

THE PROPAGATOR.

VOLUME 00/01 ISSUE One October 2000 PRINTED BI-MONTHLY

PRICELESS

Meetings 2nd Tuesday of each month (except January). S.E.S. Building Montague St Nth Wollongong
Starting at 7:30 PM. Official newsletter of the Illawarra Amateur Radio Society. P.O. Box 1838 Wollongong 2500

Well Here I Am.... The New Editor Of The Propagator. I Have Been Here Once Before but A Fair While Back. So You Think I Would Have Learnt The First Time. I Hope I Can Do As Good A Job As Brian Did And I Would Like To Thank Him For The Help He Has Given Me In getting Set Up For This Task. I Hope To Be Able To Present A Variety Of Articles For Your Reading Pleasure. Please Bear With Me If I Repeat A Article That Has Been Put In Recently As I Have Been Inactive For Quite A Few Years And Have Only Just Re-Joined The Club.

One Of The Hardest Things The Editor Finds Is To Get Contributions For Any Club Magazine. If You Have Any Bit Of Information That You Think May Be Of Interest To Your Fellow Amateur Forward It To Me. Don't Just Leave It Up To The Half Dozen Or So That Do Contribute. I Can Be Reached Either By E-Mail At **VK2JBS@Bigpond.Com.au** Or By Packet At VK2XGJ's BBS.

The Next Club Meeting Will Be A Little Different. It Will Be Held At **Cataract Dam** Picnic Area On Saturday The 7th October Commencing At 10:00AM. This Will Be A Family Day So Make Sure You Bring The XYL And Harmonics. If The Weather Looks Threatening Stay Tuned To VK2RMP As the decision to Cancel or not Will Be Made Early And Broadcasted Accordingly. If The Meeting Is Cancelled, The Usual Meeting Will Be Held On The Following Tuesday Night (10th) At SES Headquarters.

At The November Meeting Our **Annual Club Auction** Will Take Place. This Year Some New Guidelines Have Been Introduced So your attention is drawn to Page 3 For The New Requirements.

You may recall in the last issue of the Propagator mention was made of the AX2000 Callsign. Five members of our club took the opportunity to use this callsign during August.. There was two efforts that really need to be commented on. Gerry Rosham VK2APG had 464 Contacts during his usage of this call and Phillip Miller VK2FHN had a staggering 1057 contacts in a 22 Hr Period. At the last club meeting they were both presented with plaques to mark this outstanding effort.

Congratulations to you both.

I have included a article on Lightening which explains some misconceptions about it and I hope to include in the next edition a simple device that may help save some equipment if a ground strike occurs nearby.

Finally The Club Will Be Running The Snowball once again This Year. It Will Basically run under the same rules as last year.... But you must be there to win it.

Well that's about it for issue No 1. If you have any comments either good or bad Don't Hesitate To Speak up.

73's Bill

de VK2JBS.

Minutes of General meeting held on September 12th 2000. The meeting opened at 7:40pm with Jim vk2zgw in the chair and he welcomed all those that were there.

Attend 22 plus Adam harmonic of vk2mt.

Apologies from: vk2's zlj, zdm, zrf, tnb, xbc

Correspondence in: Renewal Notice from Vk2xic, vk2 kpj, vk2mrj, vk2dzj. Vk2kbi, vk1zmc. Australia

from I.M.B re new account charges. E mail from Lloyd about not being able to give a talk.

News letters from: Dragnet. Smoke Signals. Ballarat Amateur radio Group.

Correspondence Out: E mails to vk2wi re the clubs new executive. E mail to Prime TV Shane Angelo re guest speaker on digital TV. Letter to Norm vk2zxc re Guest speaker. Letter to Ken Morgan welcoming him to the club. Letter to Lloyd re guest speaker at a meeting. Membership application from Hank Laauw to join the club.

Minutes of meeting being has read Moved vk2ubf 2nd vk2tth as he was not present at last meeting vk2zgw seconded them.

Matters arising from: David vk2ezd spoke about aerals and it was moved to be discussed at general business.

Treasurers report: Given my Jim vk2cav and attached. Moved vk2cav seconded vk2ubf

Repeater report: Rob spoke on the link to Bega and a letter he received from them (attached to Corro in file). There had been a break in at Saddle back site and around \$10,000 stolen. Thankfully none of ours went missing.

Rob spoke of NOT saying where our repeaters are located. If you know of their location NEVER mention this on AIR.

General Business: Club auction the members are to decide what they want a JUNK auction or an auction over \$10 each item. One suggestion was that ALL people that are bringing items for auction give \$10 into the club for EACH item and when the item reaches this amount the money is given back to the member. Leave it up to the AUCTIONER to decide if the goods are to be auctioned. Of the amount of return is it worth all the effort. (\$60)

john vk2bho spoke of having a \$1 for each lot number given out and this will NOT be refundable. Much more was spoken about and Simon vk2xqx seconded this proposal. Rules of next auction to be published in newsletter.

