

QRM

June 1986



Newsletter of the Tasmanian Division
of the
Wireless Institute of Australia

(Insert in 'A.R.')

DIVISIONAL DIRECTORY.

Postal Addresses:

Tasmanian Division: P.O.Box 1010, Launceston, 7250.
Southern Branch: P.O.Box 123, Sandy Bay, 7005.
Northern Branch: P.O.Box 275, Launceston, 7250.
Northwest Branch: P.O.Box 194, Penguin, 7316.

Divisional Officers 1986/7:

President: Peter Frith, VK7PF.
Secretary: Barry Riseley, VK7RS.
Treasurer: Frank Beech, VK7BC.
Asst. Sec.: Robin Harwood, VK7RH (Also Minuting Sec.).
Federal Council: Joe Gelston, VK7JG.
Council Member: Byron Dilworth, VK7BD.
Vice- Pres. Arthur Tregaskis, VK7SE.
Vice- Pres. Russ Pitman, VK7ZRP.

Branch Notices:

NORTHERN BRANCH MEETS AT 8 P.M. ON THE SECOND FRIDAY of each month (except January) in Room G25, Swanson Building, Australian Maritime College, Newnham, Launceston. Next two meetings: June 13th. July 11th.

NORTHWEST BRANCH MEETS AT 8 P.M. ON THE SECOND TUESDAY of each month at the Penguin High School.
Next two meetings: June 10th. July 8th.

SOUTHERN BRANCH MEETS AT 8.15 P.M. ON THE FIRST WEDNESDAY of
the month, at The Activity Centre, 105, Newtown
Road, Hobart.
Next two meetings: June 4th. July 2nd.

Broadcast Officers:

Divisional Co-ordinator: Arthur, VK7GH, 34, Ashbolt Crescent,
Lutana, 7009.

Te1: (H) 002.284963. (B) 002.305600.

Northern Branch Officer: VK7AV Bill.
Northwest Branch Officer: VK7ZFH Frank.
Southern Branch Officer: VK7GH Arthur.

Broadcasts commence 09.00Z every Sunday, normally originated on 2m., with relays on 80m., 40m., 144.1 MHz (SSB) and ATV.

Radiotutorial.

Suddenly, it seems, the air is full of new ideas and new proposals. John, VK7ZJA, is planning the establishment of an RTTY beacon in North Hobart, to be run on a frequency of 52.540 MHz, and in fact the proposal is before the DoC at the moment. Rai, VK7VV suggests setting up a state-wide Used Equipment Register to facilitate the interchange and checking of amateur equipment of all types, especially to help those who are trying to build up their gear for the first time. Details of both these schemes will be published as soon as space allows in "QRM"

We would, however, like the opportunity this month to quote from an article in "Micom", the newsletter of the Microcomputer Club of Melbourne, to whom we send our thanks and acknowledgments. There is in the April issue a long article on a "Public Digital Radio Service", and the Editor comments in detail on the many issues involved. Without altering the intent of his comments, we quote extracts. (The full article is available at the Activity Centre for those interested). "It may not have occurred to many people, but there is no technical reason why you cannot send messages or computer programmes across the country, or around the world for FREE. Amateurs do it all the time, but a certain technical ability and a knowledge of Morse is required. Many more people would be interested in joining the ranks of hams if Morse were dropped. But amateurs oppose this. Yet it's true that many people who do not wish to become hamradio operators under the present terms would like to have some access to the airwaves for personal communications purposes. This is why CB was so popular for a time. Technical limitations of the equipment and immature actions of some users, unfortunately, meant that most serious users left the band in disgust. The PDRS proposal appears to be one way of allowing more people to communicate via the airwaves while still having safeguards to prevent certain users from turning the system into another electronic pigsty. My question is, why should telephone companies, commercial packet networks, broadcast interests and postal services be protected to the detriment of the general public and personal computer users in particular? We have to pay to send data but the technology is here to allow us to do it for free. We are subsidising these institutions every time we wish to communicate. Besides, postal services do not have the immediacy of radio links."

