detailed Data and Large screen installations
SXGA	1280 x 1024	1 310 720	4.27	High resolution for detailed graphics
UXGA (16:9 image)	1600 x 900	1 440 000	4.69	
WUXGA (4:3 image)	1440 x 1080	1 555 200	5.06	
UXGA	1600 x 1200	1 920 000	6.25	Highest resolution
WUXGA	1920 x 1080	2 073 600	6.75	True High Definition- commercial cinema
QXGA	2048 x 1536	3 145 728	10.24	Available but very expensive
WQXGA	2560 x 1600	4 096 000	13.33	Not Available for projectors
QSXGA	2560 x 2048	5 242 880	17.06	Not Available for projectors
WQSXGA	3200 x 2048	6 553 600	21.33	Not Available for projectors
QUXGA	3200 x 2400	7 680 000	25	Not Available for projectors
WQUXGA	3840 x 2400	9 216 000	30	Not Available for projectors

The World's Greatest Piggyback Ride

The Shuttle Carrier Aircraft (SCA) touches down at Kennedy Space Center with Shuttle orbiter Space Shuttle Discovery, atop.

NASA keeps two 747s, known as the Shuttle Carrier Aircraft (SCA), set up this way on purpose. The downstairs passenger area of these jetliners are kept as hollow inside as possible in order to carry a special cargo: a Space Shuttle orbiter.

One of these specially-modified SCAs brought the orbiter Discovery home to Kennedy Space Center in Florida after completing the historic Return to Flight mission. The SCA ferried the orbiter from Edwards Air Force Base in California, where it landed Aug. 9.



Ferry flights are few and far between these days, but don't let the light work schedule fool you: These aircraft have to work twice as hard as a normal 747 to get the job done.

"It's brute force that keeps us flying," explains Larry LaRose, a flight engineer on the SCA. "When we're carrying an orbiter, we have to use twice the power and a lot more fuel to maintain flight."

The passenger area has been stripped of many creature comforts, such as galleys, carpeting and even part of the inside temperature ductwork -- all for the sake of reducing weight. But the planes still weigh more than 250,000 pounds, and the drag created by the shape and weight of the orbiter -- 176,000 pounds or more, depending on any onboard payload -- negates the small amount of lift it adds.

The downstairs portion of the 747, stripped of seating and other passenger equipment. During a normal flight, the SCA might use 20,000 pounds of fuel an hour; with an orbiter on its back, that number doubles.

The piggyback arrangement might look cumbersome, but how does it fly compared to a normal 747? "It handles remarkably the same," says SCA pilot Gordon Fullerton. As chief pilot at NASA's Dryden Flight Research Center, his daily job involves flying jets for high-performance aircraft research. But Fullerton's experience with the orbiter and SCA dates back nearly three decades. In addition to being a Space Shuttle commander and pilot, he was one of four NASA astronauts to land the Enterprise during the Space Shuttle Approach and Landing Test program in 1977.

"It's obvious [the orbiter] is up there, because there's a constant rumble that you can feel because of the wake of the orbiter hitting the vertical stabilizer of the 747," Fullerton says of ferry flights. But other than long takeoff rolls and the need for some extra care in steep turns, "it's pretty much the same."

A small team of six specially-trained pilots and four flight engineers has the critical task of making sure this precious cargo has a safe trip from alternate landing sites. Those who serve on SCA crews are former military aviators who are qualified to fly several types of aircraft, such as the Shuttle Training Aircraft, Super Guppy, zero-gravity aircraft and T-38 jets. Most are based at NASA's Johnson Space Center in Houston, although LaRose is stationed in El Paso, Texas, and two are based at Dryden.

Story courtesy Anna Heiney via Sarex
NASA's John F. Kennedy Space Center ([see www.nasa.gov](http://www.nasa.gov) for more space news)

Perhaps the biggest challenge the crew faces during a ferry flight is the weather.

The orbiter cannot be exposed to moisture, turbulence or temperatures below -9 Centigrade and these restrictions determine the flight path and altitude. To meet those conditions in the winter months, they sometimes fly as low as 10,000 feet.

A "Pathfinder" aircraft, usually a U.S. Air Force cargo plane, flies 100 miles ahead of the SCA carrying weather officers and Space Shuttle personnel from Kennedy. Also onboard is an experienced SCA pilot, whose expertise helps the ferry flight crew keep to the safest route.

