

Second Class Mail
Registration Number
5073

\$2.50

THE CANADIAN AMATEUR

Canada's Amateur Radio Magazine

La Revue des Radio Amateurs Canadiens

FEBRUARY 1987

A Portable Digital Emergency Station — Page 14

CARF honoured at VE7EXPO finale — Page 13

Public service in Calgary. See page 19. Photo— VE6COD



"WHEN ONLY THE BEST WILL DO!"

YAESU

FT 23R/73R

UHF AND VHF HANDIE TRANSCEIVER



- FT 23R 144-160 MHZ
- FT 73R 440-450 MHZ
- COMPACT SIZE
- RUGGED HIGH IMPACT RAINPROOF CONSTRUCTION
- 5 WATTS OUTPUT
- 16 BUTTON DTMF KEYPAD
- LIQUID CRYSTAL DISPLAY
- TEN MEMORIES
- INDEPENDENT REPEATER INFORMATION
- IMPROVED CHANNEL SELECTION
- MANY MORE ACCESSORIES

C. M. PETERSON CO. LTD.

ask for JOHN or BRIAN

220 Adelaide St. North, London, Ont.
N6E 3H4 519-434-3204

We ship anywhere in Canada

Store hours:
Mon.-Fri. 8:30-5:30
Sat. 8:30-12.00



VISA & C.O.D.s WELCOME

(416)1-800-265-7903
(519)1-800-265-4110

CIRCULATION OFFICE
P.O. Box 356, Kingston
Ont. K7L 4W2
613-544-6161 (24 Hrs.)

EDITOR
Frank Hughes VE3DQB

CONTRIBUTING EDITOR
Doug Burrill VE3CDC

TECHNICAL EDITOR
Bill Richardson VY1CW

CONTEST SCENE
John Connor VE1BHA

AMSAT NEWS
Ernie Welling VE3HD

MICROWAVES
Michael Ross VE2DUB

CRAG COLUMN
Cary Honeywell VE3ARS

DX EDITOR
Paul Cooper VE3JLP

QRP EDITOR
Moe Lynn VE6BLY

YL NEWS AND VIEWS
Cathy Hrischenko VE3GJH

VHF/UHF
Bob Morton VE3BFM

PACKET RADIO
Brett Delmage VE3JLG.

COMPUTERS
Lyle Blake

DESIGN
Nancy Bradley VE2GFN
& Steve Campbell

**ADVERTISING
REPRESENTATIVE**
Don Slater VE3BID
RR 1 Lombardy,
Ontario K0G 1L0
613-283-3570

PRODUCTION
County Magazine Printshop Ltd.
P.O. Box 30, 71 Main St.
Bloomfield, Ont.
K0K 1G0
613-393-3355

Please address correspondence to
the Editor at Box 855, Hawkesbury,
Ontario K6A 3C9, telephone 613-
632-9847.

THE CANADIAN AMATEUR

Canada's Amateur Radio Magazine

February 1987

Vol. 15 No. 2

EDITORIAL, VE7AHB	3
LETTERS	4
FEATURES	
DOC News— Guide for Morse Code Exam	7
Radiosensitive Consumer Appliances	11
CARF honoured at VE7EXPO finale, VE7AHB	13
Digital Communications and Emergency Work	14
Rick Hansen warms Niagara	18
Product Review, Kenwood TM-2550A	34
Try these Exam Questions!	42
THE CARF COLUMN	19
CROSSWAVES	21
FROM THE CLUBS	23
QRP	26
YL NEWS & VIEWS	28
CONTEST SCENE	29
DX	31
SWAP SHOP	32
TECHNICAL	
Notes on the FOXX, VE3DQB	36
The Chirpsounder, VY1CW	37
Using Mixed Mode on Voice Channels	38
Antennas, VE3DQB	39

The *Canadian Amateur* is published in Canada 11 times per year to provide Radio Amateurs, those interested in radio communications and electronics, and the general public with information on matters related to the science of telecommunications.

Unsolicited articles, reviews, features, criticisms, photographs and essays are welcomed. Manuscripts should be legible and include the contributor's name and address. A signed article expresses the view of the author and not necessarily that of C.A.R.F. Publications Limited.

The contents of this publication are copyright and may not be reproduced without prior consent except by a bonafide Amateur organization which may reproduce them provided the source is acknowledged.

The Advertisement Department of The Canadian Amateur on behalf of the magazine wholly disclaim any responsibility for the content of any advertisement contained herein and make no representations on behalf of The Canadian Amateur as to the truth of any statement contained in any such advertising.

C.A.R.F. Publications Limited and the publisher and editors of The Canadian Amateur hereby disclaim any responsibility for any statement of opinion or other statement that may be contained in any article published by The Canadian Amateur and any such statement of opinion or other statement contained in such article is solely the opinion of the author of the article and not that of C.A.R.F. Publications Limited, the publisher or editors of the magazine unless it is specifically stated to be the case therein.

The *Canadian Amateur* is published by C.A.R.F. Publications Limited, 370 King St., P.O. Box 356, Kingston, Ontario, Canada K7L 4W2. It is recommended by the Canadian Amateur Radio Federation Inc. and its members receive it automatically. Indexed in the Canadian Periodical Index: ISSN 0228-6513.

Second Class Mail Registration Number 5073



Executive

C.A.R.F. President
Ron Walsh VE3IDW
10 Nicholson Cres.
Amherstview, Ont.
K7N 1X1
(613) 389-3301

Past President
Don Slater VE3BID
RR 1 Lombardy
Ont. K0G 1L0

Senior Vice President
Bill Carew VE3MEW
RR 6,
589 Ashburnham Dr.
Peterborough K9J 6X7
(705) 748-2499

Vice President
J.F. Hopwood VE7AHB
1209 Kilmer Rd.,
North Vancouver, B.C.
V7K 1P9
(604) 985-1267

Vice President
Earl Smith VE6NM
P.O. Box 412,
Grande Prairie, Alta.
T8V 2A2
(403) 532-4279

**Vice President/
CRRL Liaison**
Art Blick VE3AHU
11 Manitou Cres.
Amherstview, Ont.
K7N 1B7

**General Manager/
Treasurer**
Ollie Schijns VE3LXO
730 Dempster Dr.
Gananoque, Ontario
K7G 2E7
(613) 382-3867

Secretary
George Sansom
VE3LXA
786 Selkirk Rd.
Kingston, Ont.
K7P 1A5
(613) 389-5108

Legal Counsel
Timothy Ray VE2KC
Hughes, Laishley,
Barristers & Solicitors
116 Lisgar St., Suite 600
Ottawa, Ont. K2P 0C2
(613) 236-7333

Mid West Director
Norm Waltho VE6VW
Box 1890
Morinville, Alta.
T0G 1P0
(403) 939-3514

Ontario Directors
John Iliffe VE3CES
387 Selby Crescent
Newmarket, Ontario
L3Y 6E2
(416) 898-4875
Geoff Smith VE3KCE
7 Johnson Rd.,
Aurora, Ontario
L4G 2A3
(416) 727-6672

Quebec Director
Michael Masella VE2AM
19 Pheasant Street,
Dollard des Ormeaux,
Quebec H9B 2T4
514-683-7785

Pacific Director
J.L. (Jim) Voight VE7CWC
46542 Pine Ave.
Chilliwack, B.C. V2P 2C5
604-795-5208

Atlantic Director
Nate Penney VO1NP
P.O. Box 10
Shoal Harbour, Nfld.
A0C 2L0

**Interim Director
(Manitoba/Northern Ont.)**
Louis Curtis VE4AEM
665 Munroe Cres.
Winnipeg, Man. R2K 1H9

**Assistant Regional
Directors**
Stewart Harvey VO100
Susan Harvey VO1OI

Ben Kean VO2CZ
R.G. White VO1RW
Jeanine Côté VE1BWP
Camille Tremblay VE2DNO
Antonietta Avanzini
VE2AAV

Bill Carew VE3MEW
Barry Baggs VE3IVV
Pierre Mainville VE3LPM
Mailes Dier VE3AP
Francis Salter VE3MGY

Cecil Fardoe VE4AEE
Max Geras VE4ACX
Malcolm Timlick VE4MG

Vic Allen VE5AEN
Bill Munday VE5WM
Bjarne Madsen VE5FX
William J. Wood VE5AEJ

Ken Schneider VE6COH
David Roberts VE6XY
Jim McKenna VE6SU

John Allan VE7DOM
Murray Brown VE7MAB
Gene Graham VE7GAS
J.F. Hopwood VE7AHB
Larry Reid VE7LR
Bill Richardson VY1CW

Committee Chairmen

D.O.C. Liaison
Art Stark VE3ZS

News Service
Dino Moriello VE2FSA

**Electromagnetic
Interference**
Ralph Cameron VE3BBM

**Emergency
Communications**
Ken Kendall VE3IHX

CARF Contests
Norm Waltho VE6VW
Box 1890
Morinville, Alta.
T0G 1P0

CARF Awards
Garry Hammond VE3XN
5 McLaren Ave.
Listowel, Ont. N4W 3K1
(519) 291-4813

**Reciprocal Licencing
& International Affairs**
Francis Salter VE3MGY

Affiliate Clubs
George Morgan
VE3IQW
687 Fielding Dr.
Ottawa, Ont. K1V 7G6

**Publications
Committee**
John Iliffe VE3CES

C.A.R.F. QSL Service
Jean Evans VE3DGG
P.O. Box 66,
Islington, Ont.
M9A 4X1

CARF Head Office
Debbie Norman,
Office Manager
(613) 544-6161

WHAT IS ?

The Canadian Amateur Radio Federation, Inc. is incorporated and operates under a federal charter, with the following objectives:

1. To act as a coordinating body of Amateur radio organizations in Canada;
2. To act as a liaison agency between its members and other Amateur organizations in Canada and other countries;
3. To act as a liaison and advisory agency between its members and the Department of Communications;
4. To promote the interests of Amateur radio operators through a program of technical and general education in Amateur matters.

EDITORIAL

QUA



The Tip of an Iceberg!

BY J.F. HOPWOOD
VE7AHB

Remember the slogan "Use them, or lose them!" Until recently, protection of existing Amateur bands was a major topic of on-air ragchews and numerous magazine articles. Perhaps the acquisition of the new WARC bands has lulled us into a state of complacency over threats to the Amateur bands? It is time to sound the alarm again!

INFO WORLD, an international PC Weekly out of California reports that The Microperipheral Corporation of Redman, Wash., unsuccessfully petitioned the FCC for the 52 to 54 MHz segment of the six-metre band. It seems that the personal computer business world wants a packet-switching public digital radio network where the user would not require a government licence.

Remember our loss of the 11 metre band to CB radio! Similarly, this would mean the creation of a new PC public radio communications band. Microperipheral states that it would be cheaper than using phone networks or ham radio. They seem a little confused about the purpose of Amateur radio licensing! But, that is not the end of it!

In turning the application down the FCC noted that 52 to 54 MHz is part of a Ham band and that the users would have had trouble with nearby TV Channel 2. And, guess what! The FCC invited the corporation to apply for the 902 to 928 MHz band which is also a potential prize for proposed VCR public service radio to transmit video tapes around the house and neighbourhood. It is a shared band with Amateur, industrial, scientific and medical users (at least in Canada).

The territory of the radio frequency spectrum is prized and sought after by new business interests just as land is for real estate speculation and development—there is only so much to go around. Little by little we can be forced off of, or never grow to utilize

such bands more fully because of the lure of expanding markets for both private and public service communications.

In Canada, the DOC proposal to restructure the Amateur service to better reflect today's opportunities is not just to make it easier for someone to get a ham licence. It is a recognition of today's fast paced hi-tech world which is making fantastic advances in the field of microchip digital technology and generating, along with it, a voracious appetite for communications bandwidth. In a very real way, the proposal is suggesting that Amateur radio is vulnerable and must be regrouped and redirected if it is to survive into the 21st century.

The joint CARF/CRRL response to the DOC proposal to restructure the Canadian radio Amateur service reflects not only the desire to retain valued traditions, but also recognizes the need to adjust to the future and to attract prospective new Amateurs to the little used VHF/UHF/SHF Amateur bands very soon.

As a veteran in the techno-structure of commercial telecommunications, I am very aware of what could happen to high-end radio spectrum communicating in the near future. This is definitely a new age—the age of digital-related technologies: of computers, robotics, light optics, cellular radio, medical and industrial telemetering and a host of other new services and opportunities.

Technology is the engine of change. Developers are going to put new technology to work on our underdeveloped territory if we don't get crackin' soon! Remember the saying— "Use them or lose them!" Petitions for PC and VCR public radio networking is only the tip of the iceberg.

The Canadian Amateur welcomes contributions to this column of opinion.

LETTERS

BOUQUETS

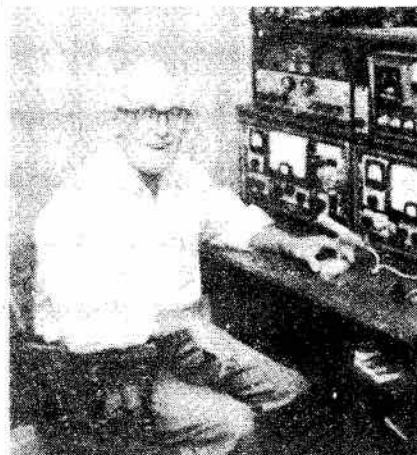
I enjoy your magazine. Keep up the good work.

73, Cliff VO1II

Magazine getting better all the time, thanks to the volunteers.

Reading the October issue, re type size, I agree with VO1RE letter page 4. Age here 77 and just fitting the FOXX kit together Hi.

73, Reg Argyle VE3DTU



MUSKOKA CENTENNIAL, VE3DFA OCTOGENARY

I am sending you this Certificate as it is going to be the centennial year here in Muskoka. It will be its 100th year and I will be 80 the same time, and have been a Ham for 40 years too. So I will be giving out the Certificate to everyone that calls me on the ham bands. I am a Member of CARF #M5600.

Now do you think that you can put this in The Canadian Amateur for me in 1987?

Your Ham operator
Dave VE3DFA. TNX.

Of course we will, Dave!— Editor

SILENT KEYS

Rick Hedges VE3GHI became a Silent Key Dec. 12, 1986.
H.W.R. Neal VE3CGY.

FROM DOWN UNDER

Enclosed some small token of appreciation for the work you and your team are doing for Canadian A.R.*

I do enjoy reading *The Canadian Amateur* and enjoy it even more to 'pinch' some articles now and then for our Club magazine *QRM*. Art Stark should have a bundle with him and future issues will be sent to you thru him.

Hope that any future *TCA* or whatever it may be called (if the negotiations are successful) will still allow *QRM* to republish articles. In the meantime, feel free to use whatever you like from *QRM*.

Hoping that the Canadian Hams may look towards a united organization, free from 'overseas' domination.

With best wishes for a Joyous Christmas and a very happy 1987.

73 John Aarsse VK4QA

IF WE COULD BUT SEE...

BRAVO, JOHN ILIFFE VE3CES! It is refreshing indeed to read an editorial in which a CARF Director is not concerned that young Canadians are not clamouring to become Amateur radio operators. John's contention that the number of people taking up the hobby from the population as a whole, is probably the same or greater than ever is borne out by the fact that the Call Book grows bigger with each publication. Those that think Canada's Amateur population is dwindling need only go into a DOC field office and ask what are the chances of getting a two-letter call sign.

In the mid 1960s DOC removed the minimum age limit for Amateur candidates. DOC examiners stepped back and awaited the stampede of boy scouts and others which, they were assured, would be forthcoming. It didn't happen!

A recent survey indicates that the average schoolboy spends the same amount of time watching television as he spends in the classroom. I suspect that DOC's latest proposal to simplify the rules and make it easier to obtain an Amateur ticket will attract only those who would have studied for an Amateur licence anyway. Amateur radio, like stamp collecting or rock grinding, is a hobby which will attract

* A Queensland pennant. It now graces the editorial office wall.— Editor.



AMATEUR RADIO STATION VE3DFA

Membership Certificate



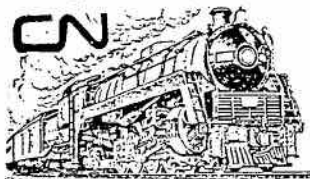
THIS IS TO CERTIFY THAT _____
HAS A QSO WITH - VE3DFA,
AND IS THEREBY ENTITLED TO ALL THE RIGHTS
AND PRIVILEGES OF A CHARTERED MEMBER OF
THE ABOVE MENTIONED CLUB.