The above article is, as you will have guessed, American, but in view of some points being raised in Australia about the use of packet radio in some of its aspects, we need to consider our position and be informed on WIA Federal actions in the matter.

New members of the Tasmanian Division.

We are informed by Frank Beech, the Divisional Membership Officer, that these are our new members who are, or should very shortly be, receiving "A.R."

F. Richele, VK7ZBX, Burnie. L.J. Durkin, VK7JP, Orford.
R.E. Glock, VK7LT, Rosny Park. P.J. Sykes, VK7YP, West Moonah.
A.D. Hay, VK7ZHA, Devonport. D.S. Thomasson, VK7NCH, Huonville.
F. Clark, VK7KCK, Deloraine (son of the late VK7CK, Poley).

Associate Members:

R.N. Howlett, Rokeby. W. Perleberg, Fern Tree.
S. Bean, Glenorchy. M.R. Wachsmann, Diddleum Plains.

Membership Certificates for some have been posted, the remainder will be forwarded after the next Council Meeting.

Tasmanian Amateur Radio Convention 1986.

Licensed Amateurs at TARC 1986 - 15th & 16th March.

VK2AV	VK7HH	VK7MF	VK7QF	VK7ZBW
VK2ELG	VK7JG	VK7MX	VK7RH	VK7ZBX
VK2HA	VK7JK	VK7NAI	VK7RN	VK7ZDD
VK7AK	VK7JO	VK7NAU	VK7RS	VK7ZGG
VK7AN	VK7JU	VK7NBF	VK7SF	VK7ZJH
VK7BC	VK7KAB	VK7NBL	VK7SV	VK7ZNP
VK7BD	VK7KKV	VK7NBU	VK7VK	VK7ZPK
VK7BV	VK7KWR	VK7NHG	VK7VV	VK7ZPN
VK7DE	VK7KY	VK7NJJ	VK7WJ	VK7ZRF
VK7EK	VK7LA	VK7NPT	VK7WP	VK7ZRP
VK7EL	VK7LT	VK7OL	VK7WW	VK7ZTA
VK7FR	VK7LZ	VK7PD	VK7WZ	VK7ZTT
VK7GH	VK7MA	VK7PF	VK7ZAP	VK7ZWW
VK7GP	VK7MB	VK7PYT	VK7ZBT	VK7ZZ

SO YOU WANT TO CONTACT THE EDITOR?

His name is John Rogers. His callsign is VK7JK. His telephone number is 002.293402. His address is:

1, Darville Court,
Blackman's Bay,
Hobart, 7152.

And when you lose your copy of "QRM", remember he's QTHR. When he is at home, the 2m rig is running and listening to Repeater 2.

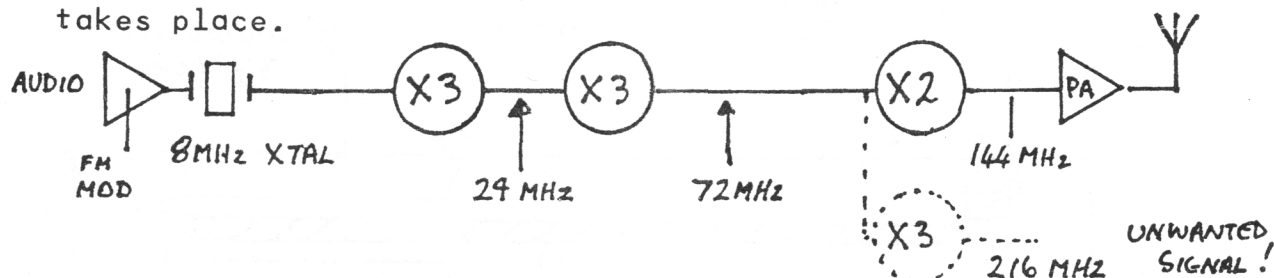
Design of a Bandpass Filter, for 2m. Band.

by B.P.Dilworth, VK7BD.