HOLLINGSWORTH DAYTONA MESSAGE FOOD FOR THOUGHT.....contribution from Graeme VK3NE

FCC Special Counsel in the Spectrum Enforcement Division Riley Hollingsworth's main message at the [Dayton Hamvention](#)® 2007 FCC Forum is one which should be listened to by all amateurs, not just those in the United States.

Hollingsworth advised that the Amateur Radio community needs to "lighten up" on the air and urged his audience to take his message more to heart. "All of you can learn from each other," he said, "and you need to work together more and show a little more respect for your diverse interests and for the Amateur Service as a whole. It isn't about you. It isn't about enforcement. ***It's about Amateur Radio.***"

As radio amateurs take to the airwaves, he continued, they need to decide what's most important -- the best interests of ham radio or their ego, pride or perceived "rights."

"I realize I may be preaching to the choir here, but on the air you need to be more cooperative and less argumentative -- and I need you to take this message with you when you go home," he continued.

Hollingsworth offered "The good news: Nothing is wrong with Amateur Radio," he allowed. "It is a good service that is showing its value to the public on a daily basis."

The bad news, he asserted, making a comparison to "road rage," is "that there is an element of Amateur Radio that too often reflects present society generally."

Hollingsworth urged all radio amateurs to cooperate more and depend less on the FCC to solve their operating issues.

"We live in a rude, discourteous, profane, hotheaded society that loves its rights, prefers not to hear about its responsibilities, and that spills over into the ham bands," he said.

Hollingsworth's bottom line: Be flexible in your frequency selection and make regular use of the "big knob" on the front of your transceiver to shift to any of the "thousands of frequencies and hundreds usable at any given time of day or year" as necessary to avoid problems. "The world is ugly enough -- don't add to it," Hollingsworth advised.

"We can enforce our rules, but we can't enforce kindness and courtesy or common sense," Hollingsworth concluded. "And a very wise person, who happens to be standing to my left [FCC Wireless Telecommunications Bureau staffer Bill Cross, W3TN -- Ed] once told me: ***'You can't regulate stupid.'*** If we could, we'd be working for the United Nations instead of the FCC."



Sick of trying to sort your mobile whip antennae? Here is a simple solution using an old plastic crate. If you have an odd length of PVC pipe cut the pipe into lengths to suit the size of your whips (UHF or VHF). Cable tie your pipes to the side of the plastic crate and insert your whips into the most appropriate pipe. Jobs right.....Mark VK3PI

ODD

SPOT



Sometimes it really is difficult to work out where the brains of the organization are—front or rear??



**GET
WELL
SOON**

Jock VK3UB

has recently been in hospital to treat a respiratory issue and our thoughts are with you Jock. Trust you are on the road to recovery.

Max VK3ZCW

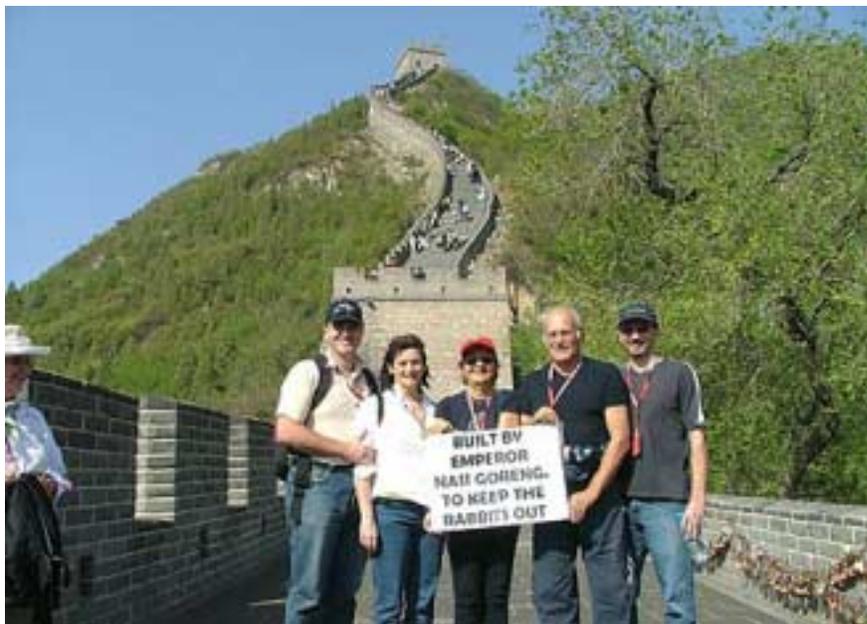
is still conspicuous by his absence on 146.450MHz of an afternoon, but is improving. Look forward to hearing your dulcet tones, Max.