DATED AT THIS DAY OF 1987

Small
40 Meters
75 Meters
2 Meters



Small
40 Meters
75 Meters
2 Meters



1887—1987

CENTENNIAL YEAR

MEMBERSHIP No. _____

SIGNED THE OFFICIAL SAMPLER

Gravenhurst, Ontario, Canada

QSL'S
QSL w/ your local bureau or send

PICTURES BY PACKET— A WORLD FIRST?

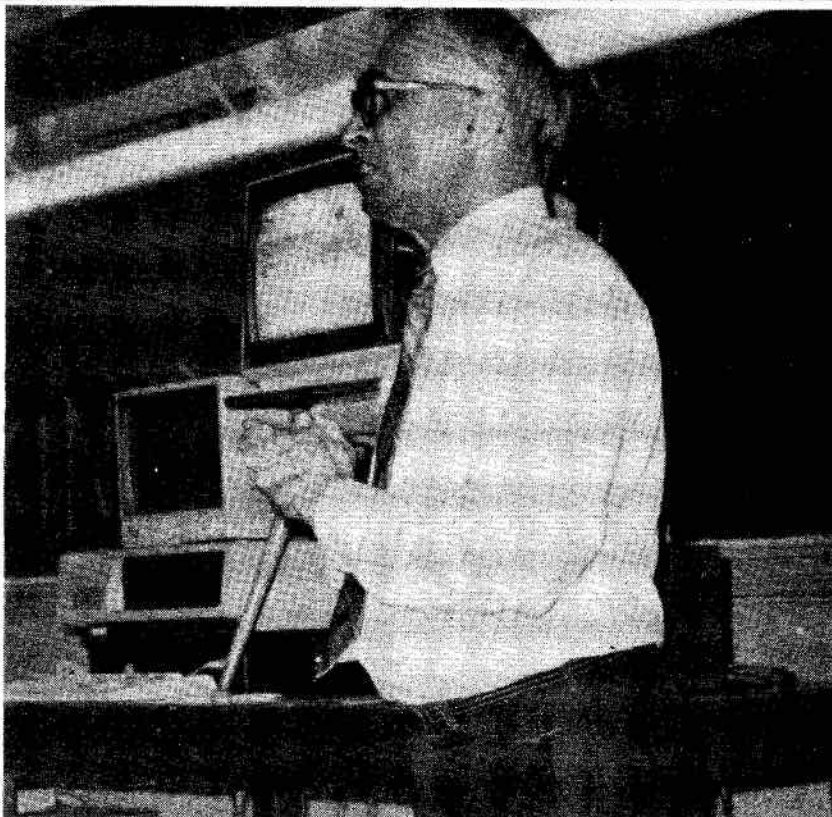
At the Kingston Amateur Radio Club meeting held on 1986 Nov. 4, members of the Belleville TELIPAK group, led by Syd Horne VE3EGO, demonstrated TELIPAK—a system which provided the capability for Amateurs to exchange high-resolution, error-free, digital colour images, text, graphics and speech.

The novel aspect of the lecture and demonstration was that the pictures used for the talk were transmitted by packet radio from Belleville to Kingston using digipeaters VE3TPK and VE3NFW. Barry VE3CJC transmitted the pictures from Belleville and they were received by Syd VE3EGO in the meeting hall in Kingston.

We believe that this is the first time that digital colour pictures have been transmitted for a talk using packet radio techniques.

73, Bob Boyd VE3SV,
Program Chairman,
Kingston Amateur Radio Club

Syd VE3EGO →
demonstrates TELIPAK



only those genuinely interested—and rightly so!

73, C.D. Fisher VE7YD

PACKET RADIO OPERATION ABOVE 14.100 MHz

The use of Packet Radio on the HF Bands has really become popular but not without some criticism. Many of the ardent RTTY/AMTOR crowd do not appreciate the intrusion of packet signals in to what has been traditionally their portion of the sub-band on 20 metres as well as those true-blue DXers trying to listen to far away beacons placed on 14.100 MHz. There is also an intrusion above 14.1 into the 'International Phone Band.' With all this, Packeteers are certainly becoming an unwanted species on 20 metre HF.

To add fuel to the fire, many of the more popular Packet Bulletin Boards and Gateways are located in the 10 kHz above 14.100. If you were to monitor their frequencies, you would find many of the messages going to and from these BBS stations originate in Canada.

Schedule IX of TRC-25 does not permit the use of telegraphy by frequency shift keying (F1) above 14.1 MHz. on the 20 metre band. U.S. Amateurs do not have the same restriction, and are permitted the same operation to 14.15 MHz.

Perhaps we in Canada should

change our regulations to meet those in the U.S. or better yet—create a new sub-band on 20 metres for 'International Packeteers'—say starting at 14.15 to 14.175 or 14.2 to 14.25 MHz. THAT' would please everybody!

73, John Noel VE7ESI

SUDBURY'S SANTA'S HELPERS

The Santa Claus Parade was another learning experience for the Sudbury Amateur Radio Club. Seventeen members of the Club participated on Sunday, Nov. 23, 1986. Two control stations were set up at 1100 in the marshalling area, one on 146.46-147.06 VE3SRG manned by VE3DBW and one on 146.52 simplex manned by VE3HZQ. Assisting in the marshalling area were VE3KON, VE3ZLB and VE3ATM, all using handhelds. VE3KON found that he had to switch to the repeater when he got into a vehicle and moved away from the marshalling area.

The parade was formed up and moved off at 1310, ten minutes late as the colour party had stationed themselves with the wrong band, hi. VE3DNS was on the net from Ambulance Dispatch, which also gave us a direct connection to the Fire and Police Departments if required.

VE3IFP led the parade with a handheld complete with his antenna mounted on top of his white hard hat,

headset and mic and battery belt. VE3AC and VE3OTB assisted the Cable TV crew with handhelds and relayed the Judges' decision on best float, etc. VE3COG, VE3IGU, VE3KBU, VE3HAC, VE3MOW and VE3NNQ were strategically placed along the parade route and VE3NNK and VE3CUV acted as home based monitors. The hams' main concern was to keep the parade closed up and to call for aid in an emergency.

The parade committee were well satisfied with the Club's performance and were reported as saying that next year the Amateurs were to provide all communications. Apparently some commercial gear the Judges had did not work out too well in their hands.

Next year VE3DNS has promised a PA system for the marshalling area, to facilitate the positioning of floats, etc. Thoughts for the future are to provide some form of Club ID on the mobiles and an improved form of individual ID. The summer caps were cold. Dream of Santa's Ham Station in full operation on a float!

A good time was enjoyed by all, and it did not rain until the parade was over.

73, VE3ATM

Please send mail directly to: Frank Hughes VE3DQB, P.O. Box 855, Hawkesbury, Ont. K6A 3C9.

VE3VM

NIAGARA PENINSULA
AMATEUR RADIO CLUB INC.
ANNOUNCES

VE3NRS

BIG EVENT

#9

SATURDAY, FEB. 7, 1987

TALK IN DIRECTIONS
VE3NRS - 147.240/840
SIMPLEX - 146.520

0800 hrs to 1400 hrs
Set-up at 0630 hrs

HOURLY
DOOR
PRIZES

CANADIAN AUTO WORKERS HALL 125 BUNTING RD., ST. CATHARINES

Lots of Parking - Indoor Displays
New and Used Parts and Equipment
Commercial Displays
Hot and Cold Refreshments will be served

Hamfest

8:00 a.m. to 2:00 p.m.

Table set up starts at 6:30 a.m.

Tables

Entrance Fee

\$5.00 each

(plus entrance fee)

\$3.00 each

Dealer Tables

\$10.00 each

(Maximum Four Tables)

Children under 12 free with adult

Advance registration on tables required by

JAN. 27th, 1987 (cut off date)

Payable by cheque or money order
to N.P.A.R.C. Inc.

DON'T DELAY RESERVE NOW

from:

N.P.A.R.C.

c/o Peter Mitroff, VE3DSW

8 Marsten Dr., St. Catharines, Ont. Canada L2N 3C7

Telephone: (416) 935-6732

*Local Hotels and Motels will offer a
discount for overnight stay.*

Dinner Dance

LIVE ENTERTAINMENT

Bar Opens at 6:30 p.m.

Family Style Dinner at 7:00 p.m.

Dancing at 9:00 p.m. til ???

*Tickets for Dinner Dance
include a chance for
Grand Prize Draw*

**Tickets: \$19.00 per person or
\$38.00 per couple**

First Come, First Served

Grand Prizes

First Prize

2 Meter Mobile Radio

Others to be announced at Hamfest

Draw will take place at Dinner Dance

*Tickets for draw will be available at
Hamfest and Dinner Dance only*

All proceeds from Hamfest for N.P.A.R.C. club projects

MONITOR — VE3VM
VE3NRS - 147.240/840
SIMPLEX — 146.520



**Reserve early. Don't be disappointed
LAST DATE FOR TABLES AND DINNER
JANUARY 27, 1987**



DOC News

Guide for the Morse Code Examination

Here are DOC's instructions for an examination in Morse code by three Advanced Amateurs.

Prospective Amateurs, or Amateurs working for the Advanced licence, need not go to DOC for a Morse code examination. Instead, any three Advanced Amateurs can certify their proficiency.

The Amateurs concerned fill in the Attestation Form reproduced on page 9. This is the only acceptable document. If you photocopy it, make sure it is clean.

(Here is the text of Radiocommunication Information Circular RIC-1, dated Oct. 15, 1986)

1. GENERAL

1.1. Purpose

This circular outlines the policies and procedures for examiners who are conducting amateur Morse code examinations on behalf of the Department of Communications and for candidates who are preparing for the examination.

1.2. Fees

There are no fees or remuneration allowed for examiners conducting Morse Code examinations on behalf of the Department of Communications. The candidate has the option of being tested by the Department, however, the applicable examination fee will be charged.

2. CANDIDATE ELIGIBILITY

2.1. Age & Nationality

There are no age or nationality restrictions as to who may take the examinations.

2.2 Amateur Class

Anyone is eligible for the Morse Code examination for the Amateur class of certificate.

2.3 Advanced Amateur Class

To be eligible for the Advanced Amateur examination, a candidate must hold a Canadian or foreign Amateur station licence for a period of not less than one year or satisfy the examiner that he has the necessary operating experience.

3. EXAMINER QUALIFICATIONS

The examiner must be the holder of an Amateur Radio Operator's Advanced Certificate or of a Canadian professional radiotelegraphy certificate such as the

1. Radiocommunication Operator's General Certificate (Maritime);
2. Radio Operator's First Class Certificate; or
3. Radio Operator's Second Class Certificate.

3.1. CAUTION TO EXAMINERS

Periodic reviews will be carried out by the Department to ensure conformance to examination procedures. Failure to comply may result in the disqualification of the candidate and the examiners.

4. EXAMINER RESPONSIBILITIES

4.1 Receiving and Sending Tests

Examiners are encouraged to develop their own receiving and sending tests in accordance with the guidelines contained in section 6 and appendix B of this circular.

For the receiving test, examiners may send the Morse code by hand. Timing and length of text must be closely scrutinized in this case. Alternatively, machine generated code may be sent.

4.2 Test Tapes

The Department will assist examiners during the implementation phase of the program by providing test tapes subject to availability and demand. Examiners should provide an exchange tape. Sample texts are included in Appendix B as a guide to those examiners who wish to produce their own test tapes.

4.3. Regulations

Examiners must ensure that the tests conform to the requirements of the Radio Operator Certificate Regulations (ROCR) and that they are conducted in an impartial manner (see section 5 for an extract of the ROCR).

EXAMINATION REQUIREMENTS

5.1 Amateur

In accordance with the Radio Operator Certificate Regulations,

candidates for the Amateur Radio Operator's Certificate are required:

a) to send correctly, in International Morse Code, on an ordinary radiotelegraph key, a semi-automatic key, or an electronic hand key for three (3) consecutive minutes at a speed of not less than ten (10) words a minute, text consisting of plain language, including figures, punctuation marks, 'Q' signals and emergency signals; and

b) to receive aurally and copy a text sent in International Morse Code. The text will be comprised of plain language, including figures, punctuation marks, 'Q' signals and emergency signals. The test will be sent at a speed of ten (10) words a minute for three (3) consecutive minutes. The candidate will be required to correctly copy the text legibly by hand or by typewriter.

5.2 Advanced Amateur

The Morse Code requirements for the Advanced Amateur examination are similar to the Amateur class except that the candidate is required to send Morse Code at a rate of not less than fifteen (15) words a minute for three (3) consecutive minutes and is required to receive text sent in International Morse Code at a rate of fifteen (15) words a minute for three (3) consecutive minutes.

6. MORSE CODE SPECIFICATIONS

6.1 Definition of 'Word'

A Morse Code 'word' as defined in the Radio Operator's Certificate Regulations consists of letters, accented letters, figures and signs of punctuation counted at a rate of five (5) characters per word with letters counting as one character each and accented letters, figures and signs of punctuation counting as two characters each.

6.2. Punctuation Marks and Accented Letters

Normally, Amateurs use only a few of the punctuation marks but do not use accented letters. Therefore, Amateur Morse Code tests may include the period, comma, question mark, dash and oblique stroke or slant, but will not include any of the accented letters.

6.3. Speed

The basic unit in Morse code is the dot. A dash is three dots long. Pauses between character elements are one dot long, pauses between characters are three dots long and pauses between words are seven dots long.

To verify the speed of a Morse code sending machine, the word 'PARIS' sent ten times in one minute results in a code speed of 10 words per minute.

7. CONDUCT OF EXAMINATION

7.1. Attestation

The attestation (see Appendix A) is the only document acceptable to the Department. Examiners should take care to use clean photocopies and to complete the document accurately. In the event of any discrepancy being noticed by the Department, or in the case of any disagreement by any interested party, the certificate issued will be considered null and void. The candidate's name must be entered in full exactly as written on their birth certificates. The code speed entered must be either that for the advanced amateur or that for the amateur (see section 5.1), not the speed that the candidate achieved. The form must be either typed or printed in block letters and all entries must be indelible; pencil is unacceptable.

If the examination is not conducted simultaneously by all three examiners, then the text of subsequent examinations required for a candidate to complete the ATTESTATION procedure should differ entirely from the preceding examination texts. The ATTESTATION process shall be completed within thirty calendar days of its commencement. The Department reserves the right to randomly select individual candidates for retest in order to ensure adherence to the Regulations.

7.2. Briefing and Familiarization

Examiners should allow ten minutes for adjustment of equipment, briefing and familiarization prior to the test. The familiarization may include the sending and receiving of sample texts excluding the text being used for the examination. The text for the sending test shall be different from that for the receiving test.

7.3. Timing

Examiners must ensure that the code receiving and sending are timed in accordance with the Regulations (see section 5.)

7.4. Review

The examiner shall allow two minutes at the end of the receiving tests for candidates to review their

copy and fill in or correct where possible.

For the sending test, candidates may send the error signal and resend the character as many times as they wish but must send the text completely within the time allotted.

7.5. Marking

Examiners shall assign marks in Morse code receiving test by counting errors and giving a mark of 100% where there are 5 errors or less, 99% for 6 errors, 98% for 7 errors, 97% for 8 errors and so on. The pass mark for code receiving is 100%.

In both sending and receiving Morse Code tests, each character including figures and punctuation that is omitted or that is incorrectly sent or received, is counted as one (1) error.

7.6. Re-examination

Candidates who fail the Morse Code tests may be retested by private examiners as often as necessary at the convenience of both the examiners and candidates.

7.7. Period of Validity

The Attestation will be valid for one year from the last examination date appearing on the attestation form.

8. EXAMINATION CREDITS

8.1. Amateur Certificate

Morse code examinations successfully completed through private examiners, or at a district office of the Department, shall be valid for one year from

(a) the last examination date appearing on the attestation form, or
(b) the date the examination was successfully completed at a district office.

NOTE: Candidates who successfully complete the Morse code examination by private examiners, prior to successfully completing the other sections of the amateur examination, are not required to notify the Department until they attend a regularly scheduled examination at the nearest district office. However, should a candidate already possess credits in theory and regulations, the attestation should be forwarded to the nearest district office of the Department so that a certificate can be issued.

8.2. Advanced Amateur Certificate

Credits for the successful completion of the Morse code examination for this certificate shall be valid for life, whether completed through private examiners or at a district office of the Department. The candidate must ensure that the credit gained by private examination is recorded at a district office before the expiry date of the Attestation. See section 7.7 of this circular.