Having recently acquired an older style solid state two metre FM Tx/Rx, I found that on air tests showed that there was a noticeable output on 216 MHz, which is 'spot on' Channel 11, the local T.V. translator output, causing TVI on transmit. This output on 216 MHz is low level but still bad enough to cause problems in the local area. It is an unfortunate result of the Tx design as no complex filtering is provided at the output stage - this situation is common among some simpler Tx circuits.

Source of Problem:

The 216 MHz output is a result of third harmonic output of the 72 MHz stage, i.e. 72 MHz signal is doubled to give desired 144 MHz output, but some tripling to 216 MHz also takes place.



2m. Tx -Typical of Popular Home-brew types.

Solution to problem: Two possible solutions exist -

- Redesign of P.A. stage to increase suppression of unwanted output.
- External bandpass filtering to suppress out-of-band signals.

Not wishing to alter the design of the transmitter, as in a), with the possibility of introducing more complex problems, I decided to take alternative b) and design a suitable 'outboard' filter. This choice was also made as the filter could also be used to clean up very simple 2-valve type transmitters (Mini-tran 2 from "A.R." march 1962) which I had built.

After studying various alternatives, I finally settled on co-axial cavity types as described in A.R.R.L. publications, and modified these to suit locally available materials.

Design: This is shown in the accompanying drawings - note use of older Imperial measurements. This was done as older copper pipe was used, having Imperial dimensions.

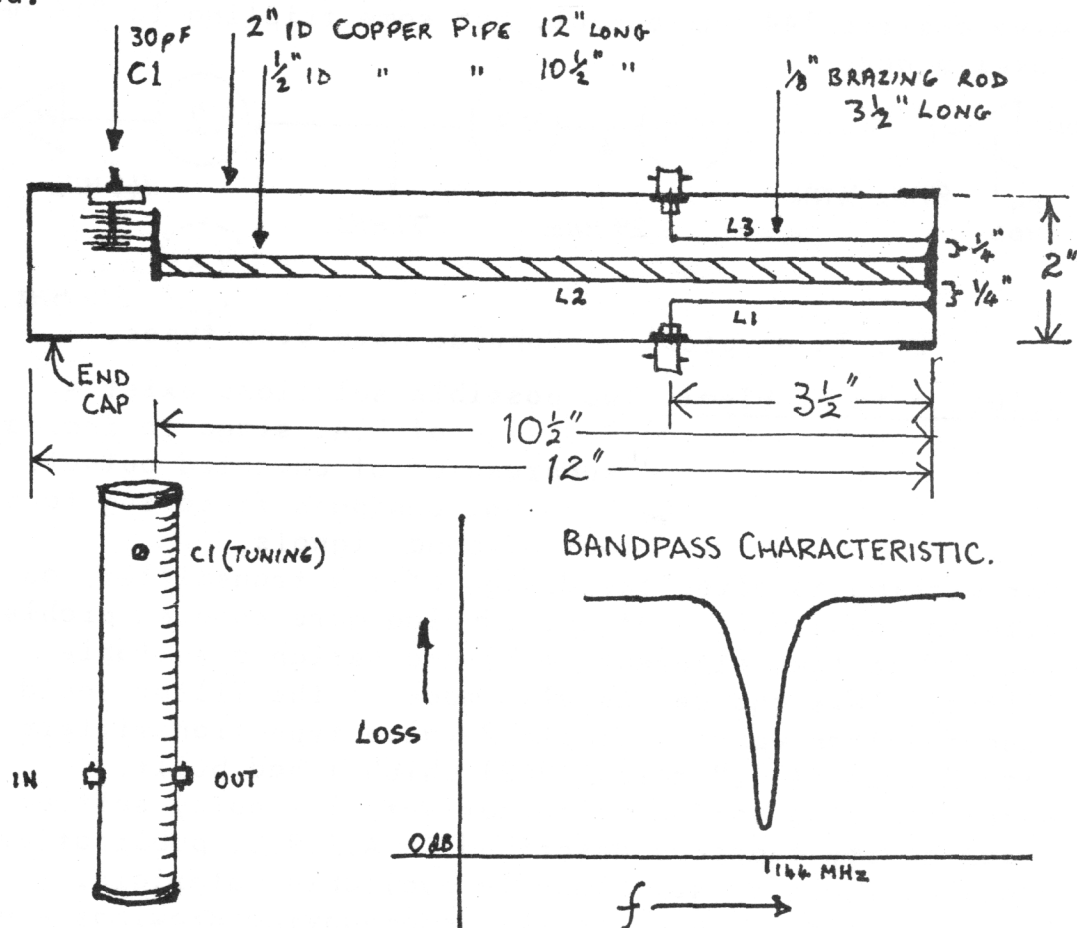
The drawings should be self-explanatory. All rods and $\frac{1}{2}$ " pipe are soldered to the base cap, and the capacitor C1 is fitted between the outer pipe and the inner one - also providing support for the top of the inner pipe, so use a mechanically strong ceramic insulation type here. Whilst on C1, use a type