Saturday meeting in October suggested date is October 7th at cataract dam.

All agreed to this date so mark in down now. Meeting time around 10am at dam. We may even have some South African wine for a raffle prize!!!!.

Start a badge draw in October you must be present to win and have PAID your membership before the end of THIS meeting. It will jackpot until won or \$75 which ever is the sooner. So if NOT paid up so now you could win!!!!

Present certificates to those that worked the AX 2000 call. Phil vk2fhn and Gerry where presented with their certificates Gerry was not present as away on holidays so Phil will give it to him when home.

David vk2ezd spoke about putting up aerals at the SES building. As they will be moving soon the committee will look into this.

The club has been told about 486 computer for free but we MUST collect them. Nobody was interested to do this so it looks like they will go to LANDFILL.

Raffle prize first draw vk2kej gave it back, 2nd draw vk2alu gave it back, 3rd draw vk2alu gave it back (by this time the meat had gone off) 4th draw won by vk2tbf.

General meeting will be held: October 7th 2000 or if raining that day October 10th the normal Tuesday night.

Simon presented the leather tongue award to Rob vk2mt. Ask Rob why did he get it next time your speaking to him!!!!

Meeting close: 8:50pm where all those present had a great supper provided gain by Simon's xyl.

ANNUNAL AUCTION RULES.

The Illawarra Amateur Radio Society annual November Auction
In recent years the club auction has had a few practical problems. The committee this year discussed would we have an auction at all in light of the work needed and the small return the club received. At the Sept general meeting it was decided to have the annual auction with a few changes from previous years procedures, so here are this years auction rules .

- 1... Lot numbers will be issued for \$1.00 EACH LOT(**non refundable**)
- 2... Lots must be - Described (for auctioneer's use)
 - Packaged and labeled with owners name or callsign
 - Less than 20kg. (to allow single person handling)

Lots to be presented prior to **7:15pm.** All items to be **booked in BEFORE** then as the book will close at that time.

NO LOTS WILL BE GIVEN OUT AFTER.

The doors will open at 6:30pm SO COME EARLY.

4.... Bidding will be under the auctioneer's directions. The minimum bid will be \$1.00 or multiples thereof.

5.... Commission on sales over \$10.00 will be 10% of the auctioned price and rounded up down in multiples of \$1.00

e.g. auctioned price \$65.00

10% of \$06.50

Commission with rounding \$6.00

6... Buyers must not take possession of any goods until the paperwork is complete and the financial clearance has been given.

7.... Sellers will be settled up only After buyers have paid.

8.....Payment of auctioned items will start 15 minutes AFTER the auction has finished.

9.....All payments **MUST** be paid within 30 minutes of the auction has finished. Lots not paid for after that time will be given back to the owner.

10... Be patient , please not hassle the helpers , enjoy the night .

The committee want this auction to be an enjoyable and entertaining night for the members and visitors, so please follow the simple steps as set out in presenting or collecting your goods, and we should have a smooth and enjoyable night of spirited buying and selling, and as old Joe the gadget man used to say ,

" Don't forget to bring your money with you "

THERE ARE NO EXCEPTIONS TO THE ABOVE RULES.

Every year the FBI is asked to investigate over 36000 serious crimes including murder and suicide. Every year the homicide investigation unit puts out its "top 20 Homicides of the Year". Here are some that made this years list .

Debbie Mills-Newbroughten, 99 years old was killed as she crossed the road. She was to turn 100 the very next day, but crossing the road with her daughter to go to her own birthday party her wheel chair was struck by the truck delivering her birthday cake.

Peter stone 42 years of age is murdered by his 8 year old daughter whom he had just sent to her room with no dinner. Samantha stone felt that if she could not have dinner on one should, and she promptly inserted 72 rat poison tablets into her father's coffee as he prepared dinner. The victim took one sip and promptly collapsed. Samantha was given a suspended sentence as the judge felt that she did not realise what she was doing, until she tried to poison her mother using the same method one month later.

David Danil 17 year of age was killed by his girlfriend after he attempted to "Have His Way" . His un-welcome advances were met with prompt kick in the chest and then 4 shots from a double barrellled shotgun. Charla's (The girlfriends') Father had given it to her just 1 hour before the date started just in case.

Javier Holos 27 years of age wads killed by his landlord for failing to pay his rent for 8 years (Yes That's 8 Years). The landlord Kirk Weston clubbed the victim to death with a toilet seat after he realised how long it had been since Mr Halos paid rent.

Mary-Lee Cooper 11 years old was killed by her 1year old sister who climbed on top of her whilst she was sleeping causing her to be suffocated.

Meagan Fry 44 Years of Age is killed by 14 state Troopers after she wandered into a live firing fake town simulation. Seeing all the troopers walking down the street Megan jumped out in front of them and yelled "BOO !".

