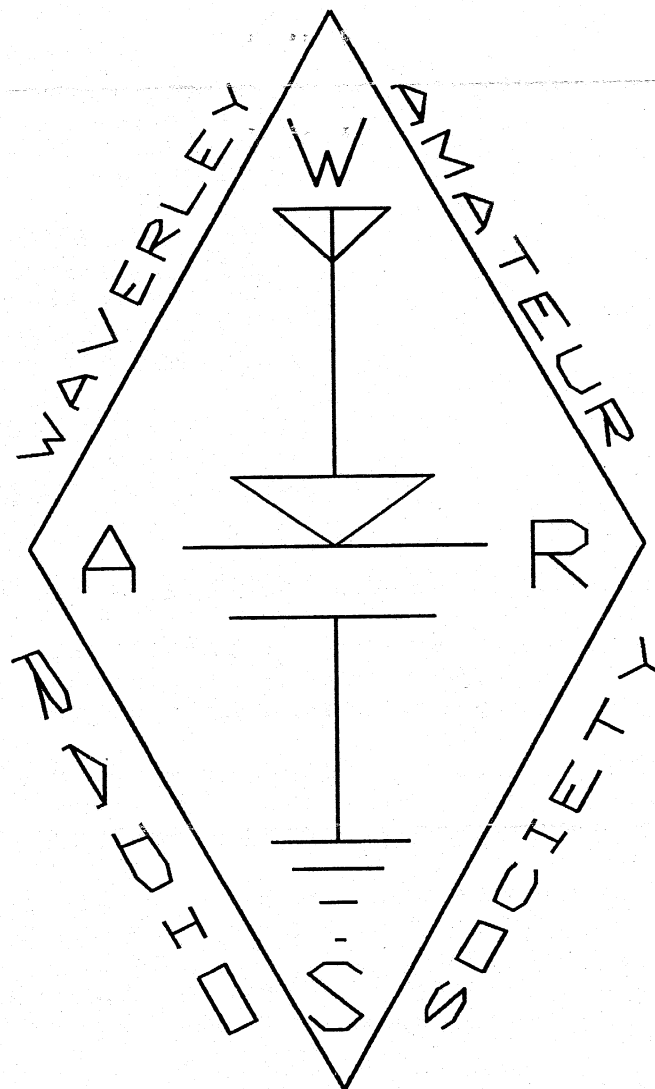


The WARS CORRESPONDENT



The Newsletter of the Waverley Amateur Radio Society

MARCH 1991

WAVERLEY AMATEUR RADIO SOCIETY

<u>PRESIDENT:</u> GEORGE Adams (VK2KEL)	328-7296
<u>VICE PRESIDENT:</u> STEVE Shore (VK2CSV)	389-9913
<u>SECRETARY:</u> ERIC van de Weyer (VK2KUR)	337-2909
<u>TREASURER:</u> BRETT Wilkinson (VK2XMU)	878-5186
<u>PUBLICITY OFFICER:</u> RICK Cummins (VK2KRF)	661-3816
<u>EDUCATION OFFICER:</u> ELLIS Horman (VK2KFL)	649-9518
<u>EDITOR/NEWSLETTER EXCHANGE</u>	Eric van de Weyer 337-2909 Brett Wilkinson 661-5457
<u>MEETING TIME</u>	8.00 PM - Second Monday of every month at the; 1st Edgecliff Scout Hall, Cooper Park Road, Bellevue Hill.
<u>NET TIMES</u>	Club nets are held each Tuesday evening commencing at 1930Hrs local time on the Paddington repeater on 147.025 (rpt up) followed at 2015Hrs on 28.505 USB on 10M.
<u>CORRESPONDENCE</u>	All correspondence for the club should be addressed to the club at PO Box 131 Watsons Bay 2030.

INFORMATION FOR PROSPECTIVE MEMBERS

The Waverley Amateur Radio Society is the oldest continually licensed radio club in Australia. The group was formed in 1919, and with the exception of the war years has been continually licensed ever since.