6.

with a lockable shaft or stiff movement as this sets the pass band and should be 'bump proof'.

On air tests.

The filter was connected to the Tx/Rx and peaked to give maximum Tx output power. There were no noticeable changes in signal reports given with the filter in or out of the antenna line. A portable colour TV was placed near the transmitter and Ch.11 selected. With filter out, the TV was overloaded and the received programme totally lost. With filter connected, the TV showed no signs of interference, and thus the problem was solved. Running 1 watt Tx power and with the 2m. and TV antennas only one metre apart, slight interference occurred, but this also happened with commercially built Tx, so pure front end overload of the TV (a midrange Japanese model) is suspected.



Ref: QST, 1964, A.R.R.L.

Amateur Radio Handbook, 1976, A.R.R.L.

B.P.DILWORTH, VK7BD,
4, Anson Street,
Waverley, TAS.

7.

AWARDS, by Bob, VK7NAI.

News comes again from Ivan, ZL1AQO, of another New Zealand Award. This time the award is called

THE RIVERTON 150th. ANNIVERSARY AWARD.

To qualify for the award, you are required to work the Special Event Station, ZL4RAC, plus five other stations who are members of either Branch 08, East Southland, or Branch 37, Southland, between 1.7.86 and 31.7.86.

Log extracts together with \$3.00 must be forwarded before 31.8.86 to:

Riverton 150th. Anniversary Award,
P.O.Box 1260,
Invercargill, New Zealand.

The award is available only for contacts on 80m. or 2m.
I will attempt to organise a special net one Saturday night in July.

I would also like to remind you about the TARAWERA CENTENNIAL AWARD, an award, sponsored by the Rotorua Branch of NZART, and instituted to commemorate the eruption of Mt. Tarawera 100 years ago. The duration of the award is from 10.5.86 to 10.6.86 and to qualify, you are required to work five (5) Branch members (NZART Branch 33).

To earn the 1886 endorsement, you must work ZL1AVG on Mt. Tarawera on Tuesday 10.6.86. (I will attempt to have this station come up on the Devil Net that night).

The usual details are required and logs (I am not sure if they need to be certified) must be posted to arrive before 17.7.86 with the Awards Manager, Rotorua A.R.C., P.O.Box 1984.

Two special prizes of free return flights to the top of Mt. Tarawera will be awarded to the first two recipients of the award carrying the 1886 Endorsement.

To assist you with the award, you might call on 3.686 or 7.086 MHz. I have been assured that during the course of the award, Branch members will be active on the Novice section of the 80 metre band.

