THE WEST AUSTRALIAN VHF GROUP BULLETIN

NOVEMBER 1994

THE WEST AUSTRALIAN VHF GROUP (INC)
P.O. BOX 189 APPLECROSS W.A. 6163

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ACTIVITIES	*TERRY*	*VK6ZLT*	*MUSEUM REP*	*TOM*	*VK6ZAF*

NOV	*20*	*FOXHUNT*	*DEC*		
	21	*COMMITTEE MEETING*			*MERRY CHRISTMAS*
	28	*GENERAL MEETING*			
JAN	*17*	*COMMITTEE MEETING*	*FEB*	*21*	*COMMITTEE MEETING*
	22	*FOXHUNT*		*26*	*FOXHUNT*
	24	*GENERAL MEETING*		*28*	*GENERAL MEETING*
MAR	*21*	*COMMITTEE MEETING*	*APR*	*18*	*COMMITTEE MEETING*
	26	*FOXHUNT*		*23*	*FOXHUNT*
	28	*GENERAL MEETING*		*25*	*GENERAL MEETING*
MAY	*16*	*COMMITTEE MEETING*	*JUN*	*20*	*COMMITTEE MEETING*
	21	*FOXHUNT*		*25*	*FOXHUNT*
	28	*GENERAL MEETING*		*27*	*GENERAL MEETING*

West Australian VHF Group Newsletter P.O. Box 189, Applecross W.A. 6153.

Circulation is 65. This consists of 38 city and 6 country fee paying members, 15 life members and 6 courtesy copies of the bulletin.

Review of the VHF Group Library
by Alan VK6ZAY

1. *A Home Built Satellite Dish Steering System*
   by John Barker
   VHF Communications 2/91

This article shows how to mount a 2 foot dish on a small antenna rotator to provide a motorised polar mount. Primarily intended for geostationary satellite reception in the UK this system is simple and may provide ideas for the experimenter.

2. *A 6 cm Transverter using Stripline Technology*
   by Peter Vogl, DL1RQ
   VHF Communications 1/91 and 2/91

The author presents a detailed description of the transverter which comprises several small circuit boards. This is an excelllent article for the beginner as well as the expert. Multiplier chains, mixers and filters are described with graphs showing the parameters of interest for several of the boards. Although the frequency of interest is 5760 MHz, the design methods are applicable to frequencies from 2.4 to 10 GHz.

3. *A Simple Radiator for 3 cm Parabolic Dishes*
   by R.Heidemann, DL3QS
   VHF Communications 3/79

10 GHz dish antennas are commonly illuminated by the penny feed. This is quite suitable for dishes with low f/d ratios (0.25 - 0.35)
What do you do if your dish has a f/d ratio of 0.4 - 0.6? This article provides an alternative feed, similar to the penny feed but more suitable for shallower dishes.

Mode S Made Easy

There are currently 5 stations in the VHF Group operating on the Oscar 13 satellite on mode S (70cm up and 2401 MHz down) in Western Australia, Arnold VK6VV, Alan VK6ZAY, Alan VK6ZWZ, Lindsay VK6ZLK and Bruce VK6BMD. We all have different receivers and different antennas.

Arnold VK6VV has a 2 metre mesh dish (homemade) with the original VK5 receiver and a Downeast Microwave preamp both mounted at the feed which is a G3RUH 2 1/4 turn helix.

Alan VK6ZAY has a homebrew receiver of his own design in the shack and a preamp of his own design mounted on loop yagi's of the Downeast Microwave design.

Alan VK6ZWZ has the original VK5 receiver in the shack and a 600 mm solid dish with a homebrew preamp mounted at the dish.

Lindsay VK6ZLK has a 600 mm mesh dish (homemade) with a SSB UEK2000 receiver mounted 1 metre away from the dish.

Bruce VK6BMD has an earlier model of the SSB UEK2000 mounted at the feed of a homemade 1 metre mesh dish with the G3RUH 2 1/4 turn helix.