The society currently meets the second Monday of every month at the 1st Edgecliff Scout Hall, Cooper Park Road, Bellevue Hill. The meetings start at 8pm, with coffee being served afterwards.

Members and non-members are most welcome to attend whether an amateur or not. Every month we have a guest lecturer, lecturing on such topics as commercial radio, power supplies, packet radio, or any topic of general interest. The topics for these lectures are announced both here in this Newsletter and on the weekly WIA broadcast the two weeks proceeding a meeting.

Also members and other interested parties get to go on interesting excursions. In the past these have included the Pitt St Telephone Exchange where we were given a guided tour and learned many things including how malicious calls are traced. Also we have visited the Sydney Observatory, OTC and many other places.

If you require more information please contact any of the members listed above as we will only be too happy to help you.

Editors Note

Well it's finally here. Thanks to some editorial problems, the fact that your's truly has got himself engaged (Yes I am really getting hitched) and some heavy WICEN activity, it's only about 5 months late (hence the amount of minutes).

With any luck things will be getting back to a regular routine, so please send me in any articles or materials for inclusion. Publication dates will be approximately the third week every second month, the months being February, April, June, August, October and December. Any material for inclusion should reach the mail box no later than the last working day of the month preceding publication. Late articles will only be accepted if they are deemed urgent.

Well now for the newsletter.

Brett Wilkinson
Editor.

P.S

Hope that you had a Happy Christmas and a very Happy New Year.

OTHER EDITOR'S REPORT

Hi there everyone.

Well, here it is at last, and it's only MARCH 1991!

Oh Well, things have been rather hectic around home for the last few months. I have had to totally clear out the shack for the renovations to start. All is now well under way and progressing very well. The mods out the back are about 70 percent finished and they are now working on the inside parts of the house. Everything is a mess at the moment and is likely to remain so for the next month or two but after that I will be able to start getting things reorganised.

As Brett mentioned in his article, above, we are always after articles of interest for the newsletter so if you have anything suitable, please put pen to paper and let us have it.

I would also like to thank Richard VK2XRC for his "secretarial" services. It is most appreciated and makes my work much easier. What happens now is that George makes brief notes at the meeting and then, when he gets home, dictates the minutes onto a memo tape. This tape is then delivered to Richard, whose secretary then types it. From there it goes onto Packet Radio over to me so up until the time you see it in print it has been all handled electronically. Progress toward the Electronic Office using modern Amateur Radio techniques to the full.

Oh well, I've probably bored you all silly now, so I'll leave off now till next issue.

73 from Eric van de Weyer VK2KUR
Secretary.

Minutes of the Meeting held 9 JULY 1990.

1. The Meeting opened at 2010. Brett VK2XMU in the chair.
2. Present were those listed on page 47 of the attendance book.
3. Apologies were received from the following:

George	VK2KEL
Steve	VK2CSV
Andrew	VK2MGX
Ricardo	VK2IOU
Patriko	VK2ECE
Joe Condon	
Subramani	VK2GDR
Richard	VK2XRC
Jim	VK2JIM
Chris Nuw	
Greville	VK2FEI
Gerard	VK2XEA

4. The minutes of the previous meeting were taken as read and accepted by the meeting.

5. Matters arising from the minutes:

Due to the implications of the club not yet being incorporated, it was proposed by Wayne VK2XPL that the club cease all activities until such time that the club is incorporated. Seconded by Rick VK2KRF. Carried.

It was moved by Rick VK2KRF that Eric VK2KUR be nominated as the public officer for incorporation. Seconded by Duane VK2VE. Carried.

6. Correspondence inwards:

Letter from Mrs Oneil regarding the disposal of gear from her late husband, VK2NT.

Received copies of AMSAT and DRAGNET.

