

THE WIRELESS INSTITUTE — OF AUSTRALIA —

TASMANIAN DIVISION

BOX 851 J, G.P.O., HOBART

JUNE 1963

MONTHLY BULLETIN

PRICE 6d

PRESIDENT

Mr. T. Allen
VK7AL

TREASURER

Mr. C. Harrisson
VK7CH

SECRETARY

Mr. K. Spiegel
VK7KS

Registered at G.P.O., Hobart, for transmission by post as a periodical.

EDITORIAL. by VK7AL

At the recent Federal Convention it was decided to implement plans for the next I. T. U. Conference. As you know the late John Moyle was our delegate at the last I. T. U. Conference in Geneva and the raising of finance and the briefing of our delegate was a very rushed affair. This was neither fair to our delegate nor our cause.

To obviate this rush it was unanimously decided at the Convention to commence preparation of the brief immediately and to have raised by Easter 1965 an amount of £3,500, the money collected to be held by Federal Executive in a special I. T. U. Fund.

Divisions have been allocated minimum contributions as follows: VK2 £1,300. VK3 £800. VK4 £425. VK5 £550. VK6 £225. VK7 £200.

This means that if we are to hold our bands we will have to raise the equivalent of £1 per annum for each licensee for the next two years to fill our minimum contribution.

We would welcome contributions from all licensees and other members and also non members, and will be happy to receive any amount in yearly, half yearly, quarterly or even monthly instalments if you wish, as long as we get the finance to complete our obligation.

Fellow members, you are requested to give full support to this matter, to be wholeheartedly behind your Federal Executive and help to fully suscribe our total early. Thanks in anticipation.

SUBSCRIPTIONS

Unfortunately a number of members have still failed to renew their subscriptions, and as a final reminder the amount owing by you is shown below. If not received by June 5th your name will be removed from the "Amateur Radio" circulation list.

XXXXXXXXXXXXXXXXXXXXX
X
X
X
X
XXXXXXXXXXXXXXXXXXXXX

If no amount appears you are financial to 28/2/64.

GENERAL MEETING

The next monthly meeting of the Division will be held in the Club Room, 147 Liverpool Street, Hobart, on WEDNESDAY, 5th June 1963 at 2000 hours.

Col. C. J. Geard, Director of Civil Defence Tasmania, has kindly agreed to come along and give us a talk on "Civil Defence Organisation". As this is an organisation in which we will play an important part, a good roll up of members is expected, and of course we will be very pleased to see any visitors.

NORTH WESTERN ZONE.

The next meeting will be held on TUESDAY, 4th June at Lakin's Hall, Ulverstone at 2000 hours

NORTHERN ZONE.

The next meeting will be held at 102 Charles Street, Launceston, on FRIDAY 14th June at 1945 hours.

COUNCIL MEETING.

The next Council Meeting will be held in the Club Room on MONDAY, 17th. June at 1930 hours.

SILENT KEY.

We record with sorrow the sudden death on 9th May of Geoff Aschman VK7GA. Although Geoff had not been on the air much of late, he was previously very active mainly on 28 mc/s, and although unable to attend many meetings recently he took a keen interest in Institute affairs. He was President of the Division in 1957. To Mrs. Aschman and her family we extend our deepest sympathy.

V.H.F. NOTES by VK7ZAV

Well readers, this is your new VHF notes scribe. First of all I would like to appeal to all VHF enthusiasts for information both for these notes and for "Amateur Radio". The address for such information is now M. L. Jenner, P.O. Box 14, New Norfolk.

Band Activity. 50 mc/s. Stations active on this band in the South at the moment are VK7s' ZAX, ZAQ, ZAO and ZAV. Brian ZAZ is heard occasionally at week ends when home from Huonville. David, ZAI, is on this band on odd occasions, usually to supply or gain information from someone. I don't know what we would do without him. Allan, MY, and Geoff, ZAS, are active on Sunday mornings. Allan of course, with the relay of the VK7WI news. The winter DX season is due any time now and should draw a few more to this band, for a short period anyway. 144 mc/s. The story is a little different on this band, especially in the North of the Island. In the South all those mentioned for 50 mc/s and a few more are quite active. The extras include Barney, ZAK, and Winston, ZAP, whom, I believe, has been heard in Launceston from his home QTH in Sandy Bay by Len BQ. Others now and then heard are Neville, ZEE, John, ZOO, Danny, ZDM, and Rick, ZAT. David, ZAI, is nearly always engaged in experiments of some form or another, and finds 144 ideal for this form of work. Phillip, ZAX, is about to erect a 50 foot mast with a 10 element Yagi on top and should put out a very nice signal with his 25 watts.