Bob, VK7NAI.

WOULD ALL ASPIRING CONTRIBUTORS TO "QRM" PLEASE NOTE THAT THE EDITOR'S CLOSING DATE FOR THE JULY EDITION WILL BE:

15th. JUNE.

QSL BUREAUOUTWARD CARDS

A correctly completed card is an essential requirement for the issue of many Awards so make sure your card at least shows the following information:-

Your Call Sign and full address.

Call Sign of station worked and confirmation that a two way QSO has taken place.

Date and time (UTC) of QSO, band, mode and signal report.

If you make a mistake when writing out a card do not alter it but fill out a new card as an altered one will not be accepted for Awards.

When having cards printed do not choose heavyweight type of card and make sure they are no larger than 140 x 85 mm (5½ x 3⅝ in.) OUTWARD CARDS LARGER THAN THIS WILL NOT BE ACCEPTED as they weigh more, will not fit in a standard sized envelope and will not pack easily in bulk with others resulting in damage to your card.

The charge for outward cards is 2¢ each (non members 6¢). This covers cost of postage, envelopes, P.O. Box rental, etc. Sheets of 100 stickers are available from QSL Officers and the Bureau at a cost of \$2 and one of these stickers (three for non members) must be affixed to each card before being handed into the Bureau.

PLEASE sort your cards alphabetically by prefixes with Australia and U.S.A. into Call Areas as there is a separate Bureau in each Call Area. All the various U.S.A. prefixes should be sorted together and treated as "W" prefix, but those for other than continental U.S.A. (such as KH, KL7, KP4, KG6 etc) should be kept separate.

Write the call of the station it is for on the back of the card and if he has a QSL Manager show this, viz "BV2A via K2CM" so that I know to send it to the W2 Bureau. Cards are sent in bulk to other Bureaus and only sent direct if there is no Bureau in his country and his address is known.

INWARD CARDS:

Inward cards for North and North West Branches are sent to the QSL Officer concerned monthly and may be collected at the Branch meetings. Cards for members in the South are taken to three successive meetings and if not then claimed are held at the Bureau for 12 months and then destroyed. Country members who cannot attend Branch meetings may have their cards sent to them by lodging a few 160 x 114 mm (6½ x 4½ in.) self addressed stamped envelopes.

If you do not want your cards let me know and they can be destroyed.

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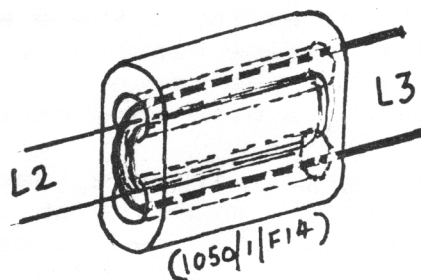
The Bureau address is G.P.O. Box 371D, Hobart 7001, but I would prefer that cards, enquiries etc, be sent to my home address, 95 Wentworth St., Bellerive 7018 (phone 442854)

Chas. Harrisson VK7CH
QSL Manager

Problem-solving Guide for the "TAS DEVIL" Rig.

<u>PROBLEM</u>	<u>POSSIBLE CAUSE</u>	<u>REMEDY</u>
Audio Amplifier motor boating.	Unstable D.C. levels on output stages.	Connect 10M res. across C29.
Frequency of V.F.O. too high	VC1 value too low (spec. 140pF)	Add 100pF styro across VC1 in position provided.
RLA operates on application of 12v.	Q9 faulty. Reversed Q10 or faulty or incorrect type.	Replace or reverse. Note: RLA operates momentarily then releases when 12v applied.
Low output from TX.	L2/L3 on wrong former.	Use correct former 1050/1/F14 NOT 1050/2/F29.
Q5 overheating.	Drive too high.	Reduce turns on L3 to 1 turn. Increase R12 or R14
Noise bursts from RX.	C40 C34 C47 reversed C47 (-) to base of Q14	Correct polarity.
Aerial not connected to RX.	TX & RX connections to RLA reversed.	Change over connections.
Random "Buzzing" from side-tone on transmit.	C17 holding charge at the threshold voltage of CMOS IC3 pre-amp.	Connect 47K res. from junction of R28 & C17 to E.