7. Correspondence outwards:

8. General Business:

We were asked by Gerard to help with the Cycle Classic, but due to other commitments around the same time, it was proposed by Brett VK2XMU and seconded by Eric VK2KUR that Gerard is to organize the event otherwise the club will can not partake in the activity.

The club accepted Bob Bunton as a new member

Ellis VK2KFL reported that the classes were going very well and that of those who attempted a sample exam did very well considering that the course is still in its early days.

Brett VK2XMU reported on JOTA. WE STILL NEED MORE VOLUNTEERS. Bear in mind that the scouts that we are to support in JOTA are the same ones that allow us the use of their hall. So it is in the interest of ALL club members to help out in this yearly event.

Brett also reported on the progress of the City to Surf event and once

again, WE NEED MORE VOLUNTEERS. Where ARE all our club members ?

On the 21st of August, our club celebrates its 70th anniversary. Duane is going to write a historical prose for the WIA broadcast, and we are also going to try to arrange an interview with our founder, Gordon Thompson, VK2AVT.

9. The meeting closed at: 2112.

Minutes of the Meeting held 13 August 1990.

1. The Meeting opened at 2025. George VK2KEL in the chair.
2. Present were those listed on page 48 of the attendance book.
3. Apologies were received from the following:

Wayne	VK2XPL
Phil	VK2YPW
Bob Bunton	
Chris Nuw	
Andrew	VK2MGX
Daryl Brojezevic	
Richard	VK2XRC
Greville	VK2FEI
Steve	VK2CSV

4. The minutes of the previous meeting were taken as read and accepted by the meeting.
5. Matters arising from the minutes:
The incorporation was accepted at the special general meeting held prior to this meeting.
6. Correspondence inwards:
An anonymous cheque was received as a donation to the club.
7. Correspondence outwards:
Club callsign renewed.
8. General Business:
The treasurers report was unavailable due to the City To Surf.
Rick VK2KRF thanked Joe VK2XTQ for the assistance he gave in regards to the teaching facilities provided for our AOCF theory course.
Rick also thanked Chris Nuw for finding a new location for our courses, and the club thanks Jochen for the generous donation of a computer system.
Brett VK2XMU reported on WICEN and the City To Surf and thanked everyone for their assistance.
A short discussion took place to resolve the overcrowding problem that exists in the club's operating room. A cleanup is being considered for the near future.
9. The meeting closed at 2102hrs after much talk about the male being not needed in the future.

Minutes of Special Meeting held 13 August 1989.

1. The Meeting opened at 2000. George VK2KEL in the chair.
2. Present were those listed on page 48 of the attendance book.

3. Apologies were received from the following:

Wayne	VK2XPL
Phil	VK2YPW
Bob Bunton	
Chris Nuw	
Andrew	VK2MGX
Daryl Brojezevic	
Richard	VK2XRC
Greville	VK2FEI
Steve	VK2CSV

4. This meeting is the special general meeting called for in writing, notice of which was sent to all members of the society three weeks ago outlining the proposals to be put forward as well as enclosing a copy of the model rules and the aims of the society.

The purpose of this meeting is to take the action required for the incorporation of the club.

George explained the reasons behind the incorporation, as well as the three proposals that are to be put forward.

The First proposal, on the aims of the club was put forward. Brett VK2XMU moved and Rick VK2KRF seconded that the aims of the club as proposed be accepted.

Vote unanimous.

The second proposal, that we adopt the model rules of the incorporation of associations as put forward by the Corporate Affairs Commission be accepted as is. Moved by Rick VK2KRF, seconded by Ellis VK2KFL.

Vote unanimous.

The third proposal to nominate Eric VK2KUR as the public officer of the club was moved by Brett VK2XMU and seconded by Rick VK2KRF. As no other nominations were forthcoming Eric was duly elected.

It was moved by VK2KFL and seconded by VK2XMU that Eric take the necessary steps to complete the incorporation at the earliest possible date.

Vote unanimous.

The meeting closed at 2023 hrs.