The troopers thinking she was a pop up target fired 67 shots between them over 40 of which hit their target. She Just Looked Like A very real looking Target one of the troopers stated in his report.

Fionna Given 17 Years of Age Was Killed By a "Hit-man" hired by her Ex Boyfriend after she broke off their relationship . The Hit-man was promised that he would be paid \$500,000 for the task. The Hitman killed the boyfriend after he found out that the 16 year old high school student who's father was in jail and mother worked as a ironing lady didn't have access to \$500,000

Jay Newton was killed after a Co-worker at Sea World Florida dropped a 20Tonne Killer Whale on him. Thew Whale had been Hoisted out of it's tank by a Master Tonne Crane when the victim swam underneath to inspect the harness his colleague Brian Hartley released the whale crushing the victim instantly (And emptying the pool)

Three People were killed as they walked past a New York apartment building. David Smee 7 and his 6 yo Sister were left alone in their 27th floor hotel room by their parents as they went to the Hotels gaming room. Bored the Kids thought it would be fun to "Squish" the ANT looking things on the pavement below. (people) They started by throwing fruit then quickly graduated to chairs, televisions and even the drawers from the bedroom dresser.

For

Courtesy to
Amateurs and
Value

In
Our yard

Not usually
Seen elsewhere

WE

RECOMMEND!!!

Cavions

11 Molloy Street Bulli

Phone 4284 6838

The Simple Dipole.

The horizontal, single wire antenna is one of the most popular forms of receiving and transmitting antennas. It can be either end fed or centre fed. When it is centre fed and a half wavelength long it is called a dipole.

The dipole is a balanced antenna. That is it is symmetrical about the centre feed point and current and voltage values in one half of the dipole match those in the opposite half. Both feedpoint terminals at the dipole centre are electrically balanced to each other and with respect to ground.

Coaxial line is almost universally used to feed the dipole antenna. This line however, is a unbalanced conductor since the outer conductor is (or should be) at ground potential. For best antenna performance a transformer is often connected between the line and the dipole to preserve the antenna symmetry with respect to the ground. This is desirable from a TVI point of view and to avoid difficulties with unbalanced currents on the line and consequently unwanted radiation from the transmission line itself.

Connecting a dipole directly to the Coaxial line is frowned upon by purists, but it is never the less done every day, apparently without drastic effects or loss of antenna efficiency. Unbalanced currents in the feed line apparently cause no great mismatch even though antenna currents may flow on the outside of the line. Inclusions of a is therefore left to the option of the builder.

In the case of high gain beam antennas the inclusion of a between the balanced antenna and the feed line is essential to preserve the electrical characteristics of the directional beam pattern. Front to back ratio and power gain of the beam both suffer if the feed line is not properly connected to the beam.

Since the dipole antenna has neither power gain nor front to back ratio it may be directly fed with a coaxial line and will provide good results.

Used by thousands of amateurs world over the single band dipole is efficient, inexpensive and unobtrusive. The dipole works on any one amateur band and is tuned to that band by adjusting the length of the flat top wire section as shown in the table below. The length of the coaxial cable is unimportant, being long enough to reach comfortably from the antenna to the shack.

The basic dipole is about the least expensive antenna a amateur can construct. It requires no ATU (on most bands) and is made up of inexpensive components. A High frequency dipole with dimensions for the popular Ham bands is shown in the illustration. With the exception of the 160 And 80 Metre bands the dipole may be cut for mid band operation and would work well over the entire band. On the two lowest HF and high ends of the bands since the width of these bands is a large percentage of the mid frequency design point.

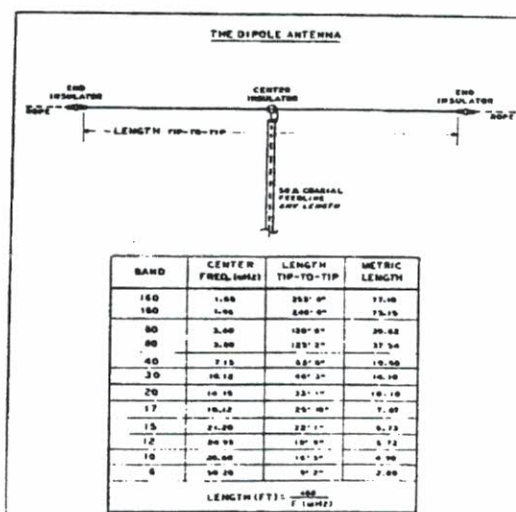


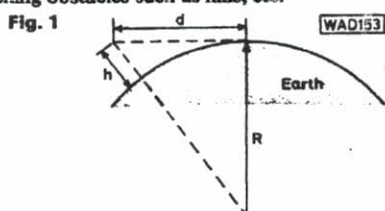
Fig. 1 DIPOLE ANTENNA FOR HIGH FREQUENCY BANDS is tuned to frequency by adjusting tip-to-tip length of wire. Response is broad enough so that when antenna is cut for mid-band operation on 5, 10, 15, 20 or 40 meters it will function properly across entire band. Separate dimensions are necessary for low and high frequency portions of the 80 and 160 meter bands.