Most active stations in the South are equipped for mobile operation in some form or another, perhaps the most consistent of these being Mike, ZAV. That is when he can scrounge a power supply. The last one he borrowed blew up at a very inopportune moment. Before the power supply blew up however, it was put to good use on Sunday 28/4/63. This was the occasion of an expedition to Mt. Wellington by the "Voice" to attempt contact with David and Rick who were at the time stationed on Flinders Island, the distance being approximately 208 miles. Heavy cloud right throughout the path and rain at both ends did not improve signals but reports of 5/7 were exchanged.

The last meeting of the VHF Section was held on the 15th May. This was the annual meeting and the following were elected for the coming year:

President	Mr. E. Beard VK7EB
Vice President	Mr. B. Watson. VK7ZAK.
Secretary.	Miss Anne Landers.
Broadcast Officer.	Mr. P. Corby. VK7ZAX
Assistant Broadcast Officer.	Mr. D. Thorne VK7ZAI
Correspondent.	Mr. M. Jenner. VK7ZAV.
Activities and Lecture Committee.	Messrs. D. McDonald VK7ZDM. W. Emmett VK7ZAO. Mr. M. Jenner VK7ZAV.
Research Officer.	Mr. G. D'Emden. VK7ZAV.

A partly built 6 mx crystal locked converter has been donated to the group by Barney, ZAK, and this is to be completed by Reg and Wilf, ZAO and ZAQ. The converter will remain the property of the VHF Group and will be lent to H.F. Broadcast Officers for the purpose of relaying the VHF Group notes on Sundays. 144.1 mc/s. There was much discussion about this frequency and the following standards have been decided on. A tolerance of 35 cycles per megacycle giving plus or minus 2.5 kc at 144.1 is the figure arrived at. We are not laying down the law but if you want to be heard on this frequency this is the greatest deviation from centre that will give a reasonable BFO note on most of the communication systems in use at the moment.

V.H.F. NOTES (Continued)

Oscar. As most of you probably already know the Ws' are putting up another amateur satellite shortly. This will be capable of retransmitting signals received over a bandwidth of 50 kc centering on 144.1. The retransmitted signals will appear over a bandwidth of 50 kc centering on 145.9. There will also be a beacon on 145.85.

COUNCIL REPORT by VK7EB

The May meeting of Council was held on Monday 20th May when all members were present except VK7ZZ who was absent due to a bad attack of flu. Business was quite extensive, and, briefly consisted of the following items: Applications for Membership. Inwards and Outwards Correspondence. Accounts - Passing for Payment. Subsidy to Zones. Unfinancial Members (Those concerned will receive personal notification in this Bulletin). Youth Radio Scheme - Progress Report by VK7EB. Federal Business - Report on Federal Convention and results of voting on agenda items.

The financial status of the Northern and North Western Zones was discussed and it was moved by VK7CH that a subsidy of £5- 5s/- be paid to each Zone - seconded by VK7CT. In regards to the Convention report I suggest that if there is any particular agenda item you are interested in, please let your Federal Councillor know, and I'm sure he will supply the information you require.

To finalise, further to my suggestion re "growls" as mentioned in last month's Bulletin. If you have one contact one of your Councillors, by letter or in person. Council was elected by you to act in your interest. Don't heckle from the Stalls! Come up on the stage and speak up - if you have the strength of your convictions. Strong words I know, but who knows, I may receive some mail soon. The address is 148 Derwent Avenue, Lindisfarne.

CLUB ROOM FUND.