Minutes of the Meeting held on Monday 8th October, 1990

1. The meeting opened at 8.05pm Mr. George Adams in the chair.
2. Present were those listed on page 50 of the attendance book.

3. Apologies were received from the following:

John Mathews	John Churchill
Albert Sullivan	Ian Haynes
Malcolm Hollroy	Paul Winter
Phillip Wright	VK2YPW

Wayne Brack VK2XPL
Andrew Castle VK2MGX

4. The minutes of the previous meeting were taken as read and accepted by the meeting.

5. Matters arising from the Minutes: Nil

6. Correspondence inwards: Letter from member Wayne Brack VK2XBL advising resignation of membership and committee position to take effect from Monday, 8th October, 1990.

Comments by the speaker (George Adams) as to the distance for Wayne Brack to travel and appreciation as to the courage and conviction of same and acceptance of resignation with regret.

Proposed that a letter of acceptance of resignation with regret be forwarded to Wayne Brack thanking for his input and efforts to date.

Seconded by Rick Cummins.

7. Moved by Richard that the Insurance for the club should be processed for the amount of \$133.38

8. Seconded by Rick.

9. No word received from Corporate Affairs as to the Name: Waverley Amateur Radio Society Incorporated. Cheque has been cashed by Corporate Affairs.

10. Treasurers Report: Expenditure of \$133.38 Insurance. Before this transaction we were financial to the sum of \$405. Other regular bills will be incoming shortly. Magnetic first aid posters are available if interested. Stocks can be obtained.

11. General Business: WICEN is still growing, at present has 130 Financial members. Next meeting will be on 18th October, 1990.

12. J.O.T.A Scout movement travelling by train to Blue Mountains. Call for a small truck or van to assist Brett in carrying gear up to Blue Mountains. Leaving 20/10/90

13. Eric Van De Weyer wishes to relinquish his duties as Secretary, Correspondence and Minutes Secretary. He shall retain his capacity of Public Officer and Membership Secretary.

W.A.R.S. require a person to take on Correspondence incoming and Minutes for meetings etc.

Richard Cortis offers secretarial assistance.

Tape of meeting to be taken.

Rick Cummins to condense tape and arrange in minutes form for typing.

Speaker nominates that Richard and Ricks offer be accepted.

This will be put forward at the next meeting as a nomination.

14. Discussion on newsletter.

Richard also offers to supply typing assistance for newsletter.

15. Discussion on preparation of exams.
16. Discussion was held in regard to DOTC 71 & 72 being available on electronic media via the DOTC bulletin board.
17. Discussions on the state of the club room. This will be cleaned out and surplus equipment made available to members.

Meeting closed at 8.52PM.

Minutes of Meeting held 12th November, 1990

1. The meeting opened at 2025 hours. George VK2KEL in the chair
2. Present were those listed on page 51 of the attendance book.
3. Apologies were received from the following:-

Richard	VK2XRC
Jim	VK2JIM
Andrew	VK2MGX
Steve	VK2CSV
Subramani	VK2GDR
Peter	VK2PV
Brett	VK2XMU

Visitors in attendance were Warren Solomon and Tracy Dignum.

4. The minutes of the previous meeting were taken as read and accepted by the meeting. There were no matters arising.
5. Correspondence inwards.
 - (A) Amsat Newsletter
 - (b) Department of Communications advised changes were required to the exam as submitted. These will be returned by Eric VK2KUR week ending 16/11/90.
6. Correspondence Outwards. A letter sent to Wayne Brack acknowledging his resignation and thanking him for his services to the society.
7. Treasurers report. Not tabled due to Brett VK2XMU being absent.
8. General Business.
 - (a) Club dinner to be held on 28th November, 1990 at the Seals Club, Maroubra starting at 1930. Numbers to Rick VK2KRF.
 - (b) Leo VK2AC reported that he had visited Lee VK2AXK in hospital and found him to be in good spirits with amateur radio being excellent therapy.
 - (c) Course now finished and Rick VK2KRF asked that the course teachers be formally thanked for their assistance.
 - (d) Members were asked to assist in the clean up of the club room with any member to take any item they may find of value but to first clear this with Eric VK2KUR or Ellis VK2KFL.