Radio Range~Height Calculations

By R.T. Irish

Being born and bred at the seaside, I have often stood on the beach and wondered just how far away the horizon really was and to what extent this visual distance increased when the top of a ship's mast appeared above it.

Attention was recently drawn to this same problem when determining the maximum range of a v.h.f. transmitter/receiver system as the elements of the system start to drop below the horizon "line of sight", assuming no intervening obstacles such as hills, etc.



This interesting problem is easily solved by considering the geometry, shown in Fig. 1. Here, h is the height of the transmitter (or receiver) antenna, d is the distance to the horizon and R is the earth's radius. Using our well-tried friend, Pythagoras, on the triangle formed:

$$(R + h)^2 = d^2 + R^2$$

$$\text{or } d^2 = 2Rh + h^2$$

and since $2Rh$ is much greater than h^2 for usual values of h , this becomes:

$$d = \sqrt{2Rh}$$

In useful units, $R = 6400$ km and if h is expressed in metres then this formula becomes: $d = \sqrt{13h}$ —as nearly as makes no difference.

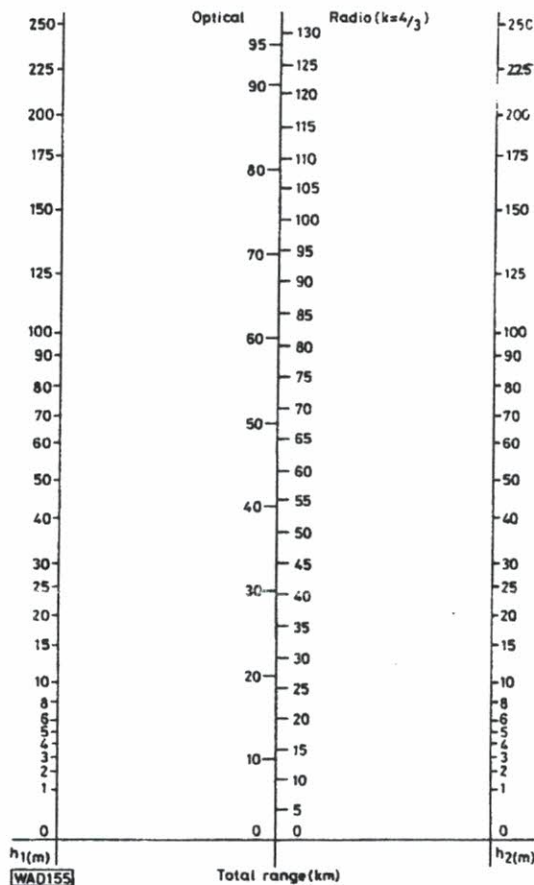
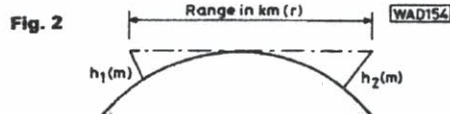
For a transmitter, height h_1 , and a receiver at height h_2 , just on the limit of visibility, the ray path is tangential to the earth's surface—as shown in the diagram at the top of Fig. 2. The maximum range may thus be found by adding the distance of each from the horizon. The nomogram, Fig. 2, displays this range as the left-hand central scale marked "optical".

As radio enthusiasts are aware, the atmosphere is denser nearer the earth's surface than it is at higher levels. As a result, radio waves travelling in this density-graded atmosphere are bent downwards somewhat and the true ray path extends beyond the simple geometric limit. This may be very simply taken into account by multiplying the earth's radius by factor k and using the modified radius in the formulae instead. Experimental results show the best value of k to be 1.333 for a so-called "standard atmosphere". With this in mind, the practical formula now becomes:

$$d = \sqrt{17h}$$

and the results for the more practical value of maximum range are given on the "radio range" scale on the nomogram.

As an example, if your receiving antenna is at 50m and the transmitting station 100m then, in the absence of intervening obstacles, the maximum radio range can be expected to be about 70km.



The Above Article Has Been Reproduced From Practical Wireless August 1983.
It shows just how far your signal can be expected to travel.

Lightning Strikes

by G.R. von Kronenberger

Last May four women playing golf at Mt Lawless Western Australia were thrown to the ground when lightening hit a tree near a putting green. Two suffered burns, one to the roof of her mouth one to her fingertips. The others escaped with a bad shaking.

The women golfers were lucky. A golf course or any open field is a bad place to be in a lightening storm. In September 1985 a 40 yr old farm worker was cutting clover near a irrigation channel outside Murrumbidgee southern New South Wales was killed by a bolt. He was one of 24 deaths caused in Australia that year by one of nature's most destructive acts of violence. During the same year lightening storms inflicted injuries on 75 Australians and causes millions of dollars in damage to property.