Please Note: Technical assistance regarding the "Tas Devil" rig is available from its designer, Ian, VK7IJ (VK7KAN) or by phoning 002.279142 a.h.

Winding details for L2/L3

73's de VK7IJ.

WICEN (Southern Branch) REPORT

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 The future role of WICEN (Southern branch) was the subject of recent discussions with State Emergency Service personnel and with previously active WICEN members in the south.

Although further talks are scheduled with S.E.S. in mid June, an intrem report would appear to be in order.
 STATE EMERGENCY SERVICE.

The communications capability of S.E.S. has changed considerably in the past 5 to 10 years. A very comprehensive sub-plan, which is apparently the envy of other States, has been developed.

A fairly extensive network of remotely controlled H.F. stations (2 to 5 mhz.) has been established throughout the State but communications generally would seem to depend chiefly on the lower v.h.f. (76 mhz.) system provided by several thousand vehicles and handhelds operated by Government and Semi-Government instrumentalities. These mobiles are each able to access the others sector of the spectrum thus providing great flexibility of performance.

S.E.S. have also developed a number of multi-band mobiles as a result of the successful concepts used by WICEN members. These are built into 4WD vehicles and are capable of lower V.H.F., H.F. and in some cases teleprinter capability. Such refinements as hydraulically elevated vertical antennae are incorporated !.

In spite of this upgrading, S.E.S. still do not have access to some of the compact, high technology equipment available to the average amateur radio enthusiast. They are of the opinion therefore that WICEN might well be used in an emergency to supply specialist communication services and have agreed to prepare a statement defining such a role.

This statement is expected to be a result of our scheduled meeting with S.E.S. in June and will be reported in QRM as soon as available.

The same report will summarize the current status of WICEN in the southern branch and an action plan for the future. Included will be a registration form to update the record of available resources.

A wide range of talents is needed for an organization such as WICEN so there will be a worthwhile job for everyone. Novices are especially invited to participate and an effort will be made to team them up with more experienced members to give them maximum benefit from the exercise.

More detail in the next issue of QRM. In the meantime think what you might be able to do for WICEN and at the same time add a new dimension to your hobby.

Alan Widdowson VK7CI Ph.296517
 WICEN Southern Branch Co-ordinator

II.

A.T.V. Experiments.

On 23.3.86 at 1 o'clock, Bruce Livingston and myself (VK7ZAL) left East Moonah for the Springs, Mt. Wellington, for ATV experiments with VK7ZAR. The tests from the Springs were not successful. We then moved to the Lookout, halfway up the mountain, overlooking Hobart and near a building for walkers. This test was also unsuccessful. It was worked out that the inverter driving the camera was interfering with the T.V. transmitter. We could talk on the T.V. sound with the inverter turned off. Also the battery

voltage at the equipment was 10.5 volts. The items of equipment taken were: T.V. Camera and Power Supply, 12/240 volt inverter, T.V. transmitter, HL 12ØU UHF Linear Amplifier, and an 11-element Yagi antenna. The antenna was supported 17" above the roof. Our 2m. hand-held was tuned to 146.45 MHz. Although unsuccessful, we returned home determined to try again, and so it was that on 27.4.86 we set out for the Lookout once more. By two o'clock, when the transmission was due to start, it was raining and snowing and this continued throughout the stay on the mountain. This time we coupled the T.V. Camera to the car battery, but except for the addition of 7ZAR's T.V. set, the equipment was the same, and the antenna was in the same position, 17" above the roof. By keeping the car running, the supply voltage remained high and 50 minutes of T.V. transmission were made. A good picture was obtained with average sound. It was received by 7ZPK, 7ZBW, 7ZRO and 7ZJH.