Jack Milne VK7AG has donated the following gear to be disposed of in aid of the Club Room funds and it will go to the highest bidders. Offers to reach the Secretary by June 17th. Remember all proceeds go to the Club Room Fund so make a reasonable offer if you are interested:

Item 1. Vibrator power supply in case. 6v input. 228v. output tapped 150v, and 95v. Bias 18v and 6v, about 100 ma. Spare vibrator.

Item 2. Genemotor. 12v. input 470v output 90 ma, includes 3 voltage regulators and meter.

These can be inspected at the next meeting.

NEW MEMBERS

We welcome back into the ranks two old timers in Crosby Walch VK7CW and Roy Drake, who were both active in Institute affairs some 30 years ago. We also welcome new Associate Members Ian Filby, F. Richelme, I. L. Eadie and I. M. Campbell.

STRAYS.

VK2QL reports in the N.S.W. Divisional Bulletin that if you worked APLRIL or CLOWN (among others) on April 1st. it's not much good looking for a QSL hi.!!

Hear that Ted Byrne VK7ZBB has been successful in getting his AOCP. Congratulations Ted and hope to hear you on before long.

Our thanks to Keith Johnston VK7RX for his assistance in bringing back more disposals gear from Sydney.

RECEIPTS.

Receipts are on hand for: 780. VK7RT. 782 VK7CL. 781 VK7JO. 783/4 Miss A. Landers. 779 O.C. Winter. 788 G. J. Howard. 789 L.C. Morrell. 790 A. I. Bedelph. 791 H. J. Hiscutt.

THIS MONTH'S REMINDERS

TUESDAY, 4th. June.	North Western Zone Meeting, Lakin's Hall.
WEDNESDAY, 5th. June	General Meeting. Club Room.
FRIDAY. 14th. June	Northern Zone Meeting. 102 Charles St.
MONDAY, 17th. June	Council Meeting. Club Room.
	Applications for Disposals to be in.
WEDNESDAY, 19th. June	V.H.F. Group Meeting. Club Room.

TECHNICAL by D. Thorne VK7ZAI

What is a High Gain Receiver?

We might think at first that the more gain the better, but it is interesting to note that it is possible to have too much gain in a receiver. The question naturally arises as to how much gain is actually needed.

We might decide that we would like to be able to hear a 1 microvolt signal as the weakest signal that need be heard. Most second detectors operate best when the signal level at the detector is in the order of 1 to 10 volts. This means the gain must be sufficient to raise the 1 microvolt signal to roughly two volts which is 126 db. We might then decide we would like to be able to listen to some of that DX that is putting in only 0.1 microvolt signal. It would seem logical that all that is necessary is to increase the gain ten times (20db) to do this. However, there is one factor that must be considered in such a calculation. The first tuned circuit in a receiver has in it a certain level of thermal noise and this noise level determines the lowest signal level that can be heard. Or, saying it the other way round, we do not need any more gain in a receiver than that necessary to hear the first tuned circuit noise and actually we will use less than this gain most of the time.

A means which will give an idea of the magnitude of the thermal noise is to compute the thermal noise based on the receiver input resistance and the IF bandwidth. Typical receivers having a 300 ohm input and a 2 KC bandwidth give a figure of 0.1 microvolts. This means that the maximum gain we would need between antenna and second detector in this case is about 146 db, and then the noise would be at a 2 volt level at the second detector. It also means that a 0.1 microvolt signal could give only a relatively poor signal to noise ratio, because signal voltage and noise voltage would be equal.