Much of this tragic loss could have been avoided through a proper understanding of this awesome electrical force and the practice of a few common sense safety rules.

Lightening is a electrical charge which flashes not from cloud to earth—as it sometimes appears—but from earth to cloud. When storm clouds gather the wild turbulence inside them results in separation of electrical charges. Usually negative charges accumulate in the lower part of the cloud, while positive charges build up in the earth and in the upper part of the cloud. Lightening occurs when this attraction between the opposite charges becomes strong enough to bridge this gap separating them.

an imperceptible stroke "leader" advances from the cloud step by step towards the ground establishing the path the stroke will take when it nears the ground a avalanche of charges rushes upwards through the conducting path neutralising positive and negative charges (or ions) this return stroke produces the brilliant flash and thunder clap. The leader will follow the path of least

resistance. It may seek out a tree a chimney, you—whatever offers the shortest gap and the best conductor.

Tremendously powerful lightening moves about 30,000 times faster than a bullet and may contain thousands of millions of volts and as much as 500,000 amps—millions of times as much as in your electric house current.

The intense heat generated When lightening strikes directly often causes all the sap in a tree to boil instantly and evaporate, in a chimney the violent explosion of the moisture in the bricks may blow them into a million pieces.

Although scientists have been unable to measure lightening precisely its approximate dimensions are known. The core of pure electrical energy in a average bolt is about one half to three quarters of an inch thick. It is surrounded by a 4 inch channel of super heated air. The length of a stroke may vary from 2,000 to 15,000 ft or more and since most lightening strokes are actually multiple, more

Than 40 strokes may occur in quick succession spaced up to half a second apart. Lightening bolts may be "hot" or "cold" or a combination of both. A hot one is a multiple stroke of long duration, perhaps as long as a second. It has high amperage and will set fire to flammable materials in its path. A cold strike is much faster and has an explosive rather than an igniting effect. A large bolt of cold lightening has enough explosive energy to lift a 50,000 tonne ocean liner 6 feet into the air.

The greatest numbers of lightening casualties, according to a recent study, occur outdoors, but one quarter occur in the home—mainly because that is where most people are during storms. Lightening strikes enter homes via chimneys antennas plumbing wiring or directly through the roof.

In one tragic case lightening hit a tree along side a suburban home, ran down the

trunk to a attached wire clothes line followed the line to a metal fitting that fastened it to the house and reached a television set that touched the wall of the house.

The young mother attempting to unplug the set was instantly killed. Her 5 y.o. Daughter sitting close by was temporarily paralysed. A chimney with attached TV antenna—the highest point of a house is the obvious target for lightening the average antenna is not grounded with a large enough conductor to offer lightening protection to the house. A charge striking it may jump down the chimney or find a better conductor on the way earthwards such as metal fixtures around the fireplace a metal heat or vent pipe. If this new conductor isn't grounded the charge leaps out to the nearest conductor and anyone in its path gets the full charge !!!!

It is wise therefore to stay away from walls, fireplaces, plumbing fixtures electrical equipment and metal objects such as stoves or tubs during a storm that is striking close.

Though the safest spot is generally the centre of a room see that this location does not place you between one conductor leading down from the roof and another leading down to the ground. A seat between a fireplace and a metallic heating or plumbing fixture for instance may turn out to be a "electric chair". Also since overhead telephone lines often are struck it is good practice to leave the telephone alone during a electrical storm. A properly designed and installed lightening-rod system is a useful safeguard. When lightening strikes a building thus protected the bolt thus intercepted by one of these rods then led into a heavy conducting cable which dissipates it harmlessly into the earth. The safest place to be during a electrical storm are in a building with continuous steel frame construction with the frame grounded, in a building equipped with proper lightening protection systems or in a closed car. **

If you are caught in the open, do not seek shelter under isolated trees or in small groves. Best is to find a cave, ravine or a ditch. Stay away from knolls, utility poles

and golf tees and give a wide berth to wire fences—their posts attract the charge and the wires make excellent conductors. Stay out of water and especially small boats rocky ground in the open seems to have a affinity for lightening and campers should avoid such sites when pitching a tent. Also groups of people in the open provide more attraction than individuals so scatter during a severe thunderstorm. When a storm strikes so close that the flash of lightening and the report of thunder are almost simultaneous and when the air is loaded with pungent smell of ozone it is time to carry precautions to the last degree. If you are in such a situation and feel your hair starting to stand on end than be getting set up as a lightening target. In such a circumstance toss dignity to the winds and lie flat. After all its better to be muddy than dead!!

** a car is safe because its continuous steel frame provides an easy channel directly to the ground and the stroke stays on the outside all the way down. Car windows should be closed.