Robert VK7ZAL.

F O R S A L E .

One Dick Smith Monitor and Cover. Original cost in 1985 was \$455.50. Selling only because it's suitable for computers but not A.T.V. Asking price \$200.00. Willing for it to undergo any tests. Enquiries to Robert VK7ZAL. QTHR.

Broadcast Roster for June.

June 1st.: Southern Branch.

June 8th, 15th, and 22nd.: Northern Branch.

June 29th.: Northwestern Branch.

WIRELESS INSTITUTE STORE (STOCK)
VK7ZBW (MIKE) STORES & EQUIPMENT OFFICER
PHONE (002)-28 7010 (OTHR)
PRICE AND STATUS CORRECT AS AT 06/05/86

12.

WIA	ITEM DESCRIPTION	STATUS	PRICE	WIA	ITEM DESCRIPTION	STATUS	PRICE
01	UNDERSTANDING AMATEUR RADIO	2 ON ORDER	\$ 8.40	45	W.I.A. CALLBOOK 1985/86	IN STOCK	\$ 6.50
02	RADIO AMATEUR LICENCE MANUAL	>	\$ 6.85	45D	W.I.A. CALLBOOK 1984/85	IN STOCK	\$ 2.00
03	OPERATING MANUAL (2ND EDIT.)	>	\$	46	LOG SHEETS (PER 100)	>	\$ 2.50
04	ARRL HANDBOOK 1986	>	\$ 31.20	47	W.I.A. LOGBOOK	IN STOCK	\$ 3.50
05	HINTS & KINKS FOR RADIO AMAT.	IN STOCK	\$ 6.85	47D	MOBILE LOGBOOK RSGB	IN STOCK	\$ 2.40
05D	NOVICE QUESTIONS & ANSWERS	IN STOCK	\$ 4.10	48	THE RADIO AMATEURS WORLD ATLAS	IN STOCK	\$ 2.00
06	WEEKEND PROJECTS	>	\$ 7.00	49	STICKPIN TRADITIONAL AUST.	IN STOCK	\$ 2.00
07	ARRL ANTENNA BOOK	IN STOCK	\$ 12.90	50	STICKPIN INTERNAT. DIAMOND	IN STOCK	\$ 2.00
08	FM & REPEATERS FOR RADIO AMAT.	IN STOCK	\$ 9.90	51	STICKPIN INTERNAT (CALLSIGN)	IN STOCK	\$ 2.00
09	SATELLITE EXPERIMENTERS H/BOOK	1 ON ORDER	\$ 15.60	52	W.I.A. STICKERS (CAR WINDOW)	IN STOCK	\$.50
10	RADIO AMAT. EXAM MANUAL RSGB	>	\$ 9.10	53	W.I.A. MINI LOGO (SHEET OF 10)	>	\$ 1.00
11	RADIO AMAT. OPERATIONS MANUAL	>	\$ 15.60	54	W.I.A. TIES	IN STOCK	\$ 9.50
12	RADIO COMMUNICATIONS H/BOOK	1 ON ORDER	\$ 24.50	55	W.I.A. KEYRING	IN STOCK	\$ 3.50
12D	AMATEUR RADIO AWARDS RSGB	IN STOCK	\$ 7.10	56	W.I.A. PENNANTS (FELT)	IN STOCK	\$ 4.00
13	AMATEUR RADIO TECHNIQUES	1 ON ORDER	\$ 14.20	56A	W.I.A. PENNANTS (SATIN)	IN STOCK	\$ 6.00
14	TEST EQUIPMENT FOR RADIO AMAT.	IN STOCK	\$ 14.50	57	T-SHIRT (75TH ANNIVERSARY)	>	\$ 8.00