- (e) Warren Solomon from the Multiple Sclerosis Society addressed the meeting to seek assistance with the Sydney to Wollongong bike ride on Sunday, 25th November, 1990. Amateurs are required for the event. He apologised for the short notice but we expect two or three licensed amateurs to be able to take part.
- (f) Leo VK2AC made comment re JOTA and suggested that training is required by the Scouts prior to the event. The matter is to be discussed at our February meeting to plan for the event for 1991 which is always held in October.

9. The meeting closed at 2052 with the next meeting to be held on 10th December, 1990.

Minutes of the Meeting held 14 January 1991.

- 1. The Meeting opened at 2020. Eric VK2KUR in the chair.
- 2. Present was Eric van de Weyer VK2KUR.
- 3. Apologies were received from the following:

George	VK2KEL
Richard	VK2XRC
Greville	VK2FEI
- 4. It was decided unanimously to adjourn the meeting to Eric's place
- 5. Meeting closed 2020.

MARITIME MOBILE AMATEUR ANTENNA SYSTEMS.

Many amateurs dream of setting themselves up in a yacht and sailing off carefree over the horizon to glorious unknown places. However, most fail in this pursuit because the extent and cost of preparation is far too great for most. Other plans for expeditions founder for many diverse reasons. However, we shall not dwell upon these for the time being, rather we shall discuss the problems associated with setting up a viable amateur radio station aboard a sailing yacht. Quite different criteria apply to motor boats.

Aboard a sailing boat the primary criterion must be the seaworthiness of the vessel and the function of the sails and the rigging. Any secondary aims including amateur radio must be fitted in around the hull and rigging and shall cause only a minimum disruption to the day to day operation of the vessel. Directional antennas are simply not on.

Medium frequency and high frequency marine radios have been installed in sailing yachts for many years. The international distress and calling frequency is 2182 kHz. Supplementary distress and calling frequencies are 4125 kHz and 6215.5 kHz. Marine working frequencies in the 2 MHz 4 MHz and 6 MHz bands are not harmonically related. The yacht racing frequency is 44 83 kHz. Yacht to yacht communications is on 25 24 kHz. Further marine distress, calling and working frequencies exist up to about 22 MHz. Two separate antenna systems for MF/HF operation exist.

Firstly, the back stay of the vessel can have insulators inserted into it and can then be used as an antenna. The back stay is the wire from the stern of the vessel to the top of the mast which stops the mast falling over frontwards. The availability of wire lengths in the back stay makes this system ideally suited in the operation of the 2 MHz band as it is possible to approximate a quarter wave length from the connection to the keel bolt to the upper insulator in the back stay. Operation on the 4 MHz band can be accommodated by the use of a broad band tuner device. At this stage, we must advise that the primary function of the back stay is to hold the mast up. It is not possible to remove the back stay whilst at sea and replace it with a back stay with an insulator in a different location just to suit the needs of the radio operator. Accordingly, the antenna tuner must be able to accommodate the various harmonically unrelated and spread out spot frequencies. Should one wish to operate amateur radio using the back stay, one must first disconnect the marine HF radio and re-connect the amateur device. Most amateur tuners will not tune the random length of wire of the back stay so the marine tuner should be used. For safety reasons, the marine radio should only be disconnected for brief periods when operating amateur gear.