We have been extremely lucky on mode S in W.A.,but this luck was sad for the mode L users, the 70cm transmitter failed on Oscar 13 and all the time allocated to mode L has been switched to mode S. This means that we get about 80 minutes continuous time use per pass and about 6 passes per fortnight enable you to work Europe and the USA. South Africa, Japan, New Zealand and the Eastern States are available most any pass.

At about the same time some excellent commercial receive converters became available and most of all G3RUH, the satellite GURU became interested in mode S and designed a very easy to duplicate antenna feed for dishes. He also proved that a helical of 16 turns is all that is needed to work the satellite and that a 600 mm dish is also completely adequate.

The VK5ESC VHF group has just announced the availability of its new low noise receiver for mode S on oscar 13. At the price offered it is about 40 % of the price of a commercial overseas unit and the noise figure of 0.8 is comparable.

This new design uses a Teflon PCB for consistency in performance, MGF1302 Gasfet front end followed by MMIC's for a 0.8dB noise figure and > 20dB gain. It has a 144 MHz I/F. It requires a 2256 MHz oscillator and miscellaneous hardware to complete. $50. VK5ESC also has a choice of two 2256 MHz Local Oscillator kits. The first uses a KK04 Local Oscillator kit and a x4 multiplier kit and includes a 94 MHz crystal $74. The second uses a RLC540 Local Oscillator kit and a x4 multiplier kit and includes a 94 MHz crystal $115.

See one of your committee members to get details of the VHF special service for the VK5ESC kits.

Mode S on Oscar 13 can be worked using a 600 mm dish and a G3RUH feed. See one of the above people for the simple design. You can get beautiful noise free signals from Europe and from the West coast of the USA. It took me three months to get 14 countries on mode S. In one night on mode B I got 12 countries. That is the difference. You have long conversations on mode S, up to an hour at a time as the stations are ready and willing to talk. No swapping of numbers and contact details and goodbye. It is an extremely friendly band.

The satellite is coming into its best pointing angles for us in late December 1994 through to March 1995. So get yourself ready now.

Making Your Own Dish Antenna

There is an easy technique for those of you who wish to manufacture your own Dish antenna for Oscar 13 on 2.4 GHz. It is based on three articles

1. *Want a Dish - Building Your Own is Easier Than You Think*
   by Ralph E. Herzler WA8WBP, 73 Amateur Radio Today April 1993
2. *Inexpensive Mode L Dish Antenna - Pay Little and Gain Much*
   by Keith Berglund WB5ZDP, 73 Amateur Radio Today May 1989
3. *A 60 cm S-Band Dish Antenna*
   by James Miller G3RUH, Amsat Australia Number 97, 26 April 93

The raw materials are 3m x 12 mm channel aluminium, 150 mm square pieces of 3mm sheet aluminium, 12 mm plywood and 6mm square or 12mm square bird mesh depending on your preference and the frequency to be used.
The technique is to decide on the size and f/d ratio of the dish you require and then run the program PARABOLA.BAS which is available from the BBS's. We used 0.6 f/d after reading many dish articles and optimising the various opinions. I will let the reader chose his own f/d ratio. The diameter is also up to the reader, I have built a 1 metre and a 2 metre with Arnold VK6VV and all went quite well. VK6ZLK has built a 600 mm version the same way.
The next step is to mark out on the plywood the profile determined from the program PARABOLA.BAS and cut this out to form a template. Then cut the aluminium channels to length. Using a rubber mallet, of the type used to put tyres on, form the aluminium channel to the profile of the template. This can take a bit of patience so do it gently and you will get good results. Drill out the 3mm sheets and bolt the formed channels between two plates.
Cut and attach with Liquid Nails the mesh in petals. There is an article in the VHF-UHF Manual which describes the effect of mesh size on loss in dB with frequency. You can decide from this whether to use 6mm mesh or 12mm mesh and then fit the feed which is a G3RUH 2 1/4 turn helix mounted on 12mm square aluminium tube.