Calling all amateurs

It's time to visit your local
Market in Wollongong if
you need

Meters
Antenna materials
Radio parts
Kit bits and pieces
Electronic Thingammys
True value for Money

Call and see Jack at

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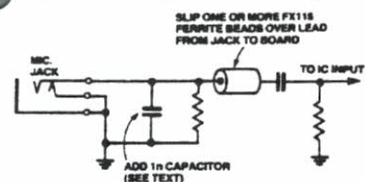
345 Keira Street
WOLLONGONG
Phone 4227 1620

note new address

Interference pickup on speaker leads may be cut by winding part of the lead, nearest the amplifier terminals, on a ferrite rod — available at many parts suppliers.

Public address amplifier systems may be prone to RF interference from a variety of sources — and the source may be unknown or hard to track down. Sometimes the source is well known but impossible to eliminate — a nearby AM broadcast transmitter, for example. CB or marine transceivers in the vicinity of a PA system are notorious sources of annoying intermittent interference. But it's not the fault of the 'offending' transmission; the characteristics of modern solid state devices are the major culprits.

A number of techniques can be employed to protect a PA amp from interference. As it will depend on the individual application, we leave it to the constructor how much, or how little, interference protection to incorporate.



Adding RF suppression to the low level inputs.

THE 'FRONT END'

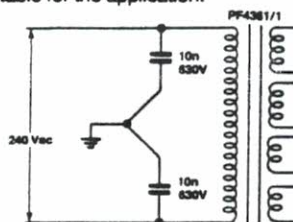
The low-level input stages are particularly prone to RF pick-up. There are two components you can add quite simply to protect each low-level input. Firstly, a ferrite bead, such as the commonly available FX115 type, can be slipped over the lead running between the jack socket and the pc board. Secondly, a 1n 'greencap' capacitor can be soldered directly across the input jack socket terminals. If the leads of this capacitor are cut to a length of 25 mm, the capacitor will have a broad series resonance around 27 MHz, greatly aiding suppression of CB and marine radio interference. These components may be added to both MIC 1 and MIC 2 inputs.

For the AUX input, a greencap with a value between 2n7 and 10n should be used.

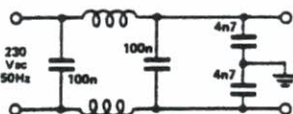
THE 'BACK END'

Long runs of loudspeaker cable have the annoying tendency to act as antennas. 'Choking off' the RF once it gets on a cable run can be problematical. One of the most effective methods is to wind that part of the cable nearest the amplifier speaker terminals

on a ferrite rod — such as is used for transistor radio loopstick antennas. This makes a very good broadband RF choke, but it *must* be installed as close to the amplifier output terminals as possible. There's nothing critical about it, but the ferrite rod should be at least 100 mm long, preferably longer. Ferrite rod in 200 mm lengths, 9.5 in diameter, is commonly available and quite suitable for the application.



Adding interference suppression on the mains input. The value of each capacitor may be anything between about 4n7 and 100n. They should be rated at 630 V or 1 kV.



Circuit of a mains input filter. The chokes should have an inductance between 5 mH and 50 mH and be capable of carrying up to 2 A. The capacitors may be greencaps or ceramic types rated at 630 V or 1 kV.

MAINS-BORNE INTERFERENCE

Apart from radio interference coupled into mains cables, light dimmers, motor controllers and switch contacts on mains equipment connected to the same line as the PA amp can cause a variety of clicks, pops and buzzes to be heard on the system. Proprietary mains filters can be obtained and often prove very effective. Alternatively, you can build a filter into the PA amp.

One of the simplest suppression methods is to connect a 10n/630 V greencap or ceramic capacitor from each side of the mains transformer primary to the chassis — at the same point. Three-pin mains plugs can be obtained with capacitors installed and may be quite effective. A 'pi' filter can be built up, as shown in the accompanying circuit, and installed in the amp's chassis.

So You want a Day Off....

There are 365 Days in the Year. You sleep 8 Hrs a Day (Some do) making 122 days. Subtract this from 365 and you get 243 Days.

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You also have 8 hrs per day for recreation so take away another 122 days, and that leaves a balance of 121 Days.

There are 52 Sundays that you do not work which leaves 69 days.

You get Saturday afternoons off, this gives 52 half days or 26 more days off. This leaves a balance of 43 days.

You get an hour off for lunch, which when totaled makes 16 days leaving 27 days off a year. You get 20 days leave a year so that leaves 7 days. You get 6 legal holidays a year which leaves only 1 day.

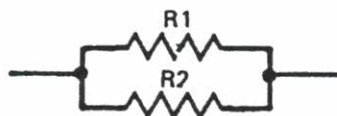
So what makes you think you'll get that off!!

Anon.