Hot-Watch

No. 8 Yaesu FRG-7 S/N-131087 ID-B. 1947.29

No. 9 Kenwood TR7950 S/N-3080499 no ID

No. 10 Icom IC3200A S/N-1910 no ID

No. 11 Icom IC37A S/N-2677 no ID

No. 12 Drake TR7 S/N-3013 no ID

No. 13 Drake pwr supply S/N-3282 no ID

No. 14 Kenwood TS700A no S/N no ID

No. 15 Heathkit SB220 no S/N no ID

No. 16 Yaesu FT208R S/N-4E382333 no ID

No. 17 Kenwood TS830S no S/N ID sin.# 426-451-118

No. 18 Kenwood TS130S no S/N ID sin.# 426-451-118

No. 19 Yaesu mic. MC40 no S/N ID sin.# 426-451-118

No. 20 Diawa 2030 no S/N ID sin.# 426-451-118

No. 21 Kantronics interface no S/N ID sin.# 426-451-118

No. 22 RCA VCR VHF no S/N ID sin.# 426-451-118

No. 23 KDK 2015A no S/N ID sin.# 426-451-118

No. 24 Yaesu FT227R S/N 020487

No. 25 FOUND

No. 26 Decca KW109 supermatch S/N BT578/52 ID SIN 228-030-631

No. 27 ICOM 45A S/N 18301628 no ID

No. 28 KDK FM240 S/N 246 no ID

No. 29 SWAN SWR Bridge no S/N

No. 30 Kenwood TR7400 S/N 630018 no ID

No. 31 Yaesu HF set 707 S/N 4202056 no ID

No. 32 Yaesu 707 power supply no S/N no ID

No. 33 Yaesu 707 scanner no S/N no ID

No. 34 Kantronics Interface S/N 4134160016336 no ID

No. 35 Viking PH Patch M/N 250-0046-001/3 no ID

No. 36 Ham rotor control no S/N no ID

No. 37 SWR Bridge 10W to 1000W no S/N no ID

No. 38 Yaesu FT757GX S/N 4E07113 no ID

Notes: No. 30-37 were stolen out of the CSC College in Quebec. Reported by VE2OO. No 38 is the gear of Bud VE1RV. It was lost by the Post going 100 miles.

If you lost any gear send a list to me: HOT-WATCH, c/o Bob Fletcher VE3OEC, 201 Admiral Dr., London, Ont. N5V 1H9 or call collect 1-519-455-3988. Phone Collect after 6 p.m. Note new address and phone.

CODE ATTESTATION FORM

Here is the attestation form by which three Advanced Amateurs may certify the ability of an Amateur to send and receive Morse Code. It is the only form acceptable to DOC. Make a clean photocopy and be sure it is filled in clearly, completely and accurately.

Instructors— send SASE to CARF, Box 356, Kingston K7L 4W2 for a supply of forms and sample Morse code tests.

Note: if convenient, the candidate may be tested by the examiners separately. It is not necessary for all three to be present at the same time.

A. ATTESTATION AMATEUR MORSE CODE EXAMINATION

THIS ATTESTATION WILL BE ACCEPTED IN LIEU OF A DEPARTMENTAL MORSE CODE EXAMINATION AND IS VALID FOR ONE YEAR FROM THE LAST DATE OF EXAMINATION. IT MAY BE APPLIED AS A CREDIT TOWARDS THE APPROPRIATE AMATEUR RADIO OPERATOR'S CERTIFICATE.

We, the undersigned, holders of the Canadian Amateur Radio Operator's Advanced certificate or of a Canadian professional radio telegraphy certificate, attest that

was successfully examined in receiving and sending an International Morse Code text composed of plain language, figures, punctuation marks, 'Q' code signals and emergency signals at a speed of _____ words per minute for a minimum of three (3) consecutive minutes and achieved a pass mark of 100%.

Furthermore, we warrant that the examination was undertaken in a fair and impartial manner without remuneration either expressed or implied.

Name and Initials of Examiners	Telephone Number	Signature	Date of Examination

I do hereby attest that the aforementioned is an honest and accurate accounting of my ability to send and receive the International Morse Code.

Signature of Candidate _____

B. SAMPLE TEST SAMPLE TEST— AMATEUR

(1) FOR BEST RECEIVER PERFORMANCE, THE IF FILTERS SHOULD BE CONTAINED WITHIN THE AGC LOOP. THIS STRONGLY SUGGESTS THE USE OF RF DERIVED AGC. 19047 53826 60125 QRT QRX?

(2) ONE OF THE FIRST DATA COMMUNICATIONS CODES TO RECEIVE WIDESPREAD USE HAD FIVE LEVELS TO REPRESENT THE ALPHABET, NUMERALS, SYMBOLS AND. 34621 79058 29431 QST QRM?

(3) THE LOAD RESISTANCE IS EQUAL TO THE OUTPUT VOLTAGE DIVIDED BY THE TOTAL CURRENT DRAWN, INCLUDING THE CURRENT DRAWN BY THE BLEEDER RESISTOR. 34103 95721 68125 QSB QTH?

SAMPLE TEST— ADVANCED AMATEUR

(1) ADVANCED RADIO THEORY AND OPERATION AS APPLICABLE TO MODERN AMATEUR TECHNIQUES INCLUDING RADIOTELEGRAPHY, RADIOTELEPHONE AND RADIOTELETYPE. CANADIAN REGULATIONS AS APPLICABLE TO THE ESTABLISHMENT AND OPERATION OF STATION PERFORMING AN 23795 01684 QSO QRT?

(2) TO SEND CORRECTLY, IN THE INTERNATIONAL MORSE CODE, ON AN ORDINARY RADIO TELEGRAPH KEY, A SEMIAUTOMATIC KEY OR AN ELECTRONIC HAND KEY FOR THREE CONSECUTIVE MINUTES AT A SPEED OF NOT LESS THAN FIFTEEN WORDS A MINUTE PLAIN LANGUAGE. INCLUDING 50931 74816 QRX QST?

(3) ELEMENTARY PRINCIPLES OF ELECTRICITY AND RADIOTELEPHONY, OPERATING PROCEDURE AND THE INTERNATIONAL REGULATIONS APPLICABLE TO RADIOTELEPHONE COMMUNICATIONS FOR STATIONS IN THE INTERNATIONAL AERONAUTICAL MOBILE SERVICE. 32908 75164 QRA QSA?

GREAT PRODUCTS BY



HEARING IS BELIEVING



The Key Element

SSB clarity starts at the microphone...

If you are not satisfied with the "sound of your station" - it's no wonder-most "communication" mics you use were designed for industrial paging or p.a., not for the sophisticated SSB techniques. The HC-3, 4 and 5 response gives maximum articulation for getting through DX pile-ups and has set the new standard for all.

You can easily install this small, advanced Heil element into your present old mic.

- | | |
|----------------|--------------------------|
| HC-3 - \$34.00 | STD. SIZE
LARGE MIKES |
| HC-4 - \$38.00 | CONTESTER
SPECIAL |
| HC-5 - \$38.00 | SUB. MIN.
SMALL MIKES |

You've earned your Ham ticket. Now What?

The new Heil Ham Radio Handbook was written by the 1982 Radio Amateur of the Year-Bob Heil, K9EID. Bob heads his own electronic manufacturing company and is respected world-wide for his sound systems, microphones and equalizers.

Bob's new book fills the gap that often makes the difference between sitting there watching the dial lights and actually making contacts that are the real joy of amateur radio.



A BOOK YOU WILL ENJOY READING COVER TO COVER ONLY 12.95

HEAD BOOM/MIKE SET

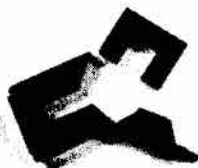


This set is ideal for contesting, DXing and hand free operation on SSB. One ear piece is removable.

BM-10 - \$95.00 WITH HC-4 or HC-5 ELEMENT

SNAP ON CHOKE-EASY AS

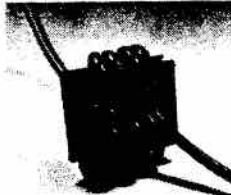
ONE ...



TWO ...



THREE ...



ELIMINATES RADIO FREQUENCY INTERFERENCE

AFFECTING:

- TELEVISIONS
- RADIOS & STEREO SYSTEMS
- PA. SYSTEMS
- TELEPHONES
- VIDEO RECORDERS
- TEST EQUIPMENT
- BURGLAR & FIRE ALARMS
- MODEMS
- MONITORS
- AND OTHER ELECTRONIC DEVICES

DUE TO:

- DOMESTIC APPLIANCES
- RADIO TRANSISTORS (COMMERCIAL, HANDIRADIO, CB)
- INDUSTRIAL MACHINERY
- CORDLESS TELEPHONES
- SWITCHING SYSTEMS
- COMPUTERS

- DOES NOT VOID EQUIPMENT WARRANTY

PACKAGE OF THREE - \$9.95

DISTRIBUTED IN CANADA BY

HEXPRO SALES CANADA INC.

4087 UNIT # 10, HARVESTER RD., BURLINGTON, ONT. L7L 5M3

FOR FURTHER INFORMATION CALL OR WRITE YOUR NEAREST AUTHORIZED DEALER

- HOBBY TRONIQUE INC. - QUEBEC (514) 336-2423
8100-H TRANS-CANADA HWY. VILLE ST., LAURENT H4S 1M5
- ATLANTIC HAM RADIO LTD. - ONTARIO (416) 636-3636
387 WILSON AVE., DOWNSVIEW, ONT. M3H 1S9
- C. M. PETERSON CO. LTD. - ONTARIO (519) 434-3204
220 ADELAIDE ST., NORTH LONDON, ONTARIO N6E 3H4
- COM-WEST RADIO SYSTEMS - BRITISH COLUMBIA (604) 321-1833
8179 MAIN STREET, VANCOUVER, B.C. V5X 3L2

WATCH NEXT ISSUE FOR ...

America's Best Kept Secret!

Radiosensitive Consumer Appliances

TO— MR. WILLIAM TUPPER,
M.P.

Dear Mr. Tupper:

Thank you for your cordial reception last Monday to discuss concerns of the Canadian Amateur Radio Federation members. Part of my purpose in seeing you as a member of your constituency was to convey a measure of alarm about the present and future incidence of electronic entertainment and control equipment which may malfunction when operated in close proximity to radio transmitters.

The copy of the Department of Communications, 'Electromagnetic Advisory Bulletin, Issue 2,' dated Aug. 1, 1982 directly addresses our concerns and for this reason was left with you. Some 500 copies of this bulletin were distributed to Canadian electronics manufacturers and importers over four years ago. The

FREQUENCY ALLOCATION CHART

A colour chart of all spectral radio frequency allocations according to the 1979 Geneva conference is again available. The chart shows the allocations in force in Canada.

Copies are available at \$2.50 each by requesting number C-022-33-1982 from the Canadian Government Printing Centre, Supply and Services Canada, Ottawa, Ontario K1A 0S9.

CHARTÉ D'ATTRIBUTION DES FREQUENCES

Une charte en couleurs montrant l'attribution des fréquences du spectre radio suite à la conférence de Genève de 1979 est disponible à nouveau. Cette charte couleur montre les allocations en vigueur au Canada. Des copies sont disponibles au montant de \$2.50 l'unité en commandant le Numéro C-022-33-1982, de: Centre d'Édition du Gouvernement du Canada, Approvisionnement et Services Canada, Ottawa, Ont. K1A 0S9.

intent of this bulletin was to make Canadian electronic companies aware that the electromagnetic environment of 1982 was causing this equipment to malfunction at an alarming rate. The suggestion was made in EMCAB-1 that appliance suppliers should voluntarily make minor design changes to their equipment to preclude this interaction. Annex 11 to EMCAB-1 names 28 classes of susceptible equipment, which had been recorded by the DOC, since 1970. Little if anything was ever done to follow the suggestions of EMCAB-1.

Some of our members have recently received correspondence from the Minister of Communications indicating we are seeking to have 'high' levels of immunity imposed on suppliers. This is not true. We are seeking reasonable and technically achievable solutions and a mandatory regulation requiring that both importers and manufacturers solve the problem known as electromagnetic compatibility. This is nothing more than what EMCAB-1 suggested nine years ago (Issue 1). It is obvious a voluntary regulation failed.

It is somewhat ironic that the compatibility problem associated with non radiocommunication devices falls outside the mandate of the Minister of Communications. It is even more mystifying how funds could be expended to not only record the incidence of the problem for many years and prepare such a well-researched technical advisory bulletin and yet have no mandate. Follow up simply never existed.

Transmitter owners have been aware of the technical reasons why problems of appliance and control compatibility have occurred for some 40 years. The Department of Communications has similarly been aware because these records have been kept and published internally since 1970.

It is important you be made aware that the judgement against a Radio Amateur being vigorously opposed through the Ontario Court of Appeal has serious ramifications for all transmitter owners, should the appeal fail. While no comment on this aspect

of our discussion is necessary, you may be assured that many, many thousands of spectrum users in North America are aware why it occurred.

The Department of Communications has the responsibility to regulate this resource we call the spectrum. It is logical that the mandate of the Minister be extended to cover devices which are radiosensitive and which should not be. The DOC has the technical expertise as well as the vehicle to implement a mandatory requirement so the public is protected from the potential loss of property or threat to life which can occur in the current environment.

The 5000 members of the Canadian Amateur Radio Federation are prepared to await the establishment of internationally accepted standards for immunity levels but, in the interim would earnestly endorse an extension to the Minister's mandate, which we understand necessitates a change to the Radio Act.

Those who share the spectrum have a responsibility to do so with a degree of mutual respect of other users. Today's consumer, in the midst of a problem, to him undefined, has nowhere to seek redress. It should be a policy of the Department of Communications to ensure technical compatibility applies equally to those who generate electromagnetic energy as well as those make devices which may respond to this energy in an unintended manner and under some circumstances prove hazardous. To expect any less is tempting the laws of probability.

You may count on the Radio Amateurs to continue cooperative efforts to help eliminate any problem of compatibility. We believe a legislative approach will go a long way to making this totally effective.

Your comments would be greatly appreciated and we solicit your help in accomplishing the objective which for 40 years has proven elusive.

Yours truly,
Ralph D. Cameron VE3BBM
Chairman
Electromagnetic Interference
Committee
Canadian Amateur Radio
Federation.