Your magazine contributors this month include—

**Peter VK3YSF,
Graeme VK3NE,
Mick VK3CH,
Bob VK3EL,
Mark VK3PI.**

Thanks folks—you are making the task of producing the monthly magazine much easier!!

WHAT ABOUT THIS ? Contributions from members



"See...? And everyone thought the bloke in the TV advert made it up ! "

Massachusetts Institute of Technology (MIT) researchers have advised that they have developed a wireless energy transfer technology that could ensure wireless devices are always charged up and ready to go.

The team at MIT, one of the top US academic "laboratories" for new inventions, has road tested the fledgling technology and shown that it can power a 60 watt bulb from a power source two meters away.

The concept behind the technology is simple and based on the idea that two resonant objects on the same resonant frequency can exchange energy efficiently.

For this experiment, the MIT team used electromagnetic resonators in the form of copper coils, which oscillated at a certain frequency, trading energy within a given electromagnetic field. One of the coils was attached to a power source. The other acted as a receiver.

The researchers, having proved that the technology dubbed "WiTricity" does work, plan to refine it to make it more efficient, although the range over which wireless power can be delivered probably won't extend beyond a room or a factory floor. However, they are confident they can enhance the system and make it reliable enough so that consumers can dispense with power cords and even batteries for their laptops, PDAs, Blackberries or cellphones if they are being used in the same room as the power source.

From
Bob
VK3EL

From
Mick
VK3CH

Make sure your weekly diet includes the "CLUB" net, each TUESDAY evening, 146.450MHz commencing at 1930 hours.

Call net control VK3AWS and engage in some enlightening dis-



WANSARC is at
www.wansarc.org.au
Or www.wansarc.org



Bill VK3KBL, caught on camera in front of his camera during ATV transmissions. Bill still constructs much of his equipment and is seen here monitoring levels on his CRO. ATV can be seen just below Channel 28 on a domestic television receiver. Next month you will see Bill's face!!



Various video recorders, audio amplifier boxes, power transformers, brand new audio microphones.....all cheap to club members. Contact Mark VK3PI for more.

WANSARC VK3AWS

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RESERVOIR 3073

WANSARC CLUB PROFILE

History

The Western and Northern Suburbs Amateur Radio Club (WANSARC) was first formed in 1969 and since then has served the needs and interests of amateur radio operators, short wave listeners and those interested in hobby radio and electronics. The club is not gender specific, having both female and male members. Members come from all walks of life with a mix of experience, young and mature, novice and technical. The most important aspect of the club is the willingness of all members to share their knowledge for the benefit of others. Members mainly reside in the west and north of Melbourne; however membership is encouraged from all interested.

Meetings

Building K, Northern Metropolitan Institute of Technology (NMIT), St. Georges Road, Preston (Western side between Bell Street and Cramer Street) Melway 18 E12 *PARKING at NMIT-Members please note that parking adjacent to the club room building K is illegal and NMIT staff WILL book any cars which are parked in that area. ALL members must park cars in the main car park to the WEST of building K. Just look for vehicles with lots of aerials!* Meetings held on the 1st Friday of each month (excluding January) commencing at 7.30pm local time.

Talk in on 146.450MHz FM—call club station VK3AWS.

Benefits

Free technology and related presentations, sponsored construction activities, discounted (and sometimes free) equipment, network of like minded radio and electronics enthusiasts, excellent club facilities and environment plus an informative monthly newsletter for members to post articles, news, classifieds for all radio, test equipment, etc, featuring Amateur Radio news from WANSARC, WIA, ACMA, Melbourne Clubs, VK and Worldwide.

Club Nets

146.450MHz FM each Tuesday evening commencing 7.30pm local time.

More Information: **Website:** www.wansarc.org.au **Email:** wansarc@wia.org.au

Postal: WANSARC PO Box 336 RESERVOIR 3073

NEXT MEETING FRIDAY JULY 6, 2007

**Australia Post
stamp here**

CHRISTMAS IN JULY!!!— Come to Tina's Pizza restaurant Plenty Rd Preston just north of Murray Rd. 7PM local time.

If not delivered within 7 days please return to

WANSARC PO Box 336 Reservoir 3073