Handy Hints

This is a Little Chart That readers may find of some use to get that "Correct" Resistance Value

Resistors In Parallel



	10	12	15	18	22	27	33	39	47	56	68	100
10	5.00	5.45	6.00	6.43	6.88	7.30	7.67	7.96	8.25	8.48	8.72	9.09
12	5.45	6.00	4.00	7.20	7.76	8.31	8.80	9.18	9.56	9.88	10.20	10.71
15	6.00	6.67	7.50	8.18	8.92	9.64	10.31	10.83	11.37	11.83	12.29	13.04
18	6.43	7.20	4.50	9.00	9.90	10.80	11.65	12.32	13.02	13.62	14.23	15.25
22	6.88	7.76	8.92	9.90	11.00	12.12	13.20	14.07	14.99	15.79	16.62	18.03
27	7.30	8.31	4.91	10.80	12.12	13.50	14.85	15.95	17.15	18.22	19.33	21.26
33	7.67	8.80	10.31	11.65	13.20	14.85	16.50	17.88	19.39	20.76	22.22	24.81
39	7.96	9.18	5.20	12.32	14.07	15.95	17.88	19.50	21.31	22.99	24.79	28.06
47	8.25	9.56	11.37	13.02	14.99	17.15	19.39	21.31	23.50	25.55	27.79	31.97
56	8.48	9.88	5.42	13.62	15.79	18.22	20.76	22.99	25.55	28.00	30.71	35.90
68	8.72	10.20	12.29	14.23	16.62	19.33	22.22	24.79	27.79	30.71	34.00	40.48
82	8.91	10.47	5.59	14.76	17.35	20.31	23.53	26.43	29.88	33.28	37.17	45.05
100	9.09	10.71	13.04	15.25	18.03	21.26	24.81	28.06	31.97	35.90	40.48	50.00
120	9.23	10.91	5.71	15.65	18.59	22.04	25.88	29.43	33.77	38.18	43.40	54.55
150	9.38	11.11	13.64	16.07	19.19	22.88	27.05	30.95	35.79	40.78	46.79	60.00
180	9.47	11.25	5.81	16.36	19.60	23.48	27.89	32.05	37.27	42.71	49.35	64.29
220	9.57	11.38	14.04	16.64	20.00	24.05	28.70	33.13	38.73	44.64	51.94	68.75
270	9.64	11.49	5.87	16.88	20.34	24.55	29.41	34.08	40.03	46.38	54.32	72.97
330	9.71	11.58	14.35	17.07	20.63	24.96	30.00	34.88	41.14	47.88	56.38	76.74
390	9.75	11.64	5.91	17.21	20.83	25.25	30.43	35.45	41.95	48.97	57.90	79.59
470	9.79	11.70	14.54	17.34	21.02	25.53	30.83	36.01	42.73	50.04	59.41	82.46
560	9.82	11.75	5.94	17.44	21.17	25.76	31.16	36.46	43.36	50.91	60.64	84.85
680	9.86	11.79	14.68	17.54	21.31	25.97	31.47	36.88	43.96	51.74	61.82	87.18
820	9.88	11.83	5.96	17.61	21.43	26.14	31.72	37.23	44.45	52.42	62.79	89.13
1000	9.90	11.86	14.78	17.68	21.53	26.29	31.95	37.54	44.89	53.03	63.67	90.91

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SIMPLE ANTENNA TRAPS

The 100-odd foot trap dipole tuning five bands can be an attractive proposition, especially when the traps are simple (and cheap) to home-brew.

Most manuals show such traps to consist of an inductance wound over a transmitting-type fixed capacitor. To resonate, the turns of the inductance are wiggled and jiggled to adjust to the correct value. This adds up to a frustrating way to obtain an unsatisfactory result which proves mechanically unstable. But, with a little ingenuity, a superior product can be constructed easily.

The texts show that an inductance of 10.75uH with parallel capacitance of 47pF is an ideal combination. One or the other must be capable of adjustment to enable the trap to be resonated at the desired frequency in the 40-metre band, say 7075 kHz.

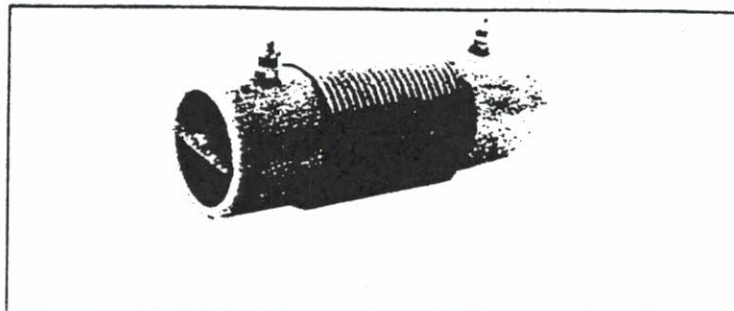
The inductance presents no problem, though to avoid losses it should be of high efficiency and low ohmic resistance, which means a conductor of not less than 16-gauge. Anything inferior to this is tantamount to a choke, an inappropriate insertion in any radiating system.

The wire in this case came from a discarded power cord, which yielded two 6-foot lengths of stout insulated wire, which would wind exactly 10 turns-per-inch. The conductors consisted of 26 strands of fine wire, equivalent in diameter to 16-gauge.