KENWOOD									--TELEX/HY-GAIN--	
ITEM	LIST	CASH	ITEM	LIST	CASH	ITEM	LIST	CASH	ITEM	CASH
AT130	269.00		SW100B	99.00		TM211A	659.00	629.00	105BAS	339.00
MC60A	149.00		SW2000	229.00		TM2530A	699.00	679.00	12AVOS	129.00
MC80	89.00		SW200A	199.00		TM2550A	769.00	749.00	14AVOS	169.00
MC85	179.00		SW200B	199.00		TM2570A	899.00	869.00	155BAS	529.00
PB21	43.00		SMC1	49.00		TM401B	639.00	619.00	18AVTWBS	269.00
PB21H	63.00		SMC2	49.00		TM411A	759.00	729.00	18HTS	1099.00
PB26	65.00		SMC3	55.00		TR2600A	579.00	559.00	18VS	77.00
PC1A	119.00		SMC4	72.00		TR3600A	599.00	575.00	204BAS	649.00
PS430	259.00		SMT1	55.00		TR751A	989.00	949.00	205BAS	899.00
PS50	349.00		SMT2	55.00		TS440S	1639.00	1599.00	214BS	109.00
R2000	999.00	949.00	TH21A	349.00	339.00	TS440SAT	1849.00	1779.00	218S	499.00
SM220	729.00	699.00	TH21AT	389.00	379.00	TS711A	1399.00	1349.00	23BS	49.00
SMC30	60.00		TH41A	369.00	355.00	TS811A	1629.00	1589.00	25BS	65.00
SP940	155.00		TH41AT	409.00	395.00	TS940S	3069.00	2969.00	28BS	89.00
ST2	170.00		TL922	2199.00	2099.00	TS940SAT	3399.00	3289.00	64BS	165.00
SW100A	99.00		TM201B	579.00	529.00	TW4000A	1029.00	989.00	7-1	369.00
<hr/>									7-2	829.00
ICOM									7-3	519.00
ITEM	LIST	CASH	ITEM	LIST	CASH	ITEM	LIST	CASH	BN-86	49.00
AH2	906.00	879.00	IC1271A	1749.00	1699.00	IC47A	789.00	759.00	CD45II	309.00
AH2A	718.00	699.00	IC12AT	665.00		IC48A	665.00	649.00	EXP-14	799.00
AH7000	137.00		IC271A	1229.00	1199.00	IC490A	949.00	919.00	GPG2A	59.00
AT100	571.00	539.00	IC271H	1499.00	1469.00	IC4AT	485.00	449.00	HAM-TV	499.00
AT150	571.00	539.00	IC27A	622.00	599.00	IC735	1449.00	1419.00	HDR300	1099.00
AT500	752.50	699.00	IC27H	665.00	649.00	IC745	1521.00	1489.00	QK710	199.00
BC35	101.00		IC28A	622.00	599.00	IC751A	2250.00	2199.00	T2X	599.00
BP2	64.00		IC28H	665.00	649.00	ICR7000	1593.00	1559.00	TH2MKS	449.00
BP3	48.50		IC290H	829.00	799.00	ICR71A	1376.00	1349.00	TH3JRS	489.00
BP4	19.00		IC2AT	385.00	359.00	PS15	235.00		TH5M2S	999.00
BP5	87.00		IC2KL	2599.00	2499.00	PS25	167.00		TH6-TH7	399.00
BP7	101.00		IC3200A	855.00	829.00	PS30	434.00		TH7DRS	1149.00
BP8	101.00		IC37A	699.00	679.00	PS35	285.00		V2S	109.00
IC02AT	579.00	539.00	IC3AT	485.00	449.00	PS45	198.00		V3S	109.00
IC04AT	639.00	599.00	IC471A	1419.00	1389.00	PS55	285.00		V4S	129.00
IC120	839.50	799.00	IC471H	1769.00	1725.00				-----SONY-----	
KANTRONICS									AIR-7	439.00
2400-TWC	299.00	KPC-2400	519.00	ICOM DAY!				AN-1	129.00	
CHALLENGER	159.00	UTU	349.00	Sat. Oct 11				ICF-2002	339.00	
INTERFACE-II	399.00	UTU-XT	559.00	ICOM PERSONNEL PRIZES				ICF-2010	499.00	
KPC-2	369.00			-----BUTTERNUT-----				ICF-4910	129.00	
				HF2V				209.00	ICF-6800	879.00
				HF6V				219.00	ICF7600A	159.00
				TBR-160-S				79.50		
				TLK				24.50		

Spécialistes en Communications / Communication Specialists

8100-H Trans-Canada Hwy., St-Laurent, Qué. H4S 1M5 (514) 336-2423; 1-800-361-6979

Hobbytronique Inc.

CARF among those honoured at VE7EXPO finale!

BY J.F. HOPWOOD
VE7AHB

The final curtain in the VE7EXPO drama came down when 200 hams and their families gathered at the Gizeh Shrine Temple in Burnaby on Nov. 22, 1986 to celebrate the station's great success at EXPO 86. The evening began with a happy hour, followed by a smorgasbord dinner, presentation of awards and ended with a 'bargain' auction of left over ancilliary cable and equipment.

The evening's events were directed by Society Chairman Bob Smits VE7EMD who, along with Operations Chairman Larry Reid VE7LR and AMSAT Co-ordinator Tony Craig VE7XQ, declined well deserved award honours. The auctioneering skills of Oz Candy VE7KX aided in netting the Society and the Shriner's Children's Hospital Fund a tidy sum.

The real honour went to the hundreds of dedicated hams who took special pride in serving and manning the station for 5½ months. Each station operator was awarded a certificate of merit for service rendered. Special note was made of the XYL's, YL's and OM's who patiently and generously supported their partner so that he or she could represent Canadian Amateur radio in such a distinguished way.

Outstanding merit service awards were as follows:

CORPORATE AWARDS

Marcel Masse - former DOC Minister; Bruce Drake - DOC Deputy Regional Director; Ian Rutherford VE7IAN - DOC Vancouver District Manager; Evelyn Garrison KA7LPA - ICOM America; Hugh Dollard VE7PA - ICOM Canada; Stan Stefanik - Com-West Systems; John Consiglio - B.C. Provincial Emergency Program.

CLUB AND ASSOCIATION AWARDS

Burnaby Amateur Radio Club; Canadian Amateur Radio Federation; AMSAT - B.C. Chapter; Vancouver Amateur Digital Communications Group.

INDIVIDUAL AWARDS

Dave Gilmour VE7YG; Dick Williams VE7RP; Fred Houghton VE7FFK; Vol Riley VE7EYG; Jack Rothwell VE7TK; Larry Leminski VE7SD; J.F. (Hop) Hopwood VE7AHB; Dennis Pekrul VE7CXN; Alan Mar VE7DPM; Lynda Schiere VE7FYL; Elizabeth Anderson VE7YL; Ken Light VE7DHI; Ted Heavens VE7CHE; Carol Enright VE7CCF; Scott Charles VE7FYC.



CARF and The Canadian Amateur are delighted to accept this Meritorious Service Award from the VE7EXPO Society. We are all proud to have supported those who dedicated themselves to the hard work of building and operating the station, and ensured its outstanding success.

The Society expressed its appreciation for the assistance of all the clubs who participated and singled out the Burnaby Amateur Radio Club for playing a vital role in so many important ways. Significantly, they manned the station at least one week out of each month. It was with regret that recent silent key and club veteran Dan Gentry VE7DG, who had been a major contributor, could not be present.

Vol Riley VE7EYG deserves special mention for the extraordinary dedication and sacrifice he made toward the success of VE7EXPO. He served on the Operations Committee and was the Burnaby Club Manning Co-ordinator. He also managed the station throughout May, and assisted in a relief capacity for the other managers over the total 5½ month operating period. He spent hours on the phone rounding up people, travelling in his car to collect unreturned operator security passes, spent hundreds of dollars for gas, parking and toll calls to keep the station properly staffed.

Another mainstay was Dave Gilmour VE7YG of the Vancouver Amateur Radio Club. Dave distinguished himself as the construction and dismantling co-ordinator. His Scottish dedication and

charm guaranteed the support of the Canadian Pavilion exhibit staff. Dave never failed to respond to cries for help. He lives close to the EXPO site and could be seen riding his bicycle through busy downtown streets to effect a timely repair to station equipment.

In accepting the award on behalf of Canadian Amateur Radio Federation, I was indeed proud of the assistance that CARF was privileged to give and particularly proud of how the CARF national and regional organizations pulled together to go all out for Canada and VE7EXPO. *The Canadian Amateur* magazine received honourable mention, thanks to the efforts of Editor Frank Hughes VE3DQB. Advertising Manager Don Slater VE3BID; President Ron Walsh VE3IDW; and Pacific Region Director Jim Voight VE7CWC are to be congratulated for their unstinting behind the scenes support.

A special thank you to the BCFM Communications Association for providing the VE7RPT VHF/UHF repeaters for VE7EXPO assistance and service to visiting hams. To the Geizeh Communications Amateur Radio Club, a sincere thank you for their assistance in providing the Temple and its amenities to celebrate the VE7EXPO finale.

Digital Communications and Emergency Work

In an emergency all of the resources available to the Amateur must be exploited. A possible emergency scenario involves the use of voice channels to carry emergency digital communications. Let me set the scene for you. An emergency occurs in an area of the province that does not have a link into the .01 system; however, it does have a link right down to Toronto using linked voice repeaters (eg. the ULR linking system). What kind of transmissions can be made and what would be the throughput? How would the system be used? Who would control it... that is, who would be net control?

Let me answer the easy questions first. As I see it, a digital transmission would be initiated as a voice transmission. The originating station would get on the local 2 metre repeater and ID. He would bring up the links through to Toronto. He would call the operator who is controlling the packet node in Toronto. They would establish contact via voice at first and then digitally. They would pass their traffic and close down the system. I don't think that I have to explain anything more since the operation of linked systems is well known. Net control would not have to be maintained unless the link was in use all the time. In that case the net controller would have to be on 70 cm and in control of the hub repeater.

There are empirical questions remaining: is it possible to send packets over linked repeaters? What is the effective throughput? What about collisions? I carried out an experiment early one morning in order to get some answers to those questions. The experiment is written up in Appendix 2 for those that are interested. What I will mention here are the conclusions.

First, as hard as I tried to make the channel busy and force collisions, the TNCs acted exactly like they were connected in the direct mode with perfect hearing. I had some initial problems because I was using four transmitters in both directions (my transmitter and three repeater transmitters) however proper settings of TXD, AXD and AXH solved any

problems. The experiment satisfied me that a linked system of voice repeaters can provide the absolute maximum digital throughput for long haul emergency traffic. It therefore is necessary that the planning in each area to integrate digital and analogue communications into an effective emergency response also include the use of voice repeaters both linked and unlinked.

7. CONCLUSIONS AND COMMENTS

The first comment I have to make is of a very general nature regarding Amateurs that I have talked to over the last 19 years. It has to do with our insularity; not in the social sense, but in the modes with which we operate. We become known as a ham who hangs around a particular FM repeater, or someone who is always on packet at night or on 75 metre phone. Many times I give a call on a local FM repeater and am met with much kidding about how I haven't been 'on' for awhile, as if being 'on' means only to work VHF FM analogue.

I've been guilty of the same thinking

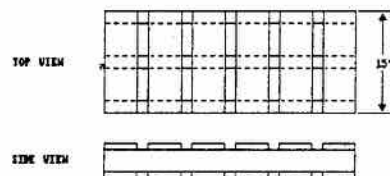


FIGURE 1

in the past as well... so don't interpret me as somehow criticizing hams at large. I make this point in the context of emergency preparations, and the integration of digital communications into those plans. It is absolutely necessary for those in the planning positions to be up-to-date in their technology and make sure that all forms of digital communications are included. This is why I made reference to AMTOR. Even though this is a packet forum the other major error detection and correction digital mode requires a place in the overall emergency plans.

Integration of multiple modes of communications into our simulated emergency tests requires that the tests be that much more complex and well-planned. Gone are the days when the schedule calls for people to show up

REGISTRATION CARD — CARTE D'INSCRIPTION										NO. 025250		RESTRICTION <input type="checkbox"/>
PLEASE PRINT — EN LETTRES MOULÉES S.V.P.												
1. FAMILY NAME — NOM DE FAMILLE										12. PERMANENT ADDRESS — ADRESSE PERMANENTE		
2. FIRST NAME — PRÉNOM	3. INIT.	4. MIDDLE NAME — NOM DE MARIAGE	5. SEX — SEXE	6. AGE	13. CITY — VILLE	14. PROV. — TERRE	15. TELEPHONE TELEPHONE					
LIST ONLY THOSE FAMILY MEMBERS WHO ARE WITH YOU AND WHO HAVE THE SAME FAMILY NAME AS YOU. FILL OUT SEPARATE CARDS FOR OTHER PERSONS. INSCRIRE SEULEMENT LES MEMBRES DE LA FAMILLE QUI VOUS ACCOMPAGNENT ET PORTENT LE MÊME NOM DE FAMILLE QUE VOUS. REMPLIR UNE CARTE DISTINCTE POUR TOUTE AUTRE PERSONNE.										16. EMERGENCY ADDRESS AND TELEPHONE NUMBER ADRESSE ET NUMÉRO DE TÉLÉPHONE TEMPORAIRES PLEASE INFORM CENTRAL REGISTRY BUREAU IF YOU MOVE. AVERTIR S.V.P. LE BUREAU DU FICHIER CENTRAL SI VOUS VOUS DÉPLACEZ.		
7. FIRST NAME PRÉNOM	8. INIT.	9. RELATIONSHIP LIEN DE PARENTÉ	10. SEX SEXÉ	11. AGE								
7. SPECIAL MEDICAL NEEDS — BESOINS MÉDICAUX PARTICULIERS												
18. ADDITIONAL INFORMATION — AUTRES RENSEIGNEMENTS												
19. PLACE OF REGISTRATION LIEU D'INSCRIPTION					20. DATE D.J. M. Y.A.	21. TIME — HEURE	FOR OFFICE USE ONLY — À L'USAGE DU BUREAU SEULEMENT 22. CROSS-REFERENCE — RÉFÉRENCE					
HS 8110 (3-81) Health and Welfare Canada Medical Services Branch Emergency Services										Santé et Bien-être social Canada Direction générale des services médicaux Services d'urgence		

This registration card is typical of those used by the Red Cross in their emergency work.

with their handhelds to serve a few hours and then go home. This type of participation will always be required and is crucial to the success of the Test. There must also be packet modes set up that have printers attached that work from DC. They must be given traffic to pass and maybe even, in initial tests, work in parallel with the voice channels for throughput measurements.

Added to the preparation, there must be a role made for HF both for voice and AMTOR. The integration might be made that much tighter if messages were initiated in one mode and routed through another mode before coming to rest at a place where the messages could be compared with their originals.

Every major centre should have a plan which is up-to-date and which specifies certain stations as having a linking capability with other centers around Ontario. These appointments would be done voluntarily and would require that the ham involved have the time and equipment to do the job. A good test for this linking ability is for two centers, widely separated, to have their simulated emergency tests on the same day and try to establish and maintain at least one voice and one data channel with each other. These channels would be active between them for the duration of the test. This would verify the long haul capability of the emergency plans.

The individualism of Amateur radio ops is well-documented. The ham over

the years has done many things that were 'impossible' to do just because he had enough technical knowledge to allow him to experiment by himself with various facets of radio. Unfortunately when an emergency does occur the individual is helpless and it is only the strength of the group that can make a difference. I urge all that are interested in developing a comprehensive plan for your particular area to get involved with the ARES and help.

The political side of Amateur radio is also well documented. Over the years groups have developed great animosity toward each other. In a crisis they must pull together. How can they do that if they do not plan together?

By the same token emergencies are not 'owned' by a particular group. That is, if the local club is managing an emergency, it should be open to others from the outside to give technical help and assistance like the delivery of an AMTOR station for long haul digital communications if one is not available locally. In fact, the local plan should assume that there will be an influx of operators and material when required. As well, each plan should provide a method of exporting operators and hardware to a nearby stricken area.

8. POSTSCRIPT

In this paper I have tried to outline some of the ways digital communications can be integrated into the emergency plans for a community. I have also made suggestions as to some of the basic requirements for a good overall emergency plan. It is my hope that this paper will spark discussions so that effective plans may be drawn up for the major centers in Ontario over the next year.

APPENDIX 1

1. GENERAL DESCRIPTION

The portable digi is designed to be deployed in any weather, in varying electrical conditions and in several different modes. The wooden base,

15" wide and 49" long is made from a re-worked warehouse skid (see Fig. 1). On this base there is room at each end for a 12v battery (a one-battery configuration is shown in Fig. 3) and the weatherproof shell that protects the electronics from the elements between them.

At the end of the wooden base is an anchor for the antenna mast. This anchor prohibits the mast from sinking into soft ground.

On the sides of the base are 4 hex lag bolts used as anchors for the 2 bungie cords that hold the shell on the wooden base (see Fig. 2).

The antenna/mast combination consists of four (4) five-foot swaged mast sections and a vertical antenna. The top of the antenna is about 26 feet above ground (see Fig. 3).

A two foot ground rod connects to the negative terminal of the battery.

The portable digi is designed to be carried to the site in any sedan. I use my Toyota Celica hatchback to carry it without crowding. The plastic cover can be used as a handy box to carry all of the electronics, the guy wires and anchors, feedline and electrical wiring. The bungie cords that are used to strap down the inverted plastic box can be used to bundle the four antenna mast sections together. The antenna that I use breaks at the feedpoint in the middle and I tie the two pieces together in parallel with two bits of wire. The digi ends up being composed of five bundles to carry: the battery (by far twice as heavy as anything else), the mast sections, the wooden base, the antenna, and the box containing all of the electronics and hardware. My wife and myself deploy the digi in less than 15 minutes from hitting the site. I carry the base and battery and she carries the antenna and mast on our first trip. We set it all up in about five minutes. The next trip brings the box full of electronics and hardware. From there is a short matter to get it all hooked up and on the air.