At this stage, a few words should be said about the antenna system itself. Generally the system operates as a ground plane type antenna. The conductive salty sea water acts as the ground plane. It is normal to connect the bottom end of the antenna to the sea using either the metal keel of the yacht, the rudder of the yacht or a dedicated "dynaplate". A lead from the dynaplate or keel bolt is attached to the earth connection of the antenna tuner. A lead from the antenna tuner is taken from the tuner to the back stay. This system is satisfactory for the lower HF amateur band frequencies of 80 metres and 40 metres. At frequencies above 6 or 7 megahertz, other factors come into play. Firstly, the insulator in the top end of the back stay has a tendency to have a specific capacitance. At higher frequencies, this capacitor at the top end of the antenna will have the effect of appearing to be a short circuit. It is therefore inadvisable to use a standard back stay insulator in an antenna intended for use above 6 or 7 megahertz. The problem can be overcome by the use of a pair of insulators in series.

However, this proposal is both expensive and inconvenient to install. At this stage, we also note that the length of the antenna, measured from the keel bolt to the capacitor at the top of the back stay, is starting to get a little bit long to produce a satisfactory horizontal type radiation pattern.

At the higher HF frequencies, it is necessary to begin to work with a shorter stern rail mounted whip antennas. With whip antennas, the horizontal section of the antenna from the tuner to the keel bolt begins to play a significant part in the operation. We must remember that all parts of the antenna above the ground plane tend to radiate and the highest current exists close to the ground plane. Accordingly, we do not wish to radiate the greatest amount of energy somewhere down about half a metre or so below sea level. Accordingly, it is necessary to reduce as far as possible the length of the earth connection from the antenna tuner to the "dynaplate" or earth connection. Of course, the other side of the compromise coin is that a dynaplate placed too far aft in a modern yacht may be out of the water for a significant proportion of the time.

Dynaplate type connections to other than dedicated dynaplates and keel bolts are somewhat difficult. Attempts to connect to the sea via the propeller shaft are doomed to failure because of the need for the propeller shaft to rotate from time to time. In some yachts, there is a propeller shaft support skeg close to the propeller towards the stern of the yacht. This can be used to advantage at the higher frequencies. However, structural considerations in the skeg frequently mean that the connecting bolts are glassed over. You may also find that there are frequently poor connections between the bolts supporting the skeg and the skeg itself because of the extent of vibration movement induced by the propeller. Basically, you regularly end up with loose bolts supporting a propeller skeg and you cant depend on the electrical connection between the skeg bolt and the skeg. The head of a bolt is not a very effective connection as it does not have the area to carry the necessary current. In addition, connections to metal rudders also suffer from the need of the rudder shaft to move. However, in yachts where a metal plate rudder has been constructed, some installations have proved satisfactory.

To make a higher frequency operation work suitably, the wire antenna path from the dynaplate connection to the sea must be as straight and vertical as possible. This means that the antenna tuner should be located close to the dynaplate and that the wire from the tuner should run as vertically as possible to the back stay or whip. In addition, the cable path must stay away from other wiring in the ship. It is not unusual for the navigation lights to flash in time with the modulation from a ships HF radio. Attempts to reduce this effect regularly end in despair.

Attempts to install radio antennas in steel or metal hulled vessels require special attention.

The installation of VHF and UHF antennas on sailing yachts is a problem. The ideal antenna location is at the mast head where the antenna must compete for location with the wind speed and direction instruments as well as the mast head lights. The cable inside the mast must compete for space with the various sail halyards. It is also necessary to secure the cable inside the mast by some means to prevent it flapping and making a noise while the yacht is at anchor. Nothing is worse than trying to sleep on a boat gently rocking when the antenna cable inside the mast goes "crash, crash, crash", back and forth inside the mast as the boat rocks at its mooring.

Most amateurs would recommend a high gain antenna for mobile operation.

However, sailing yachts have a major problem. The heel over. It has been found that 5/8 wave antennas operate beautifully at moorings and whilst under power. However, as soon as you start to sail the boat, the radiation pattern goes straight up into space and down into the sea. The most satisfactory compromise has been found to be the old quarter wave antenna.