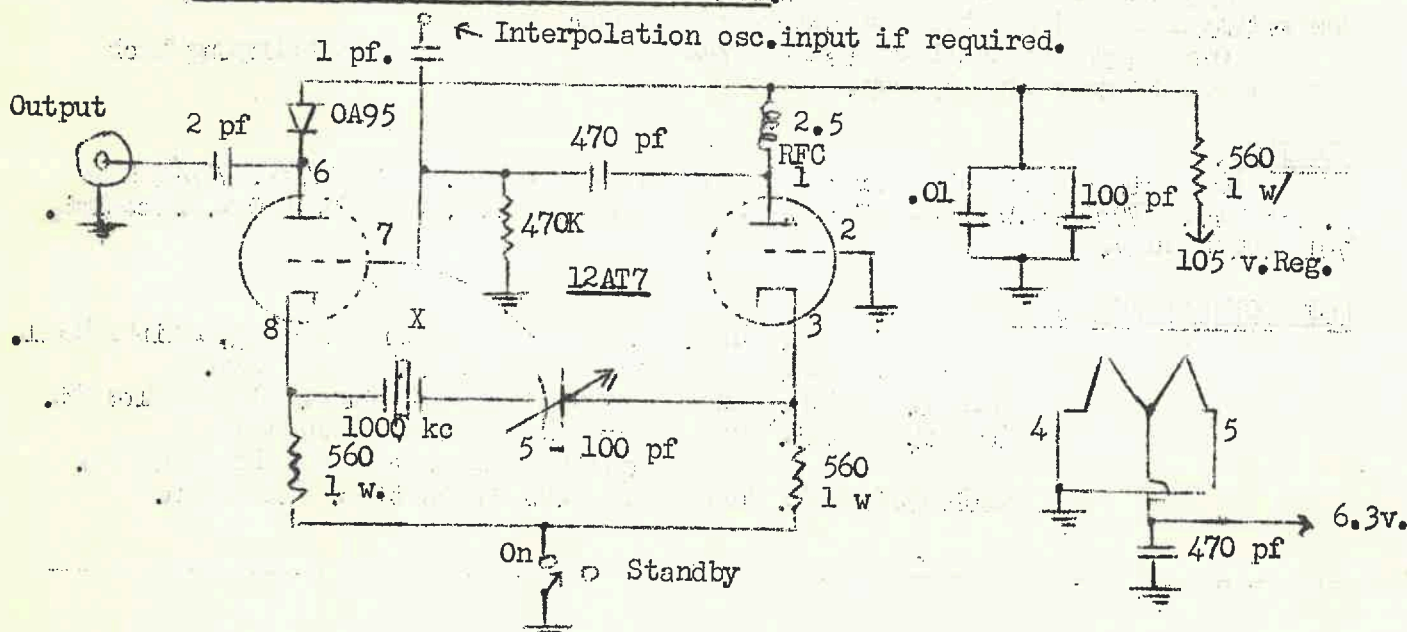
Actually, since the first RF tube will also contribute some noise, the chances of a 0.1 microvolt signal producing a useable signal to noise are doubtful. When the antenna is connected to the receiver, we find that on many of the amateur bands the noises picked up are often of a much different character than the tube and thermal noise. Picked up noise has often higher peaks such as static, ignition noise, power authority hash etc., with the result that a useable signal must be considerably greater than the receiver noise level and the gain required is correspondingly less than the calculated value.

If you build more gain than necessary into a receiver, when the AGC is turned on the receiver gain is reduced by the AGC to the point where the receiver noise is amplified only to the detector operating level. When a signal is tuned in, the gain automatically adjusts itself to bring the signal up to the detector operating level. There is perhaps a little different point of view than that most often used in considering the Automatic Gain Control, or AVC as it is often called.

In considering the weakest signal we can hear, we now realise that this is a function of signal to noise ratio when the gain is adequate. The tuned circuit noise is unavoidable (unless you lower the temperature of the circuit to absolute zero, where the thermal noise is no longer produced) so the way we can improve the signal to noise ratio is to make the tube noise a smaller proportion of the total receiver noise. In practice the law of diminishing returns applies here.

To answer the original question, a true high gain receiver is one which has enough gain so that we can hear the noise appearing at the grid of the first RF tube.

A General Purpose Harmonic Generator.



Continued next page.

DISPOSALS.

The following gear is still available to financial members on the usual conditions. Applications on the attached form together with remittance to the Disposals Committee by June 17th.