2. DEPLOYMENT MODES

The portable digi is designed to be deployed in several modes. It can be deployed with or without 12 volts, with or without the antenna mast or the antenna itself. It also has a common interface specification so that different radios can be used with a common TNC.

a. AC or DC Power

The dc power is supplied by a fully shielded cable made from two pieces of RG-8. It is terminated with a 12v cigarette lighter female connector. Attached to this socket is a 3 for 1

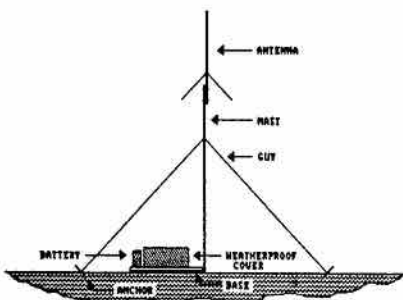


FIGURE 3

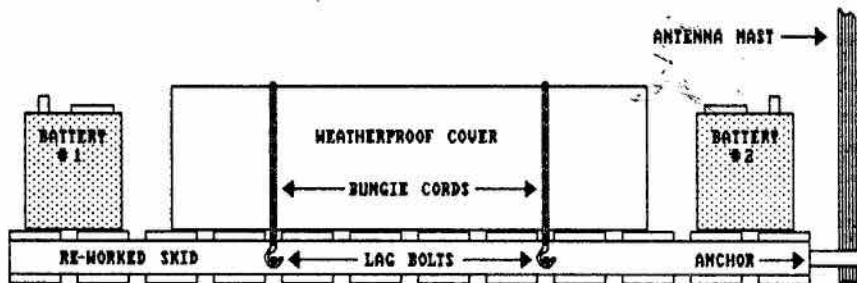


FIGURE 2

splitter so that three 12v devices may be operated from the single 12v line. The capacity of the 12v battery allows unattended operation for a minimum of 50 hours before it needs to be serviced. Two batteries allow for in excess of 100 hours of unattended operation.

There is room in the enclosure for a 12v battery charger which may be used to charge the 12v battery or a DC power supply during intermittent times when AC is available.

b. Antenna Options

If the digi is deployed in the wild at a high point the mast and antenna will be used. More often than not the digi will be deployed on a roof of a tall building. In this case the mast may not be used and the antenna can be fixed to the building structure itself. In another case it might be taken to a location that has a base station antenna but does not have any digital equipment. Here it might be hooked up to the base station antenna system.

c. Common Interface Connection

It is important that the TNC in the digi be able to work with several different radios. I have devised a common interface specification that can be used with my TNC and three radios that work on 2 metres. You will see in the parts list that I have listed a XLR 3-pin in-line socket.

This female connector has 3 lines going to it. The signals are as follows:

- pin # Signal
- 1 Receive audio from xcvr to TNC
- 2 PTT line
- 3 AFSK line from TNC to xcvr

(all lines should be amphenol RG 174/u or equivalent grounded to cover of the XLR connector)

Each of my radios (Santec ST-144, Drake UV-3, and Yaesu FT-726R) has its own interface terminating in a XLR plug. Each can, therefore, end up in the box running the digi.

3. PARTS LIST

Quantity and Name

- 1 XLR 3-pin in-line socket
- 1 XLR 3-pin in line plug
- 1 12x24x14" Polyethylene box, Pt. #TP-07-807

- 2 Bungie cords
- 1 RG-8 Handmade power lead
- 1 12v Battery (RV Battery is best)
- 1 Warehouse skid cut down to 15" in width, 49" long
- 8 Guy wire clamps
- 4 Hex lag bolts (anchors for bungie cords)
- 2 Guy wire anchors (roof anchor for digi)
- 4 Swaged mast 5' sections
- 1 4" Wall mount (mast anchor)
- 1 roll Galvanized steel guy wire
- 1 2 Metre vertical antenna, Your choice
- 1 25' 52 ohm feedline, Your choice

Most of these items are available from H. C. MacFarlane Electronics Ltd. R.R. #2 Batterssea, Ont. K0H1H0. 613-353-2800. See their advertisement this issue.

NOTE:

TP = Techstar Plastics (416) 439-6111, Contact Ed. Moshynski.

This digi is very inexpensive as you can see from the above parts list. I recommend it as a digital group club project. As a group you will be ready to deal creatively with any problem that comes up in your area.

APPENDIX 2

1. OBJECT

The object of this experiment was to test the throughput of data using linked FM voice repeaters.

2. HARDWARE SET-UP

- Two Kantronics KPC-2s
- Two ASCII Video display terminals
- FT-726R on 2 metres and Drake UV-3 on 1.25 metres. (220)

3. REPEATERS USED

- VE3GER 145.37 MHz
- VE3ULR 442.025 MHz
- VE3TTR 224.98 MHz

4. CIRCUIT DESCRIPTION

One TNC operated the Drake on 220; the other the Yaesu on 144. Both had their own ASCII terminal. I could modify the operation of each TNC separately using the keyboards on the terminals.

There were four transmitters involved on each data stream. The first transmitter was my own and three belonged to the linked network that I worked through. (See Fig. 4)

5. TNC SETTINGS

The TNCs were set as follows:

- AX25 level 2 = on
- TXD = 4 (4 x 40 ms = 160 ms)
- AXD = 3 (3 x 120 ms = 360 ms)
- AXH = 2 (2 x 120 ms = 240 ms)
- BEACON EVERY 10 sec.
- TNC #1 MYCALL = VE3HSF
- TNC #2 MYCALL = VE3HSF-1

6. DISCUSSION

The first phase of the test involved getting a connect. I had to play around with several of the parameters to allow for the time necessary to key up the four transmitters. Once this problem was solved I started both TNCs beaconing. The beaconing simulated channel activity. I watched the beacons roll in on both VDTs and over a period of five minutes there were no collisions.

The next phase involved connecting each TNC to the other while the beaconing continued. I sent many packets of varying 'Y' frames in both directions as simultaneously as possible. Again I found that packets would not collide.

The last phase involved each TNC connected to itself through the other one while the beaconing continued. Again I sent packets with varying length 'Y' frames from each VDT. This result was the same as others; no packets collided.

7. RESULTS

To my complete surprise there was no degradation of throughput between the TNCs even though the channel was very busy. The two TNCs acted like they were connected simplex and had perfect hearing between them.

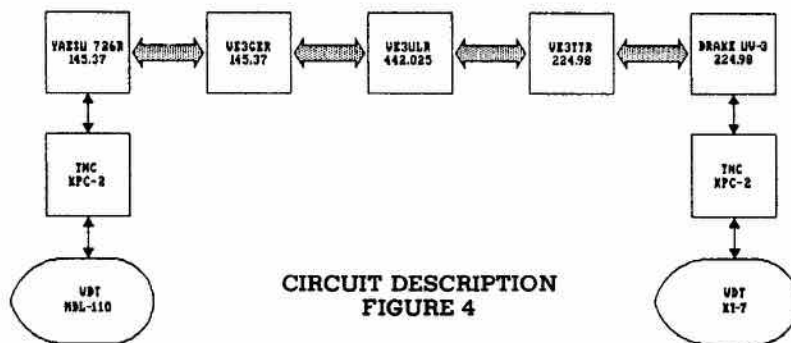
8. CONCLUSION

Linked voice repeaters can provide the absolute maximum digital throughput for long haul emergency traffic.

9. CREDITS

I would like to thank the following analogue repeater managers for the permission to tie up their machines for more than three hours while I was doing my testing: Terry Darling for VE3ULR and VE3TTR, and Dave Hunter for VE3GER.

Without their support it would have been impossible to do the proper testing.



CIRCUIT DESCRIPTION
FIGURE 4

KENPRO KT-220ET
IDENTICAL TO
SANTEC ST-20T

KENPRO

A SUPER VALUE AT
\$459.00

COMPARE TO \$600 for
other HT's & Features

Feb 1-28 SUPER SALE !!
\$399.99

WHICH OTHER HT CAN:
MEMORIZE 2 PHONE NUMBERS
TELL THE TIME (24hr CLOCK)
RUN ON 12VDC, ETC., ETC.

KENPRO KT-220ET VHF FM TRANSCIVER MODEL ST-20T	
General	
Frequency Range	142.000 to 150.995 MHz
Type of Emission	F3
Memory Channels	10 Channels
Antenna Impedance	50 ohms
Power Source	9.6V Nicd battery pack 9V Dry battery pack D.C. 8.4-16V
Transmitter	
RF Output Power	5.0 Watts (H), nominal at 12V 3.5 Watts (M), nominal at 10.5V 0.5 Watts (L), nominal at 10.5V
Modulation	Frequency modulation
Maximum Deviation	± 5 KHz
Transmit Spurious	-60 dB
Microphone	Electret Condenser Microphone
Receiver	
Receiving Methods	Double superheterodyne
I.F.	1st 16.9MHz 2nd 455KHz
Sensitivity	Less than -0.25uV at 12dB SINAD
Band Width	± 7.5 KHz at 6dB down
Selectivity	± 15 KHz at 60dB down
Audio Output Power	400mW at 8 ohm

• TWO SEVEN-DIGIT AUTO DIAL MEMORIES • ONE HAND, ONE FINGER SIMPLIFIED KEYBOARD ENTRY OF INFORMATION • 142-150.995 OPERATION FOR M.A.R.S. AND O.R.C.A.P. • TEN MEMORY CHANNELS FOR 10 DIFFERENT REPEATER OPERATIONS PLUS 'SCANLOCK' FOR LOCKOUT OF ANY ONE CHANNEL OR MULTIPLE CHANNELS WITHOUT REPROGRAMMING • SANTEC'S MULTIPLE MODES OF SCANNING • 3.5-5 WATTS OUTPUT • DIRECT 12 V.D.C. OPERATION • SUB-AUDIBLE TONE COMPUTER CONTROLLED • MICROPROCESSOR CONTROLLED ENCODE/DECODE OPTION AVAILABLE • TIME OF DAY QUARTZ CLOCK • ANALOG METER MOUNTED FOR BEST D.F.ING • AUTOMATIC ENTRY OF STANDARD OFFSET FOR BAND WITH EACH NEW ENTRY • ANY CTCSS TONE IN ANY MEMORY CHANNEL • SLIDE ON/OFF BATTERY PACK COMPATIBILITY

It Really Shouldn't Be This Easy

Remember just a few years ago, how it took a roomful of equipment just to work RTTY. And if you wanted more than one mode it took a dedicated computer system costing thousands of dollars. The new AEA Pakratts are proving it doesn't take lots of equipment or money to enjoy working all bands in five different modes.

First, A Good Idea

The idea behind the Pakratt is very simple. One controller that does Morse, Baudot, ASCII, AMTOR, and Packet, and works both HF and VHF bands. Of course the decoding, protocol, and signal processing software must be included in the unit, and connection to the computer and transceiver have to be easy. The unit also has to be small and require only 12 volts, so it will work both in the shack and on the road.

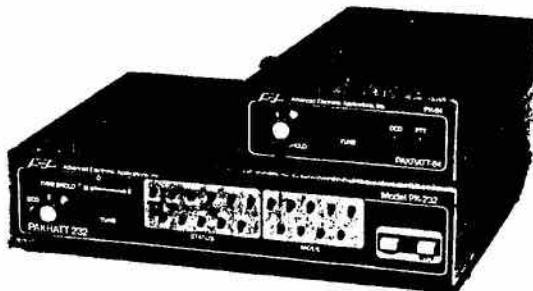
Second, Computer Compatible

It doesn't matter what kind of computer you have, we have a Pakratt for you. The PK-64 works with the popular Commodore 64 or 128, and the PK-232 works with any other computer or terminal that has an RS-232 serial port. The PK-64 doesn't require any additional programs. Simply connect to the computer and transceiver and you're on the air. The PK-232 needs a terminal or modem program for your computer. The one you're using with your telephone modem will work just fine.

PACKET CONTROLLERS and Accessories:

A.E.A. PK-232 \$559; PK-64A \$459; PK-64 \$369; PK-80 \$369; PM-1 \$299; HFM-64 \$169
KANTRONICS KPC-2400 \$559; KAM \$559; KPC-2 \$289 Modem-2400 \$259
M.F.J.-1270 \$249. Extra 5 pin cable \$12

PAKRATT™ Model PK-64



PAKRATT™ Model PK-232

Third, Performance and Features

The real measure of any data controller is what kind of on-air performance it gives. While the PK-64 and PK-232 use different types of modems, both give excellent performance on VHF. The optional HF modem of the PK-64 uses independent four-pole Chebyshev filters for both Mark and Space tones, and A.M. detection. The HF option can be factory or field installed.

The PK-232 uses an eight-pole bandpass filter followed by a limiter discriminator with automatic threshold correction. The internal modem automatically selects the filter parameters, CW Fc = 800 Hz, BW = 200 Hz; HF Fc = 2210 Hz, BW = 450 Hz; VHF Fc = 1700 Hz, BW = 2600 Hz.

The PK-64 uses on screen indicators to show status, mode, and DCD (Data Carrier Detect) while the PK-232 uses front panel indicators. Both units use discriminator style tuning for HF operation. And that's just the tip of the iceberg. Features like multiple connects on packet, hardware HDLC, CW speed tracking, and other standard AEA software features are included in both the PK-64 and PK-232.



FM-240
\$449.00

Specifications KDK FM-240 (and FM-740)	
General	
Supply Voltage	13.8V ± 15%, negat.ve ground.
Consumption	Transmit: 1.5A @ 5w, 5.5A @ 25w Receive: .4A @ 0 sig., .6A @ max volume = 10 deg. C to 50 deg. C
Temp. Range	-10 deg. C to 50 deg. C
Dimensions	40H x 140W x 170D mm (Body only)
Weight	1.0Kg (Body only)
Transmitter	
Freq. Range	FM-240 142.000 - 150.00 MHz (FM-740 440.00 - 449.975 MHz)
Output	High = 25 watts, Low = 5 watts (High = low, Low = 1W) (FM-740 High = Low)
Modulation	Variable reactance frequency modulation
Max. Deviation	± 5KHz
Spur. Emms	More than 60dB down from carrier
Duplex Offset	Programmable ± 1 to 12.7MHz (set at ± 6KHz as factory)
Tone	Programmable 74-250.3 (34 EIA tones) Encode and Decode
Receiver	
Int. Freq	1st = 10.7MHz, 2nd = 455KHz (1st-21.4MHz 2nd 455KHz)
Sensitivity	Better than 120B SINAD @ 2uV
Squelch Sens	Better than 15uV
Bandwidth	± 6KHz @ - 6dB
Selectivity	± 12.5KHz @ - 60dB
Image Ratio	Better than 70dB
Audio Output	More than 2w, 8 ohms load, 10% THD
Standard Accessories	
Speaker Microphone	Speaker = 8 ohms; Mike = Condenser type. SM-34A - UP/DOWN plus tone encoder.
Power Cable	2 meters with 7A fuse.

- Superior features, simpler to use for 2 meters. MARS. CAP
- Compact size for better fit in today's automobile
- 16 fully programmable memory channels, plus priority call channel
- 2 VFOs for today's user
- Subaudible encode and decode standard for today's 2 meter bands
- Subaudible frequency programmed by freq. no chart needed
- Search synthesis option for voice VFO

with TouchTone Speaker Mike
Voice Synth. \$59



Feb 1-28 SUPER SALE !!
\$399.99

ATLANTIC HAM RADIO LTD.

Tues.-Fri. 10 a.m.-6 p.m. 378 WILSON AVE.
Saturdays 10 a.m.-2 p.m. DOWNSVIEW, ONT.
After 7 p.m. Call (416) 222-2506 CANADA M3H 1S9
For Orders. (416) 636-3636

Rick warms Niagara

The Niagara Peninsula ARC (NPARC) has over the years been a very community minded club. Whenever there was a need the club's members were there to give communications to the many road races, regattas, Grape and Wine Festivals, Ontario Winter Games, Royal Canadian Henley Regatta, the list goes on.

It wasn't until recently (Nov. 14, 1986) on a cold windy day that a 'Man in Motion' Rick Hansen arrived in Niagara. We have all heard about Rick on TV, radio, newspaper stories, but haven't really felt the closeness to him or his struggle UNTIL that November 14.

The Bell Telephone Pioneers and MacDonald's have been helping

Rick's team as they progress across Canada. The local Bell Telephone people got in touch with me to 'put in motion' our communications requirement.

As many people know Rick's purpose is to raise funds for spinal cord research. Many organizations have donated to this cause as Rick passes by. The Niagara area was no exception. There were to be hundreds of school children lining the streets and roads along his route; communication was needed to make sure everything was in order, and this is where Ham Radio could help out. We didn't have too much time to really plan, so our team headed out to their respective spots.