9600 Baud Digital Satellites.

There are six stations in W.A. working the 9600 baud satellites UO-22, KO-23 and KO-25. These satellites take pictures of the earth in two sizes and store about 5 or 6 of them on the satellite at any one time. These can be downloaded as the satellite flys overhead at a rate of about 1 to 1 1/2 pictures per pass depending how busy the satellite is. They also are flying bulletin boards and carry messages and computer programs from one amateur to another. They are completely open and any message received by one person is received by all in a broadcast mode.
They are Arnold VK6VV, Ron VK6AKI, Lindsay VK6ZLK, Homer VK6JHN, Ron VK6TF and Bruce VK6BMD.
All these stations are using variations of the G3RUH modem, some commercial and some original G3RUH kits.
These satellites require you to carry out modifications to your 70cm and your 2 metre radios, all of the above stations have details of the modifications for most of the most popular radios. The modifications usually take only about one hour if the full details are known.
Each day there are three passes in the morning and three passes in the evening, this brings the daily passes to a total of eighteen per day for the three satellites. In each pass you can receive up to 900 kbytes of programs, information, and messages from others in the international satellite community.
The latest software suite offered is from Chris ZL2TPO who has dragged the satellite community screaming and kicking into Windows with his Wisp GSE and MSPE programs. He has now also provided a program to plot, integrally within the program, the AO13 telemetry.

Financial Report for 1993/94

As holder of the positions of Treasurer, Materials Officer and Bulletin Editor (for 1993/94 year) I wish to present the following report and comments.

Treasurer.

The club has finished the year in a sound financial position. ie it has increased its bank account and inventory. However if you look at the attached financial statement you will see that this result has been achieved fortuitously due to several fortunate surplus equipment deals. (Thanks to our President and Secretary for this) The income derived from membership subscriptions falls short of what is needed to achieve breakeven. The incoming committee will need to look closely at ways of improving this position. An increase in subscriptions or user pay bulletins may provide part of the answer. I also strongly recommend that the incoming treasurer looks at improving the recording of our non-financial assets. The current report does not account for the fact we presently hold a valuable inventory (such as rotators and coax) of surplus equipment which will be sold in the next year.

Materials.

As mentioned in the above section this year has seen a real windfall in the purchase of surplus coax and other equipment. I hold the personal view that the funds raised from these items should be used on lasting items such as beacons etc instead of underwriting the shortfall from membership subscriptions. There is still a good quantity of equipment to be disposed off. On the downside we appeared to have three unserviceable NEC rxs left over from the SKY purchases.

Bulletin.

The cost of the bulletin has been held down over recent years through the availability of free photocopying. This is no longer available so other alternatives will need to considered. One good suggestion offered at a committee meeting is use A5 size for the pages. Another the use of PACKET to those with facilities. Another option is to charge life members who want a bulletin for the production costs. However I believe that continued distribution of the bulletin is important to the ongoing survival of the group.

FINANCIAL STATEMENT 1993/1994

	INCOME		*EXPENDITURE*	
	1992/3	*1993/4*	*1992/3*	*1993/4*
Members Subs	*$790.00*	*$682.00*		
Bulletin			*$206.00*	*$296.00*
Rent			*$140.00*	*$259.00*
Beacon Licences & Subs			*$405.75*	*$349.75*
Bank Fees (FID,BAD)			*$7.58*	*$18.51*
sub total	*$790.00*	*$682.00*	*$759.33*	*$923.26*
VK5 Mats	*$2,699.05*	*$1,121.80*	*$715.09*	*$3,403.07*
Cable Sales	*$536.00*	*$2,440.00*		*$611.50*
Misc Disposal	*$917.90*	*$752.00*	*$225.20*	*$548.68*
Sky RXs & LNBs		*$4,993.00*		*$5,481.00*
Forge St Materials		*$2,024.00*		*$580.00*
Other	*$126.50*	*$121.06*		
sub total	*$4,279.45*	*$11,451.86*	*$940.29*	*$10,624.25*
TOTAL INCOME	*$5,069.45*	*$12,133.86*		
TOTAL EXPENDITURE			*$1,699.62*	*$11,547.51*

CASH ASSETS	*30/6/93*	*30/6/94*
Bankwest AC	*$4,949.68*	*$5,545.03*
Term Deposit	*$2,463.69*	*$2,463.69*
TOTAL CASH ASSETS	*$7413.37*	*$8008.72*

Jacques Borthen VK6KDX