15	HF ANTENNA'S FOR ALL LOCATIONS	IN STOCK	\$ 15.40	58	LEISURE SHIRT (LOGO ON POCKET)	>	\$ 11.00
16	VHF/UHF MANUAL RSGB	IN STOCK	\$ 21.50	59	WINDCHEATER (W.I.A. LOGO)	>	\$ 17.00
17	CALLBOOK 1985 RSGB	>	\$ 16.00	60	W.I.A. CLOTH BADGES	IN STOCK	\$ 2.50
18	UHF COMPENDIUM PARTS 1 & 2	>	\$ 35.00	CA1	BELDIN COAX (RG213)/METRE	>	P.O.A.
19	SATELLITE TRACKING SOFTWARE	IN STOCK	\$ 10.80	CA2	BELDIN COAX (RG58U)/METRE	>	P.O.A.
20	INTERFERENCE HANDBOOK	IN STOCK	\$ 12.00	CA3	BENELEC COAX (RG213)/METRE	IN STOCK	\$ 1.98
21	WIRE ANTENNA'S FOR RADIO AMAT.	IN STOCK	\$ 9.60	CA4	BENELEC COAX (RG58C/U)/METRE	IN STOCK	\$.54
22	RADIO AMATEUR ANTENNA H/BOOK	IN STOCK	\$ 10.70	CA5	ANDREWS HELIAX (LDF450)	>	P.O.A.
23	BEAM ANTENNA HANDBOOK (NEW ED.)	IN STOCK	\$ 13.40	CO3	N-TYPE ACME CONNECTOR (C39-19)	>	P.O.A.
24	ALL ABOUT CUBICAL QUAD ANTENNA	IN STOCK	\$ 9.40	DI1	VERBATIM FLOPPY DISKS/10	>	\$ 21.00
25	CARE & FEEDING POWER GRID TUBE	>	\$ 10.70	DI2	CTRL. DATA FLOPPY DISKS/10	>	\$ 21.00
26	VHF H/BOOK FOR RADIO AMATEURS	IN STOCK	\$ 14.50	SO1	MAGNA SOLDER & FLUX (PER FOOT)	IN STOCK	\$ 3.50
27	MICROCOMPUTERS IN AMAT. RADIO	NOT AVAIL.	\$ 16.60	WI1	ENAMELLED WIRE 14 GAUGE PER/LB	IN STOCK	\$.75
28	HAM NOTEBOOK VOLUME 1	1 ON ORDER	\$ 5.70	WI2	ENAMELLED WIRE 16 GAUGE PER/LB	IN STOCK	\$.75
29	HAM NOTEBOOK VOLUME 2	1 ON ORDER	\$ 5.70				
30	AMATEUR TELEVISION H/BOOK VOL2	IN STOCK	\$ 4.60				
31	AMATEUR TELEVISION H/BOOK VOL3	IN STOCK	\$ 4.60				
32	TV FOR AMATEURS	IN STOCK	\$ 3.90				
33	FOREIGN CALLBOOK 1986	>	\$ 29.50				
34	USA CALLBOOK 1986	>	\$ 30.30				
35	DX GUIDE	IN STOCK	\$ 4.70				
36	RADIO AMATEUR WORLD ATLAS	2 ON ORDER	\$ 4.70				
37	R.A. PREFIX MAP OF WORLD	IN STOCK	\$ 3.60				
38	A.R. AND ELECTRONIC STUDY GUIDE	ON ORDER	\$ 13.75				
39	BASIC TRAINING MANUAL NZART	>	\$				
40	CALLBOOK 1985 NZART	>	\$				
41	RTTY TODAY UN.ELEC.	IN STOCK	\$ 6.00				
42	WORLD PRESS SERVICE FREQ'S	IN STOCK	\$ 12.00				
43	AMATEUR OPERATORS H/BOOK P & T	UPDATE OCT	\$ 12.00				
44	W.I.A. BOOK VOLUME 1	IN STOCK	\$ 3.50				