We weren't too long in determining

that Rick was ahead of schedule and the children in St. Catharines west end schools hadn't been let out yet. A quick call via information thru VE3NRS by VE3OIF Dennis to the proper schools and this got them rolling.

We also had many hundreds of people, VIPs, MPs, MPPs, located at the downtown library where we patched all 2 metre communications over the PA system to let them have up to the minute details of Rick's location.

The Mayor of St. Catharines the Honourable Joe McCafferty is a good friend of NPARC, he knows what we can do and what Amateurs have done in the past for public service and emergency communications. When I arrived on the site for our NCS, he immediately moved his car and we got the mayor's personal parking spot for our own use. These things don't come without doing a good job in the past.

The NPARC members involved with the 'Man in Motion' public service communications were: John VE3NKW, Dan 3LVJ, Sally 3NDF, Bob 3HNN, Arnie 3LWW, Bill 3OZT, Dennis 3OIF, Tommy 3LJR, Al 3AGE, Gord 3LWF, Dave 3FOI.

As you read this article Rick will be wheeling his chair, maybe in your area (Western Canada), why not see if you and Amateur radio can help out, and get that WARM FEELING like we did in NIAGARA?

73, Dave Digweed VE3FOI



Bill VE3OZT gives Rick assistance to the PA system's mike. Bill is from VE7 land (Vancouver) the same province where Rick is from. About \$100,000 was donated from the Niagara Peninsula, Ontario area during Rick's Man in Motion trip there. Members of the NPARC supplied the necessary communication during his stay.

FCC BRIEFS

The FCC has permanently authorized the use of unattended automatic control of VHF packet radio stations.

The ARRL has been denied a Petition for Rulemaking calling for labels on home entertainment equipment warning of possible RF susceptibility.

The FCC is also proposing additional CW frequencies for Novices in Alaska, Hawaii and U.S. possessions in the Pacific and the Caribbean between 7050 and 7075 kHz.

CARF News Service

CARF's Twentieth Year!

At the recent meeting, your National Executive approved that members of the Executive would supply a CARF Column for The Canadian Amateur about activities, organization, etc., and answer queries about your national Federation, its purpose, and how it functions. This is the initial column and will give a brief outline of how CARF is organized and answer one of the questions frequently asked of CARF officials.

The membership of CARF is divided into three classes with FULL membership available to any holder of a Canadian operating certificate of Amateur grade or higher; ASSOCIATE membership to all persons interested in Canadian Amateur radio but not holders of a Canadian certificate; and AFFILIATE membership to any Canadian organization pertaining to Amateur radio.

Control of your Federation rests with the FULL members who, every two years, elect Regional Directors to represent them to the councils of CARF. Although there are five Regions, there are six Directors as the Ontario Region has two Directors.

COVER STORY

Roy Hookham VE6RH (left) discusses with Ken Oelke VE6AFO a frequency allocation change for an Amateur assigned to a V.S.D. (voting subdivision) during municipal elections in Calgary.

JAPAN PENDING

The DOC has been working towards a reciprocal agreement with JAPAN. As the necessary correspondence has not yet arrived from Japan, the agreement is not official, but the DOC is expecting it in the next few days. As soon as things are finalized, the DOC will contact CARF and an official announcement will be made.

CARF News Service

DUT1

Commencing Oct. 30, 1986, DUT1 = UT1 - UTC, will be -0.1 seconds. The new value of DUT1 will be indicated on CHU by a split pulse on the 9th second of each minute.

CARF News Service

The six Regional Directors form the Board of Directors and are responsible for (a) the policies of CARF; (b) supervision of CARF affairs and activities in their respective Regions; and (c) overall management of CARF affairs and activities. To look after the day-to-day management, the Board meets annually and elects the Officers and other officials with the President, Senior Vice President, General Manager, Secretary, Treasurer and Immediate Past President, and other officials that the Board may approve, forming the National Executive.

The President is the titular Head of CARF, Chairman of the Board and National Executive; the General Manager is the chief administrative Officer and responsible to the Board for decisions made and actions taken; and the Treasurer is the chief Financial Officer also responsible to the Board for financial matters.

In addition to the above, Regional Directors can appoint Regional Assistants, with delegated responsibilities, to assist the Director and Standing Committee to assist the Board. The National Executive may also appoint Committees to assist it in day-to-day management. The Board may appoint additional Vice Presidents to carry out specified functions (such as me— V.P./CRRL Liaison).

The major tasks of administration are performed by the Head Office located in the J.K. Tett Complex, 370 King St W., Kingston, Ont. The Office functions under the management of the General Manager and supervision of the Office Manager and consists of a 5 room suite (800 square feet of space). The national Amateur station— VE3VCA— is located in another building of the complex, functions under a Station Manager and is available to local and visiting Amateurs for operation.

As mentioned above, the Ontario Region has two Regional Directors and a frequently asked question is "Why?". To answer this requires a look back into the history of CARF...

When CARF was first formed (Sept. 1967) it was a Federation of Provincial Amateur Radio organizations who each appointed a provincial Delegate who together formed a Board of Delegates with the Board having the same function as the present CARF Board. In 1972 the

Federation received a federal Charter of Incorporation under a By-law #1 which provided for individual Amateur membership (but no control) and provision for a national publication— THE CANADIAN AMATEUR—, which had its first issue in Jan. 1973. Also in 1973, the DOC had a referendum to all Canadian Amateurs with one of the questions referring to what organization did the Amateur support as the voice to DOC. CARF expected somewhere between 25% and 30% support (we had less than 500 members at that time) and was amazed and overjoyed when the DOC announced that support was just about evenly split between CARF and ARRL. In the following period, hundreds of letters were received by CARF and DOC to the effect that the writers support of CARF would depend on a change to give individual Amateurs some control over the Federation.

By 1975 this had been resolved and By-law #2 was approved so that CARF would have a Board of Directors with Regional Directors elected by individual Full members and Directors-at-Large elected by provincial members. Some provincial organizations, such as the Radio Society of Ontario, desired that the individual members exercise full control, others desired to continue some measure of control.

As the RSO would not continue as a member of CARF, the Ontario Delegate was alarmed that the Amateur members of Ontario and Quebec would not possess a rep-by-pop and the compromise reached gave Ontario two Regional Directors and the provincial organization continued until 1975 when, under the terms of By-law #7, the composition of the Board was changed to be six Regional Directors with the Board able, if they so desire, to appoint up to three Directors-at-Large to perform specific duties. The need of an extra Director in Ontario is long gone and, quite probably, the Board will be reduced to five Regional Directors at the next change in By-laws.

If you have any questions about your national Federation and/or any comments about this column, please send them along to: The CARF Column, P.O. Box 356, Kingston, Ont. K7L 4W2 and we will do our best to answer them in this column or by direct mail.

THE HAM RADIO SPECIALISTS



**VHF/UHF
HANDHELDS**



IC-735

New compact general coverage receiver/ham band transceiver.

Call to Place
Your Order



**ALL MODE VHF/UHF
BASE STATION**



IC-271A/H 2 Meter
IC-471A/H 430-450MHz



IC-1271 1260-1300MHz

**Can you put a price tag
on reliability?**

Now ICOM offers a **ONE YEAR WARRANTY** on its HF Transceivers & Receivers purchased after August 1, 1986.



HANDHELD ACCESSORIES

- IC-14 Vinyl Case for IC-02AT
- BC-35 Drop In Charger
- BP-2 425mA 7.2V NICAD Battery
- BP-3 250mA 8.4V NICAD Battery
- BP-4 Alkaline Battery Case
- BP-5 425mA 10.8V Battery
- BP-7 425mA 13.2V NICAD Battery
- BP-8 800mA 8.4V NICAD Battery
- HM-9 Speaker Mic
- CP-1 Cigarette Lighter Cord
- DC-1 DC OP Pack
- Leather Case for IC-2AT
- HS10 Headset for HTs
- HS10SA VOX Unit for IC-02AT
- HS10SB PTT Switch Box



IC-3200A

Dual Band
2M and 70CM



IC-751A

- All Ham Band Transceiver/General Coverage Receiver
- New Design
- 100% Duty Cycle Transmitter
- 105dB Dynamic Range
- All Modes Built-In
- 12 Volt Operation
- OSK up to 40WPM
- Built-in FL-32A 9MHz/500Hz CW Filter
- Electronic Keyer Unit Included
- 100 Watts Output
- 32 Memories
- New LED Annunciator



**IC-28A
2 METER MOBILE**

- Compact size
- Large LCD readout
- 21 memory channels

Call for **YOUR Low Price!**



IC-R71A

.1 - 30MHz deluxe general coverage receiver



IC-R7000

25 - 1300MHz receiver direct entry and scanning

The 'Smart House'

Fast approaching is the introduction of what is known as the, 'Smart House.' The concept is new and promises to be part and parcel of the home of the future. It has much to recommend it and it will revolutionize the way we do traditional things around the home. It almost had to come. However, it could seriously impact Amateur radio if steps are not taken to consider its compatibility with the electromagnetic environment.

CONCEPT

The 'Smart House' is a multi-company project, directed by the National Association of Homebuilders, in the U.S. and is a registered service mark of the SMART HOUSE Development Venture, Inc., Rockville, MD. This perception of the home of the future and its attributes would introduce a new range of integrated power and communications wiring, wiring products and appliances, in order to improve home safety and encourage new product innovation and sales.

The NAHB comprises some 130,000 members who build almost 90% of domestic U.S. light commercial and industrial properties. This same group will provide education and training of staff to market the concept. They also set standards and provide necessary testing to ensure standards compliance. With such a group it is possible to monitor not only product innovations but changes to the Code and Standards, as the concept evolves.

RAISON D'ETRE

One of the reasons cited for the promotion of the SMART HOUSE concept has been the fact that there has been no basic improvement in domestic wiring in 50 years. That same wiring is marginally safe and in the U.S. at least seven different electrical contractors are needed to wire a house. There is a proliferation of powerbars, spaghetti wiring, multiway adaptors and zipcords. Frequently, the present devices and concept are innovation restricted. The capabilities of some equipment are unrealizable.

An Act called the 'National Joint Ventures Act,' November 1984, sought to encourage firms to engage in joint R&D with venture capital

funding and to retain considerable exclusivity of the resulting designs. The Act specifically encouraged the industries supporting development of semiconductors, civil aircraft, petrochemicals, home construction. With that for an entree it didn't take the innovators long to get moving. So much for the genius of those who foresaw what this could do for the North American home.

PARTICIPANTS

Some of the biggest names in home appliances as well as the multi national conglomerates are supporting the Smart House concept— it may well be a concerted effort to thwart the intrusion of Asian products into a lucrative building industry which accounts for many billions of dollars of the annual U.S. economy.

Some of the participants include: AMP, Carrier, Apple, Dupont, AT&T, General Electric, Bell Northern, Honeywell, Burndy, IBM, Lennox, N.A. Phillips, Northern Telecom and Siemens.

These companies together with those that manufacture appliances account for some eight billion dollars worth of home appliance sales. This is BIG business. In the U.S. next year (1987) it is expected that 50,000 Smart Houses will be constructed. It is obvious the concept will extend and expand to Canada, given the participants and a similar desire to emulate the luxuries and conveniences of our southern neighbours.

TECHNICAL CONSIDERATIONS

It has been estimated that an average two-storey, four-bedroom home, with no basement, would cost about \$500 U.S. more to wire than a current home selling for \$137,000 U.S. At this small premium, you may be sure the attractive features of the Smart House will take us like Grey Cup fever.

A central microprocessor will operate a closed loop 'safe' power system. Just think: power will only be made available to the appliance after receipt of an authenticating request. New services will consist of room occupancy sensors which will be coupled to light, heat and alarm systems. Processors will be redundant so that catastrophic failures will be minimized. Wall sockets and switches will all interface to the CPU. All the

features of home intercom, furnace control, air conditioner, security system, gas control and hi-fi will be handled in such a fashion so as to minimize human interaction and tremendously increase the availability and flexibility of these services, within the home. (Aldous Huxley— where are you?).

HOW ABOUT EMC?

The current estimate of sales predict 36 million plug and appliance controllers will be needed per annum— as well as two million interface units. It is impossible to comprehend what a driving force that will give marketing people. Just how much thought has gone into the implications of locally generated radio energy is not presently known. What is known is that all the appliance control, security, low speed data, telephone, hi-fi and hi-speed data are to be carried on *twisted pair*. I wonder if it will be shielded from the environment? The possibility exists that fibre optic cable and coaxial line will be used for such amenities as high definition TV and high speed data up to 1 Gb/s data rates. I am told that some initial experiments with wide band fibre optic receivers were unsatisfactory, because of their inherent lack of immunity.

OUTLOOK

Scarce time is left to address the issue of the Smart House concept. From an operational point of view consider what local transmitter operation could do in a 'Smart Home,' based on what we know now occurs due to the present lack of electromagnetic compatibility. The importance of having legislation in place to protect the homeowner from lack of immunity, could be as much an issue in the Smart House as the concept which was brilliant and innovative. CAVEAT EMPTOR.

CONCLUSION

The driving force behind the Smart House concept appears to be efficiency, flexibility and security. There is an element of the entrepreneur also evident. Should the introduction of much more sophisticated distributed entertainment devices become practical, through the use of fiber optic cable;

then the implementation of optical switch Central Office Communication equipment will become a reality.

The techniques proposed to distribute the control, power and communication signals throughout the home would appear, at first glance, to be nothing more than twisted pair conductors. Transmitter owners living close to installations employing unshielded, twisted pair conductors for security alarms,

electronic heat controls, and household and paging systems know they are totally unsatisfactory as they lack almost total immunity to local RF. It is with this concern in mind that a letter was written to a Canadian manufacturer involved in the design of devices supporting the Smart House concept. It would be technically negligent to expect that electromagnetic compatibility would NOT be considered in the concept of

connecting devices to a centrally located microprocessor in a domestic location. Let's hope some 'Smarts' are used.

JRSD FUND AUDITED

Ralph Cameron, Chairman
J.R.S.D. Fund
P.O. Box 8873
Ottawa, Ontario
K1G 3J2

Dear Ralph:

I have completed my examination of the books and records pertaining to the J.R.S.D. Fund and have prepared the attached statement of cash receipts and disbursements for the period May 23, 1985 to Sept. 30, 1986. My examination included a detailed reconciliation of the Fund bank accounts and scrutinization of invoices pertaining to cash disbursements. I have also tested listings of donations received and traced these amounts to the Fund bank accounts.

Terrance N. White
Chartered Accountant

J.R.S.D. FUND STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS FOR THE PERIOD MAY 23, 1985 TO SEPT. 30, 1986

CASH RECEIPTS:
Donations received \$59,604.68
Foreign exchange gain 2,483.04
Interest earned 243.24
62,330.96

CASH DISBURSEMENTS:
Legal fees and expenses \$24,424.40
Office Supplies and expenses 188.47
Bank service charges 70.72
24,683.59

**EXCESS OF CASH RECEIPTS
OVER CASH
DISBURSEMENTS \$37,647.37
REPRESENTED BY:**
Bank of Montreal - Savings account
#5147-893 \$29,744.86
Bank of Montreal - Current account
#4600-093, U.S. Dollars
\$5,778.80
at \$1.3675 7,902.51
\$37,647.37

IS THIS YOUR LAST TCA?

Your label will tell you when your subscription expires.

To send reminders to you all by mail costs thousands of dollars a year. By using the label to carry the message, CARF can afford to serve you better!

FOXX KITS

FOXX Transceiver kits are available from \$40.; Box 855, Hawkesbury, Ont. K6A 3C9.

KEBE CANNON HENRY

Barristers, Solicitors & Trade Mark Agents

SUITE 214, 201 MOORE DRIVE, NEPEAN, ONTARIO K2H 8C4
TELEPHONE (613) 820-4200

J. TERRENCE CANNON, B.A., LL.B.
JOHN C. KEBE, B.Sc., LL.B.
M. ANGELA HENRY, B.A., LL.B.

November 14, 1986

WITHOUT PREJUDICE

J. Ronald Scott
Fortey & Scott
Barristers and Solicitors
420-1335 Carling Avenue
Ottawa, Ontario
K1Z 8N8

Dear Sirs:

Re: Houghtby v. Ravenscroft

We wish to advise you of recent occurrences at the Houghtby home. Since the date that Judge Hollinger granted an injunction in this matter the Houghtbys have been experiencing minor interference on their television set. However, because the interference hardly interfered with the enjoyment of their home, they have not complained until now.