Item No..	Description.	Price
B3	Set of microphone, driver and modulation transformers, 122 type. New, in sealed boxes	Set 25s/-
	Or separately	
B31	ZAAO616. Microphone transformer	5s/-
v B32	ZAAO615. Driver transformer	7s/6d
B33	ZAAO617. Modulation transformer	£1
C1	BFO coil, 455 kc/s for 122. New	3s/-
C2	Kit consisting of : 12/24 volt heavy duty 100 watt vibrator transformer 90-177, multi-tap secondary (about 200-400 v) with "C" Core; Two heavy duty 12 volt 9 pin 100 watt synchronous vibrators (one for a spare) and socket; and one 100 ma filter choke. (The vibrators alone cost £8 each new). BRAND NEW. . .	£2-5s/-
C3	770170 Vibrator transformer 6/12 volt. "C" core (believed suitable for transistor power supply windings). Secondary multi tapped about 200-400v. Similar to 90-177 but lighter duty Brand new . . .	7s/6d
C4	V5211 6v. synchronous vibrators. New, boxed	6s/-
C5	2N301 Power transistors. Used but all have been tested OK. Two for £1	

We also have the following available, but as there are only one of most items we offer them to the highest bidders. Offers to Disposals Committee by June 17th. but do not send cash - you will be advised if you are the successful tenderer.

- C6 One only 522 Set plus 28 v. power supply, microphone and crystal. Modified 144 mc/s.
- C7 One only "Harbros" (70 mc or something) mobile transceiver and power supply. (Could probably be modified for 52 mc/s)
- C8 One only unknown make. Looks like the receiver section of VHF mobile rig. No valves. Power supply (tranny, metal rectifier but no vibrator) Includes several miniature ceramic valve sockets, ceramic disc condensers, and other parts.
- C9 Four only Genemotors, 12 v. input, 250 v. DC output, 65 ma. plus 6 volt at 3 amps.

All above items can be inspected at the next meeting.

To W.I.A. Disposals Committee,
Box 851J. G.P.O.
Hobart.

DISPOSALS

6/63

Item No.	Items applied for	Quantity	Price
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Cheque/M.O./P.N./Cash for £ _ _ _ _ enclosed. Plus postage if applicable.

I wish to make offers for the following :

Item No.	Price offered
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I certify that these items are for my own use and not for re-sale.

Address _ _ _ _ _ Name _ _ _ _ _

SUBSCRIPTIONS

To the Secretary,
Box 851J. G.P.O., Hobart

I enclose cheque/M.O./P.N./Cash for £ _ _ _ _ being my subscription for the year to 28/2/64

Address _ _ _ _ _ Name _ _ _ _ _

TECHNICAL.

A General Purpose Harmonic Generator (Continued)

The vacuum tube crystal oscillator and diode harmonic generator is extremely useful in spotting the exact 1 mc spots on any receiver, V.F.O., etc. The harmonics of the 1 mc crystal are strong enough to use up to 725 mc/s, when the unit's output lead is plugged into the antenna co-ax. fitting on receivers near this frequency.

The dual triode type of crystal oscillator uses crystal series resonance and a series variable capacitor for zero beating this oscillator with WWV. The frequency stability is usually much better with a series resonant arrangement, using single tube oscillators. The $2\frac{1}{2}$ Millihenry RFC used as a resonant circuit at 1 mc may need turns removed if the unit does not oscillate.

If any spot frequency is required in between the 1 mcs spots, an audio oscillator (20 cps - 100 kcs), or a signal generator (usually 100 kcs - 1000 kcs) may be injected into the interpolation input, and so the unit used as a frequency meter or signal generator in the bands from 1000 kcs to 725 mcs.

The accuracy of the measurements will depend on the accuracy of the 1000 kc crystal and the calibration accuracy of the audio or signal generator used.

ANTENNA MASTS, FITTINGS ETC.

We have made arrangements with a well known local distributor for the supply of antenna masts and assembly kits at a special rate to financial members of the Division. All orders to the Disposals Committee together with a remittance. Delivery is free in the Metropolitan area and to the Hobart Railway Station, but country members will have to pay freight or arrange to collect.

Items available are :

Telomasts. 20' £3. 30' £4-12/- . 40' £6- 6- 6d. 50' £8-10/-

Rigging Kits comprising turnbuckles, thimbles, brass line clamps and guy rings

20' £2- 6- 5d. 30' £3- 7- 9d. 40' £4-11- 4d. 50' £5-10- 3d.

Masts. 10' x $1\frac{1}{4}$ " 18s/3d. 12' x $1\frac{1}{2}$ " £1- 4- 3d. 15' x $1\frac{1}{4}$ " £1- 6- 6d

Sundries : Wire rope thimbles 7d. Anchor plates 1s/6d. Turnbuckles 4s/10d.