It is difficult to locate an antenna at the mast head as it is usual for the ship's VHF antenna to be located there and interference on that radio cannot be tolerated from an insignificant service such as amateur radio. Accordingly, most amateur VHF antennas end up located on the stern rail where the stainless steel handrail around the stern of the boat forms the ground plane. This arrangement tends to work quite well provided satisfactory waterproofing details are provided. Remember that large quantities of nasty wet salty sea water end up on the exposed connections and waterproofing is of paramount importance. Denso mastic material, although reputedly glossy, has proved successful in some installations.

For VHF SSB operation on 70cm and 2 metre, halos and turnstiles are possible but take up a lot of room and are also inappropriate to masthead mounting. The thought of a 6 metre turnstile is just too awesome to contemplate.

We wish you good sailing and satisfactory maritime mobile operation.

73

RICHARD CORTIS
VK2XRC/MM

WICEN REPORT

Well its time to put on my other hat, and become your Local WICEN Co-ordinator. During the past few months, WICEN has been involved in a number of interesting and varied activities.

We're now starting a new era in our role as a secondary communication body. Due to the major reorganisation of the Emergency Services in NSW it is more important than ever, that WICEN project a more professional image. Gone are the days when WICEN have been 'just a group of people having fun', we are now recognised as a professional accredited emergency team.

Due to the changing role of WICEN I would like to encourage all of you who are members and even those who are not members to attend as many exercises and/or weekly nets as possible.

If you require any further information, write to PO Box 123, St Leonards NSW 2065.

BRETT WILKINSON (VK2XMU)
SYDNEY EAST CO-ORDINATOR
VICE PRESIDENT

PRE AMPS AND HOW TO USE THEM

The old adage in Amateur Radio is " If you cant hear them then you cant work them". This applies particularly to Satellite Communications when you are trying to copy a low power signal coming from up to 36,000 Km in space.

The key is to have the best possible Signal to Noise Ratio in your receiving system. You will note that I have used the word "system" because your antenna, coax and connectors, receiver and Pre Amp are all significant parts of a "system". The way you arrange these has a great bearing on the results you obtain.

In this article I will describe how the use and placement of a Pre Amplifier will let you resolve signals you may otherwise not hear.

For the purposes of this discussion let us assume that your Antenna has 10 dB gain (6 elements will give you 10.2 dB) and that your receiver has a 3 dB Signal to Noise Ratio. The choice of Transmission line is very important and the list below gives losses per 100ft of the better types of line. Note that no mention of RG58 is made as it is just not on for VHF/UHF weak signal work.

Loss in dB	CABLE TYPE				
Per 100ft	RG8x	RG213	9913	1/2" Heliax	
@ 150MHz	3.5dB	2.3dB	1.5dB	0.9dB	
@ 450MHz	6.8dB	5.2dB	2.7dB	1.5dB	

For this exercise we will assume a line and connector loss of 2dB. For a signal to reach the operator's ears without a Pre Amp and the assumptions we have made above then our system will have a Noise Figure of 5dB. By adding a good quality GaAsFeT Pre Amp with a gain of 20dB and Noise Figure of 0.5dB to our system the Noise Figure will drop to 2.5dB which is a great improvement, but we can do a lot better by re-arranging the same parts of the system. Placing the Pre Amp right at the Antenna and before the Coax, our Noise Figure becomes that of our Pre Amp, 0.5dB, which is a huge improvement and certainly the best place to mount a Pre Amp.

Your question, of course, is what difference does the operator notice in the received signal? With a 0.5dB S/N Ratio the input signal can drop by a factor three compared to the 5dB system and the operator would not notice the difference in signal quality - you can thus copy very weak signals.

The inclusion of a good Low Noise Figure Pre Amp at the antenna and the use of good quality cable (and connectors) is the key to a good receiving system.

For the purpose of this article, I have rounded the maths and not included the formulae involved. If you wish to delve into this aspect of it I can give you the appropriate references.

Good Listening.
George VK2KEL.

WARS CORRESPONDENT



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