During the last week in October, the Houghtbys started to experience more severe interference. Such interference coincided with the times that Mr. Ravenscroft had normally transmitted prior to trial. However, this interference was still to a much lesser degree than that experienced prior to the trial and the Houghtbys actually had prepared to give us instructions to attempt to settle this matter since it appeared that Mr. Ravenscroft had found a way of transmitting without causing them undue disturbance. However, during the past two weeks the transmissions caused the picture on one television set to completely disappear and caused the furnace to activate again.

If Mr. Ravenscroft has been transmitting he is clearly in contempt of court and if he transmits again we have every intention of bringing a motion to have him cited for contempt. If he is using someone else's equipment or another neighbour is transmitting on his behalf, we intend to bring an action in nuisance against that person as well. Would you kindly advise your client to govern himself accordingly.

We had originally prepared this letter while the interference was on-going; even though the interference has stopped, we wish you to be advised of the situation.

Yours very truly,

KEBE/CANNON/HENRY


M. Angela Henry

*VE3SR's equipment has been in the care of VE3BBM since the trial.
Is this some form of legal harassment?— Editor.*

George Morgan VE3JQW
687 Fielding Dr.
Ottawa K1V 7G6

From the Clubs...

The other day I was talking to a ham friend of mine who said, more from curiosity than as criticism, that I seemed to include in this column activities of only a relatively small number of clubs. I have to plead guilty to the charge, but it certainly is not out of any bias on my part. I cannot invent news about club activities; I have to rely on the club bulletins that I receive, and, unfortunately, I receive bulletins from far less than half of the affiliate clubs.

If you would like to see your club activities written up in this column, make sure that I get your bulletin.

And while I am on my soap box, I

CALENDAR

1987

Feb. 6-15: Special event station VE7NOR. Details Jan. TCA.

Feb. 7: NPARC Big Event No. 9. Details this issue.

Feb. 11: DOC licence examination.

Feb. 20-22: Guides on the air. Watch the YL column from October on.

Mar. 7: Peel ARC Flea Market. Details next issue.

Mar. 18: DOC licence examination.

Sept. 11-13: CLARA 87 Celebration. Details October YL column.

Applications for DOC licence examinations May 20, Sept. 23. DOC licence examinations Apr. 15, June 17, Oct. 21.

Publicize your get-together here. Write the Editor, TCA, P.O. Box 855, Hawkesbury, Ontario K6A 3C9.

Let TCA know about your events three months in advance to list them in the Calendar.

The deadlines for 1987 Canadian Amateurs are for April, Feb. 20; May, March 20; June, April 17; July/August, May 22; September, July 17; October, Aug. 21; November, Sept. 18; December, Oct. 23 and January 1988 Nov. 13.

REPEATER UPDATES

CARF needs repeater updates for the CRAG repeater directory. Please advise us of any changes, additions or deletions regarding the repeaters in your region. Send your updates to: CRAG, P.O. Box 2610, Stn. D., Ottawa, Ont. K1P 5W7 and to Cary Honeywell VE3ARS, 40 Westpark Dr., Gloucester, Ont. K1B 3E5.

CARF News Service

would like to make a plea on behalf of the CARF News Service. If you have a news item that you feel would be of interest to all Canadian Amateurs, please send it to Dino for the News Service Bulletin.

Thanks to the Scarborough ARC News for the following:

During the past summer, the Scarborough ARC put together an exhibit on Amateur radio for the Ontario Science Teachers Convention, held in Toronto from Nov. 6-8.

Horace Caudrey, who is working on obtaining his licence, and who served as exhibit layout man, constructed seven models designed to show the behaviour of radio waves in space, illustrating the earth, the ionosphere, the ionosphere layers, various types of radio waves, etc. He constructed models of various antenna systems used by Amateurs: vertical, trapped dipole, inverted vee, end-fed long wire, beams, etc. He then turned his considerable woodworking talent to the construction of a beautiful plaque for the Scarborough ARC, with its club callsign, VE3WE.

A number of interesting items concerning Amateur radio were hung on the walls in the room; e.g. QSLs from around the world, a poster on packet radio, a DOC Spectrum chart, a world callsign map. Also on the wall was a poster entitled 'Amateur Radio in the Classroom' telling the story of Joe Fairclough WB2JKJ, who has woven Amateur radio into his seventh grade English class.

Also on display were videos on the Columbia space shot by Dr. Owen Garriot, the first Amateur in space, and on packet radio, Amateur radio's newest frontier.

As a result of the display, a number of teachers expressed the desire to start Amateur radio clubs in their schools. One teacher even purchased an Amateur radio study guide.

The Scarboro ARC feels it has made an effective effort to influence science teachers, who are in a most favourable position to encourage their students to become interested in Amateur radio.

Although I won't list here all of the Amateurs who assisted in this project, let me just join with the executive of SARC in saying 'thank you for a job well done.'

And on the subject of introducing youngsters to Amateur radio, according to the Chatham-Kent ARC's *Clear Signals*, Bob VE3PCW and Val VE3VAL had the opportunity to go to the Boy Scout Jamboree on Oct. 19 at the campground near St.

Thomas. There they met a very dedicated bunch who bore up under cold temperatures and long hours of operating with kids ranging from 6-18, boys and girls alike. They made many contacts with other Scout groups as well as other hams from as far away as California, Nova Scotia and Quebec. During one of the contacts the Venturers were 'talking in harmony' to a group in Quebec and they in turn 'talked in harmony' back. According to Bob and Val all went very well for all who participated and the chance of some of these youngsters getting into ham radio looks promising.

And speaking of the Boy Scouts, according to the Windsor ARC's *Groundwaves*, "...for the second time this year, the Windsor ARC provided communications for the 'annual' Boy Scout Apple Day. Because of changes in the event, it was held twice in one year, without initial involvement earlier this past spring. The event now moves permanently to its traditional fall date.

On Oct. 23-25, members of the club joined with area Scout troops and provided communications for the event. Our help allowed the organizers to maintain contact with their distribution vans and regional distribution points throughout the city where no telephone service was available. Over the years, the Scouting organization has tried various communication links which were of little success, and have expressed their support and gratitude for the use of our talent.

"Thanks go to all who participated, especially those who have helped out in both editions of Apple day: Bob Leschyna VE3KUD, Mike Morneau VE3MIC, Bill Leal VE3ACY, Ron Renaud VE3LFM, Al Mueller VE3LFK and John Tunea VE3NGZ.

HELP! Since Noel Funge left for Australia, we have no representative for the Amateur Radio League of Manitoba, nor an address to which to send material. We would appreciate information on a replacement.

We would also appreciate information on the club representatives or club mailing addresses for the following affiliates that, for a variety of reasons, have been removed from the mailing list:

East Kootenay ARC, Fraserview ARC, Parksville ARC, Delta ARC, Stratford ARC, Sunnybrook Hospital ARC, St Maurice Valley ARC, Association Quebec-France ARC, and Ex-G Radio Club.

SAVE on these Specials!

ICOM HF TRANSCEIVER SPECIAL !!

Buy any Icom HF Transceiver (735 745 751A) and receive one of: Any CW Filter for rig, SM-6 Desk Mike, GC-5 World Clock... LIMITED TIME SPECIAL.....

ICOM IC-28A/28H



2-METER MOBILES
IC-28A (25w) IC-28H (45w)

IC-28A Reg. List \$629.00
LIMITED TIME SPECIAL...\$549.00

IC-271H Reg List \$1499
2M 100 Watt All Mode Xcvr
CLEAROUT SPECIAL \$1249.00



SUPER DEAL !!
AT-150 Auto Tuner
\$449 Plus \$50.00
Icom Rebate !!
YOUR NET PRICE \$399

IC-02AT Reg. List \$579.00
LIMITED TIME SPECIAL...\$439.00

IC-02AT Reg. List \$389.00
LIMITED TIME SPECIAL...\$299.00

ALL ABOVE SPECIALS END FEB.28



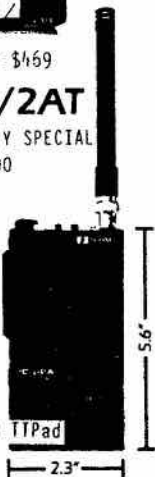
IC-u2AT List \$469

IC-u2A/2AT

INTRODUCTORY SPECIAL
\$429.00

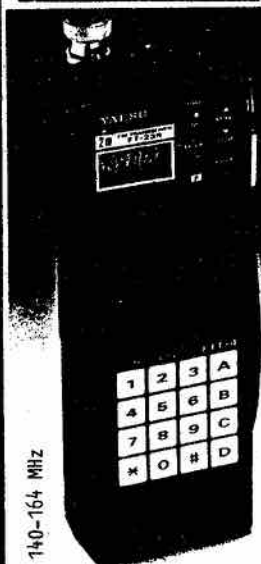
- Small Size
- 10 Memories
- Scanning
- Wide Frequency Coverage
- Size: 2.3"W x 5.6"H x 1.1"D

u2AT is with TTPad



The fabulous ICOM miniature 2-meter handheld.

SALE!



FT-23R w/FTT-4
INTRODUCTORY SPECIALS
ON THESE NEW YAESU PRODUCTS
(ENDS FEB 28)

New Mini Handheld
FT-23R with FNB-10
List \$429 Special \$369
FTT-4 TTPad-----\$ 69
NC-288 Charger-----\$ 19

YAESU

FT-727R

5 WATT
2M/440 MHz
Dual Band



New Dual Band Handheld
FT-727R with FNB-4
List \$739 Special \$669
NC-18B Wall Charger \$ 19



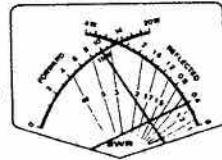
New HF Xcvr PS Auto Tuner
FT-767GX with CW Filter
List \$2899 Special \$2499
2M Board-----\$ 299
6M Board-----\$ 299

LIMITED QUANTITY OVERSTOCK

UHF Handheld
FT-709R Special---\$ 399
NC-18B charger---\$ 19
VHF 45 Watt Mobile TIM
FT-270RH Special---\$ 599
VHF/UHF DualBand Mobile
FT-2700RH Special-\$ 799



DAIWA



Linear Amplifiers FM, CW, SSB
LA-2035 2M 3W in 30W out-----\$ 99.95
LA-2035R 2M 5W in 30W out Preamp-----\$109.95
LA-2060 2M 3W in 50W out-----\$179.95
LA-2065R 2M 10w in 50W out Preamp---\$199.95
LA-2155E 2M 10-100 or 25-150W Preamp---\$349.95
LA-2155H 2M 1½W or 25W-150W Preamp---\$399.95

Cavity Coaxial Switches
CS-201 2 position SO-239 Conn.-----\$ 29.95
CS-201G 2 position N Conn.-----\$ 39.95
CS-401 4 position SO-239 Conn.-----\$ 99.95

Cross Needle Power/SWR Meters
NO NEED TO FORWARD SET THESE METERS ON SWR
CN-520 1.8-60MHz 200/2kW-----\$ 89.95
CN-620B 1.8-150MHz 20/200/2kW-----\$169.95
CN-650N 1.2-2.5GHz 2/20W-----\$239.95
NS-660A 1.8-150MHz 30/300/3kW-NEW---\$179.95
NS-663A 140-525MHz 3/30/300W-NEW---\$199.95

DK-210 Keyer with LED speed meter---\$129.95
CNW-419 Antenna Tuner 200W Meter-----\$329.95
CNW-518 Antenna Tuner 1kW CW Meter---\$499.95
RX-110G 2m GaAs FET Preamp RF Switch-\$ 99.95

MR-750E Antenna Rotor with one motor-\$449.95
MR-750P above with preset control---\$499.95
MR-750U Extra Motor for above MAX 4---\$139.95
With 1 motor 608" Torque 5215" Brake
2 motor 1217" Torque 9560" Brake
3 motor 1825" Torque 13906" Brake
4 motor 2433" Torque 18251" Brake

QSY'ers NOW AVAILABLE FOR ICOM IC-735 & YAESU FT-757GX



\$159.00



735-QSYer



757 QSYer

the best thing next to a 757

The QSYer provides the Yaesu 757 with keyboard frequency entry - the single major feature left off this remarkable transceiver. Actually a tiny computer terminal with its own 8-bit microprocessor, the QSYer is pre-programmed to mate with the 757's computer port. Installation is accomplished in seconds by plugging only two cables into the 757's rear panel jacks - one for data and one for the QSYer's power. Your operating frequency can now be changed immediately - anywhere in the range of the transceiver - just by pressing two or more buttons on the standard-sized telephone keypad. The QSYer is built with commercial-quality components throughout, and is housed in an attractive, sloped metal enclosure color-matched to the 757.

cuscraft

Triband 10/15/20M

A3 3 element \$569/\$4

A4 4 element \$759/\$6

Boomer Antennas

617-6B 6M \$519/\$4

42-18XL 2M \$269/\$2

32-19 2M \$249/\$1

215WB 2M \$219/\$1

220B 220MHz \$249/\$2

424B 430MHz \$219/\$1

476TB Twist \$149/\$1

A144-10T Twist \$1

A144-20T Twst\$195/\$1

AOP-1 OscarPk\$379/\$3

PS-4 Pol Switch \$1

A144-11 2M \$1

A430-11 430MHz \$1

FM Antennas

AR-2 2M Ringo \$

ARX-2 2M Ranger \$

ARX-2B 2M Ranger2 \$

ARX220-B 220MHz \$

ARX-450B 450MHz \$

AR-6 6M Ringo \$

AR-10 10M Ringo \$

AFM-4DA 2M 4 pole \$1

AFM-44DA 440 \$1

A147-4 2M 4 el \$

A147-11 2M 11\$125/\$1

A147-22 2M \$339/\$3

A147-20T 2M \$1

A220-11 220MHz \$

A220-7 220MHz \$

A449-6 450MHz \$

A449-11 450MHz \$

LAC-4H gas arr \$

hy-gain

Broadb

OTHER Hy-Gain IN STO

HDR-300 Super Rotor-

Tailtwister-----

Ham IV-----

CD-45 II-----

Tailtwister Rotor O

Ham IV Rotor ONLY---

Lower Mast Adaptor-

Discoverer 7-2 2el 4

238s 3 el 2M Beam---

258s 5 el 2M Beam---

288s 8 el 2M Beam---

214Bs 14 el 2M Beam

GP62A 2M Ground Pla

V2S 2M Colinear Ver

BN-86s Beam Balun---

D

153 BA 3 el 15M Bea

204BA 4 el 20M Bea

66Bs 6 el 6M Beam---

SPECIAL PRICE IS LI

AFFORDABLE PACKET RADIO FROM MFJ

MFJ's TAPR TNC 2 clone in a new cabinet with added features... for an incredible \$ 249.00



MFJ-1270
\$249

Join the exciting packet radio revolution and enjoy error-free communication... for an incredible \$249 MFJ brings together efficient manufacturing and TAPR's (Tucson Amateur Packet Radio) leading edge

technology to bring you top quality and affordable packet radio. You get MFJ's highly acclaimed clone of the industry standard TNC 2. Its in a new cabinet and includes a TTL serial port and easily replaceable lithium battery for memory back-up. If you need is your rig, home computer with a RS-232 serial port a terminal program. If you have a Commodore 64, 128, or VIC-20 can use MFJ's optional Starter Pack to get on the air immediately.

MFJ-1270 QUANTITY DISCOUNT - Get 5 or more orders to one address and take off 10% -ie\$224.10 @
- Get 10 or more orders to one address and take off 15% -ie\$211.65 @

OTHER PACKET CONTROLLERS - A.E.A. PK-232 \$559; PK-64A \$459; PK-64 \$369; PK-80 \$369; HFM-64 \$169 PM-1 \$299; KANTRONICS KAM \$559; KPC-2 \$289; KPC-2400 \$559; Modem \$269

SNAP ON CHOKE-EASY AS



also stock
SIX GREAT PRODUCTS BY

Heil Sound
Mike Elements HC-5 HC-4 \$37.95
HC-3 \$33.95; 8M-10 Headset \$104.95
SS-2 \$94.95; EQ-300 8P \$99.95

ONLY
A FEW
LEFT !!
ICOM
IC-745 +
PS-35 PS
List
\$1818.00
A
SUPER
DEAL AT
\$1499.00

SPECIAL
YAESU



Yaesu YS-60

Frequency Range 1.6-60 MHz
Measurable Power Range 0-2 kW
Meter Full Scale Ranges 20/200/2000W
Power Meas. Accuracy ± 10% of reading
(add 5% of reading between 1.6 and 3.5 MHz)
Minimum Power for SWR meas. 3 watts
SWR Measuring Range 1.0:1 to infinity
Insertion Loss: less than 0.1 dB
Input/Output Impedance 50 ohms
Input/Output Connectors SO-239
Dimensions (WHD) 120 x 72 x 85mm
Weight 680 g (24 oz.)
Power Requirements 13.8V DC @200mA

Average and PEP Power Readings !!