Guy rings $1\frac{1}{4}$ " 1s/5d. $1\frac{1}{2}$ " 1s/9d. Brass line clamps 1s/3d. Foot mounts 11s/6d.

Guy wire 600' £2- 6- 6d.

SPLATTER !! by VK7EB

Pleased to see Geoff D'Emden back in good health again. The V.H.F. gang suspect Geoff is going to rip up the "unmentionables" and use the metal stays for a multi-element Yagi on U.H.F. Excuse the pun - but, "What is the front to back ratio Geoff?" I'm referring to R.F. of course!

Lon Jensen's son, who is undertaking an engineering cadetship at the Hydros, is asking awkward questions! It seems he has doubts re the text books claiming Edison as the discoverer of the "Electric light". Apparently he read the para of the dim dark ages in the Bulletin recently.

Saw the almost completed product of a S.S.B. exciter the other day - 1.4 mcs U.S.B. - L.S.B. and C.W. Looked good - should be good, and not so costly either. More about it later.

I believe 7HT has a YL control booth operator. Could be the first time a YL has undertaken such a position in VK7. Perhaps you could let me know Anne.

DISPOSALS.....

Members purchasing disposals through the Division are reminded that it is sold to them on the express condition that it is for their own use and not for resale or is not being purchased on behalf of a non-member. Any breach of this will automatically wipe the offender off our customer list!

You are also reminded that articles are sold as received and may have hidden faults. They are sold subject to these conditions and cannot later be exchanged.

WANTED

Scrap lead, copper, copper wire, brass, zinc or aluminium. All these can be sold quite profitably for the Club Room Fund. If you have much on hand contact Ted Cruise VK7EJ and he will arrange to have it picked up. Otherwise leave it at the Club Room.

WANTED TO BUY

A BC453 190 - 550 kc Command receiver. Contact Phil Corby VK7ZAX at 44 Congress St., South Hobart. Phone 21953.

LIBRARY

Our thanks to Associate Member R. K. Jaeger for his donation of books for the library.

REPORT OF FEDERAL CONVENTION HELD AT SYDNEY - EASTER 1963

BY E.J. CRUISE VK7BJ FEDERAL COUNCILLOR

The Federal Convention of 1963 was one which in it's preparational stages looked as though it would not be held due to lack of agenda items; but when it opened there were some thirty agenda items plus about five or six general business items, making for quite a busy session in which some very important decisions were made.

Our own items, of which there were two, were well received.

Item 5.5 dealing with pulse modes was carried unanimously.

Item 5.7 dealing with the addition of M.C.W. to our item of last year (5 W.F.M. for LAOCP holders) was also carried unanimously.

General Business - Item 2

We asked that a copy of Federal Policy Book be provided to all Councilflors - carried unanimously.

Items of great importance to the Amateur Service and the WIA included one that laid down a format for the eventual formation of a Federal Company, which I am quite sure will meet with the approval of all members because it retains the Divisional set-up as we know it now, and at the same time gives F.E. the necessary authority to approach and work with or against the "powers that be" on our behalf, another item laid down the policy and financial arrangements necessary to send our delegate to the next I.T.U. Convention. This included the necessity of raising about £3,500 by Easter 1965! Tasmania's contribution to this amount is £200!!

Many other subjects ranging from contests and rules to the use of RTT7 from the conferring Honorary Life Membership, to the authorisation for F.E. to buy a new typewriter, were discussed and finalised, ending up with the decision to have the Convention next year at Adelaide.

In conclusion I would like to place on record my appreciation of the hospitality of the N.S.W. Division and my congratulations to a good Convention well organised.

If any member would like to discuss any item of Federal business at any time, please feel disposed to do so - by phone, letter or over a beer. Some, but not all subjects on the air.

.73...D.E.....VK7EJ.....

N.B. We did buy the typewriter for F.E.

Thanks to the help of several members we have been able to turn out a bigger, and, I hope, a better Bulletin this month. Ted Cruise even had the stencil cut for his Convention report above. I don't expect that, but if you write the articles or contributions I'm only too pleased to do the rest.