For the coil former an off-cut of plastic tubing was obtained. It was marked 40mm (1-9/16") outside diameter and measured 32mm (1 1/4") inside diameter.

20 turns close-wound to a total length of 2 inches gave an inductance measured at 10.8uH. As the coil former also becomes the supporting insulator, it was cut to 4 1/2" in length, to allow adequate tensile strength.

Now a capacitor is needed and has to be a small but good quality close-toler-



ance high-voltage item, nominally of 47pF, but capable of fine adjustment to permit precise setting of the desired frequency. Naturally, these will not be found at your friendly electronics store.

Happily, capacitors with these specifications prove easy to make. First consider the formula for capacitance of two plates separated by a dielectric with a constant "k".

$$pF = .224 \times \frac{\text{area} \times k}{\text{spacing}}$$

For suitable material, 1/16" copper-clad fibre-glass circuit board was considered: a peek into the text-books showed the dielectric constant of fibre-glass to be 5. Two pieces back-to-back? A quick calculation showed that a 1/8" thick capacitor so formed, and measuring 4 1/2" x 1 1/4", the exact internal measurement of the coil former, theoretically was 47.6pF (Aha! beat you this time, Murphy!).

Two small sheets cemented together and cut to size fitted snugly inside the former. A check on the capacitance bridge showed its value to be just on 47pF.

Loosely coupling a g.d.o. to the traps and taking a readout on the station receiver found both traps to be within a whisker of each other, but resonating at 7055 kHz, a trifle below that desired. A few strokes of a file at the ends of each capacitor quickly had both traps precisely on 7075 kHz. It would have been equally feasible to drill the copper sur-

face (only one would be necessary) with a fine bit.

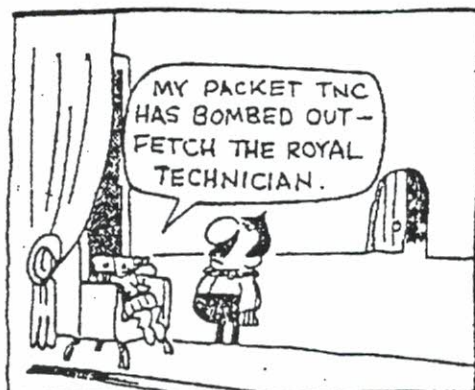
This method of adjustment is very precise: about one-twelfth of an inch in length of the capacitor represents 1 pF, so correction of the frequency to within a few cycles is easy. In all other respects the home-brew capacitor is ideal, being waterproof (and fireproof): neither is it subject to thermal change, due to the minimal thickness of the plates. The rupture voltage of fibre-glass is 500 volts/mil, giving the capacitor a breakdown rating of 60 kV.

The addition of fine threads and nuts for mounting (plated brass of course) completes the traps. Plastic discs cemented to the ends improve the appearance, and more importantly, prevent the noise of wind whistling through. Other finishing, such as coating with a sealant or plastic tape, is left to individual whim, but does not seem necessary.

Incidentally, for the coil former, pass over the soft grey PVC material in favour of the red-coloured compound. This latter is of higher density with better electrical qualities and greater mechanical strength. The permittivity of common PVC varies with frequency and losses tend to be high at 28 MHz, but in any event the carbon content of the grey compound renders it unsuitable.

Pruning of the antenna for optimum performance after installation will be needed as usual, but full details are available in the hand-books.

By Mervyn Unson VK4SO
GPO Box 1513
Brisbane 4001



WANTED!

The Local WICEN Group are in need of a Second Hand Ink Jet Printer For Use With Their Portable Packet Station. It Needs To Be Able to be run from either 12 or 9 Volts. If you have one that you may be interested in parting with contact VK2EZD on 02-42572289 or The Editor.

IMPORTANT!!!

The October Meeting. As stated elsewhere in the newsletter the October meeting will be held at Cataract Dam on Saturday the 7th Commencing At 10:00 AM. If the weather looks threatening then stay tuned to VK2RMP for a decision to be made re Cancelling the meeting. If this does occur the regular meeting will take place as usual on the Tuesday Night.

I Intend to in a upcoming issue to publish a Listing of Club Members and their call signs. This list will not include addresses or phone Numbers. If any member does not want their name to appear then please let me know. I can be contacted via VK2XGJ's BBS or via Mobile Phone On 0428-565-199.

Gunpowder.

A Man was trying to convince his son that if he wanted to live a long life the secret was to sprinkle a little gunpowder onto his corn flakes every morning. The son did this religiously and lived to the ripe old age of 93. When he finally died he left 14 children, 28 grandchildren, 35 Great grandchildren and a 15 foot hole in the wall of the crematorium!!!!

This was taken from the lyrebird. The official news letter of the mid south coast amateur radio club. Which took it from the paket system. Originally from Clinton AB7RG.

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