List \$189 Feb 1-28 SUPER SPECIAL

YS-60 **\$139**

and Tribanders

State of the art
antennas to maximize the
performance of your ham gear.

\$List/\$Cash-Cheque Discount

099	12AVQs	10-20M Vertical	---155/109
599	14AVQs	10-40M Vertical	---209/149
499	18AVT/WBs	10-80M Vertical	339/289
349	14-RMQ	Roof Mount Kit	---119/ 99
379	TH2MK3s	2 el Tribander	---559/395
289	TH3JRJs	3 el Tribander	---599/429
139	Explorer-14	NEW Triband	---999/749
899	TH5Mk2s	5 el Triband	---1269/899
9/59	TH7DXs	7 el Triband	---1479/1079
10/69	1058As	5 el 10M Beam	---429/359
5/95	1558As	5 el 15M Beam	---659/549
115	2048As	4 el 20M Beam	---829/699
9/69	2058As	5 el 20M Beam	---1119/949
129	64Bs	4 el 6M Beam	---209/179
5/59	218s	Oscar Package	---639/499
CLEAROUTS			

199 1538As 3 el 15M Beam-----239
499 Stainless Kit for 2048A-----59

TO STOCK ON HAND !! CALL NOW !!

TUNERS

MFJ-989	\$579
MFJ-962B	\$399
MFJ-980	\$349
MFJ-949C	\$269
MFJ-941D	\$179
MFJ-945C	\$139
MFJ-901B	\$109
MFJ-1601D	\$ 75

KEYERS

MFJ-484B	\$249
MFJ-482	\$179
MFJ-481	\$159
MFJ-422	\$219
MFJ-407	\$125
MFJ-401	\$ 95
MFJ-1270	\$249
MFJ-1224	\$169
MFJ-1225	\$125
MFJ-1024	\$239
MFJ-1020A	\$149
MFJ-1621	\$139
MFJ-260	\$ 49
MFJ-262	\$119
MFJ-106	\$ 40
MFJ-107	\$ 20
MFJ-108	\$ 40
MFJ-202B	\$109
MFJ-204	\$139

1987 CALLBOOKS

Ins S & H on Books \$5.00

ANY QUANTITY



The "Flying Horse"

sets the standards
Continuing a 66 year tradition, there are new Callbooks for 1987.

The North American Callbook lists the calls, names, and address information for licensed amateurs in all countries from Canada to Panama including Greenland, Bermuda, and the Caribbean islands plus Hawaii and the U.S. possessions.

The International Callbook lists the amateurs in countries outside North America. Coverage includes South America, Europe, Africa, Asia, and the Pacific area.

Please note that due to the Government's Retaliation on Books, Duties are now payable increasing book prices!!!!.

87 North American Callbook	\$40
87 International Callbook	\$40
Map Library	-----\$21
ARRL 1987 Handbook	-----\$26
Antenna Handbook	-----\$12
Antenna Compendium	-----\$16
HF Antenna for any Locatn	\$19
FM & Repeaters	-----\$ 8
86/87 Repeater Directory	---\$ 5
Satellite Experimenter's	---\$15
Get Connected to Packet	---\$18
Tune in the World	-----\$15
CRRL/Zbarsky Study Guide	---\$20
CRRL 600 Questions & Answr	\$10
ARRL Code Tape Kit (2)	---\$14
World Radio Database	-----\$19
87 World Radio TV Handbook	\$
Ontario Haruteq Scanner Bk	\$15
Toronto Fox Scanner Book	---\$20
Spiral Log Books	-----\$3.25

Insured Shipping & Handling - Please add 2% (\$5 Minimum) to all orders. Some items are subject to freight collect.....
Visa / Mastercard accepted at slightly lower discounts.....
ONTARIO RESIDENTS - ADD 7% SALES TAX AFTER ADDING SHIPPING.
PLEASE SEND 2 - 34¢ STAMPS FOR CATALOG & INFO REQUESTS.....
NOTE: ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE.....
SPECIAL PRICES BASED ON CHEQUE WITH ORDER. CREDIT CARDS ARE ACCEPTED AT SLIGHTLY LOWER DISCOUNTS - USUALLY ABOUT 2%....

ATLANTIC HAM RADIO LTD.

Tues.-Fri. 10 a.m.-6 p.m. 378 WILSON AVE.
Saturdays 10 a.m.-2 p.m. DOWNSVIEW, ONT.
After 7 p.m. Call (416) 222-2506 CANADA M3H 1S9
For Orders. (416) 636-3636

QRP

Finally received some reader input, not only with comments but a schematic as well for a transistor receiver. It is no doubt meant for the experimenter at home or someone near a parts store.

Lois and I are presently sitting out in the desert about 130 mile west of Phoenix, Arizona. The loadmaster cut down on all except the barest necessities so your help is badly needed in respect to constructing this and other projects this winter. Next year may be different as quite a lot of hidden space has been located which may even carry my computer.

MOBILE QRP

Activity while on the move was not too productive considering band conditions. The contest during Nov. 8-9 weekend covered up most of the QRP enthusiasts. These contests are few and far between, while less than 1% know you are QRP when exchanging numbers, so it was still fun.

N5JD (Jack) from Eagle Lake tx asked me what frequencies (QRG) the Canadian QRP stations used. The International QRP frequencies of 3560, 7030, 10106, 14060, 21060 and 38060 was the only answer even though I have worked very few VEs. Jack is going to write this editor after his Sail Boat ARP Expedition in the Gulf of Mexico.

AIR QRP

While this flight before we left Edmonton was interesting outside of only working VE6CE (Alex) and

VE6BAT (Bill) using one watt from a handheld. It would have been more so if trailing antennae were not taboo for more reasons than just making it impossible for the pilot to do a touch-and-go on Big Lake 10 miles west of Edmonton. No, we did not get our feet wet and even Alex asked if the flight compared with my first airplane ride back in '54 he had during a practice trip on my commercial pilot course. Balloon flying being at the speed of the wind (10 mph in our case) it does not create the 'wind blown white scarf' effect of an open cockpit airplane. Only the vertical speed indicator can give you any sense of up/down feeling even when we barnstormed an abandoned farm yard. Folks on the ground who were following the flight and landing is another story.

SIMPLEST RECEIVER

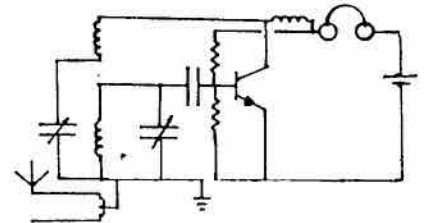
VE3DQB, whoever that is, sent in the following project and says he has yet to blow the 4410 transistor while using a 45 V power supply. This is a first project and not to be confused with a 'station receiver.' It can be improved upon by using a crystal instead of the coil and is where our readers can assist if they are not too busy running a magazine for radio Amateurs. Frank further suggests putting a key on his design and make it a transceiver!

JOIN QRP

Tell your friends about *The Canadian Amateur* having all you need to get on the air after you write and pass the code. One slight modification

Moe Lynn VE6BLY
10644-146 St.
Edmonton, Alta. T5N 3A7

to the code oscillator gives you a receiver, then another modification produces a transmitter for hours of fun among other newcomers or oldtimers too.

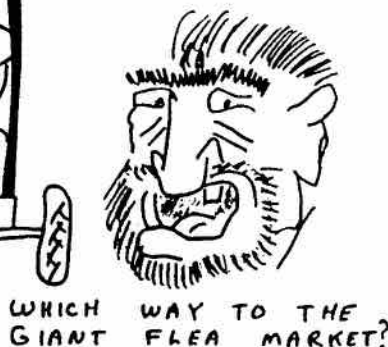
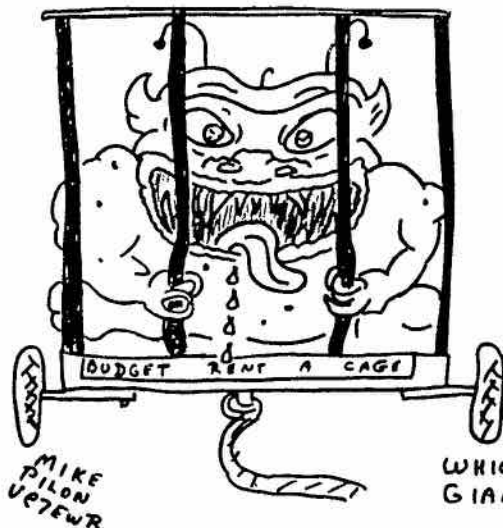


The figure shows the elementary receiver. The coil and capacitor in the base circuit are sized to cover the band of interest. The 'reaction' coil in the collector circuit has about 1/4 as many turns as the tuning coil, and the antenna coil has 1/8 as many.

The remaining coil is an RF choke. With 45 volts (five 9 volt batteries in series) this worked well on 80 metres— that is, highly sensitive, poorly selective, not too much volume, lots of fun. Both variable capacitors rotors being grounded, and the antenna feedline balanced, hand capacity was scarcely noticeable.

The suggestion of crystal control and use as a transceiver function in mind. The oscillator being directly connected to the antenna means that a signal is continuously emitted — unlawful below 50.1 MHz. However, a beginner could build one of these with a 50.1+ crystal, and communicate with like equipped stations in the vicinity. Cheap, simple, homebrewed.

Editorial duties— and the fun of FOXX QSOs— has prevented me from following this up. Any takers?— VE3DQB.



HELP!

CARF needs the present addresses of the following Amateurs. Name and last known address:

- C. Benedict VO1PB, St. John's, Nfld.
- Neville Cooper VE3MSH, 22 Crittenden Square, Scarborough, Ont. M1B 1V1.
- Bob Morton VE3BFM, 8 Thornbay Drive, R.R. 2 Stouffville, Ont. L0H 1L0.

Please tell Debbie if you have any information. Her address is CARF, Box 356, Kingston, Ont. K7L 4W2.

KENWOOD



TR-751A

Compact 2-m all mode transceiver

It's the "New Sound" on the 2 meter band—Kenwood's TR-751A! Automatic mode selection, versatile scanning functions, illuminated multi-function LCD and status lights all contribute to the rig's ease-of-operation. All this and more in a compact package for VHF stations on-the-go!



The TS-940S is a competition class HF transceiver having every conceivable feature, and designed for SSB, CW, AM, FM and FSK modes of operation on all 160 through 10 meter Amateur bands, including the new WARC bands. It incorporates an outstanding 150 kHz to 30 MHz general coverage receiver having a superior dynamic range (102 dB typical on 20 meters, 50 kHz spacing, 500 Hz CW bandwidth).

MFJ's Fastest Selling TUNER

MFJ-941D \$169.95



MFJ's fastest selling tuner packs in plenty of new features. New styling! Brushed aluminum front. All metal cabinet. New SWR/Wattmeter! More accurate. Switch selectable 300/30 watt ranges. Read forward/reflected power.

New antenna switch: Front panel mounted. Select 2 coax lines, direct or through tuner, random wire/balanced line or tuner bypass for dummy load.

New airwound inductor! Larger more efficient 12 position airwound inductor gives lower losses and more watts out. Run up to 300 RF power output. Matches everything from 1.8 to 30 MHz! dipoles, inverted vee, random wires, verticals, mobile whips, beams, balanced and coax lines.

Built-in 4:1 balun for balanced lines. 1000 V capacitor spacing. Black, 11 x 3 x 7 inches. Works with all solid state or tube rigs. Easy to use anywhere.

TELEX. hy-gain

402BA 2el 40 mtr Beam	\$639.00
EX-14 4 el. 20-15-10 mtrs	\$678.00
TH7DXX 7el tri-band beam	\$1079.00
TH3Jr. 3el tri-band	\$389.00
204BA 4el 20 mtr beam	\$589.00
205 BAS 5el. 2 mtr beam	\$749.00
DB-10-15 duoband beam	\$359.00
18AVT/WBS 10-80 mtr vertical ..	\$229.00
2BDQ Trap doublet 80&40	\$149.00
5DBQ Deluxe 10-80 doublet	\$269.00

Mosley

TA-33Jr. 10-15-20 M beam	\$389.00
TA-33 10-15-20 M I KW	\$495.00
CL-33 Classic Feed Tri-band	\$549.00
MPK-3 Conv. high power TA-33jr	\$159.00
RV-4C @ RV-8C Vertical	\$229.00
S-402 2EL. 40 mtr beam	\$639.00



PACKET RADIO \$239.00

MFJ-1270

Join the exciting packet radio revolution and enjoy error-free communications ... for an incredible \$129.95! MFJ brings together efficient manufacturing and TAPR's (Tucson Amateur Packet Radio) leading edge technology to bring you affordable packet radio. You get an identical clone of the widely acclaimed TAPR TNC 2 with identical software and hardware. It's in a new cabinet and includes a TTL serial port for extra versatility.

BENCHER

BY-1 Lambic paddle ..	\$79.50
BY-2 Chrome paddle ..	\$94.50
ZA-1 super 1:1 balun ..	\$37.00



A3 3el Tri-band	\$495.00
A4 4el Tri-band	\$599.00
A744 40mtr.adapter re A4 ..	\$149.00
R3 14,21,&10mtr. Ringo	\$495.00
AV5 10-80mtr. vertical	\$209.00
A-50-6 6el. 6 mtr. beam ...	\$229.00
FM ANTENNAS	
ARX-2B Ringo 2 mtr.	\$79.00
A147-4 4el beam	\$59.00
A147-11 11 el beam	\$95.00
A-147-20T twist	\$159.00
AFM-4D "four pole"	\$159.00
BOOMERS	
215WB 15 el. 144-148 MHz ..	\$179.00
32-19 deluxe 16.2DB	\$219.00
AOP-1 Oscar Satellite pack..	\$295.00

Rotors



**OFF-SEASON
PRICES
IN EFFECT!**

MFJ

MFJ-1229 deluxe interface	\$285.00
MFJ-1224 interface	\$159.00
MFJ-422 Econo c/w Bencher key	\$189.00
MFJ-949C Super deluxe tuner	\$249.00
MFJ-989 deluxe tuner	\$519.00
MFJ-901B Versatuner	\$98.50
MFJ-407 Deluxe keyer	\$119.00

BARKER & WILLIAMSON

AT-110 80-10 mtr trap dipole	\$139.00
AS-160 160-80-40-20 trap dipole	\$219.00
AC-1 Dipole connector	\$13.50
TR-40 Antenna traps 80&40M	\$57.50 pr.
AT10 All band antenna (portable)	\$79.00
CS-3G 3 position Coax switch	\$47.00
6 position Axial Mount	\$42.00
6 position Radial Mount	\$42.00
AT-110 80-10m trap dipole	\$129



YAESU

FULL LINE AVAILABLE

Check out our prices
on used gear

H.C. MacFarlane Electronics Ltd.

R.R. #2 Battersea, Ont. K0H 1H0, Phone 613-353-2800 VE3BPM
IN BUSINESS SINCE 1958

Open Monday to Saturday 7:30 a.m. to 9 p.m., Closed Sunday.

YOUR ONE-STOP HAM SHOP

ANTENNA SYSTEMS INSTALLED WITHIN RADIUS 150 KM; EXPERTISE FREELY GIVEN ANYWHERE!

Dealer for Delco Towers, CDE Rotors, Hy-Gain, Mosley, Cushcraft and Huser Antennas, MFJ and B&W products.

SPECIFICATIONS & PRICES
SUBJECT TO CHANGE

YL News & Views

Cathy Hrischenko VE3GJH
56 Stockdale Cres.
Richmond Hill, Ont. L4C 3S9

SILENT KEYS

It is with deep regret that I tell you Rick Hedges VE3GHI became a Silent Key Dec. 12, 1986. He's the son of Tom VE3GZV and Mary VE3COH. Rick was confined to a wheelchair but with all his health problems he always had a smile on his face and was ready for a joke or tease. Our heartfelt sympathy goes out to Tom and Mary and family.

GOTA

This is the month for GOTA—Guides on the Air. I've had inquiries from right across the country so it looks good. Even if you make one contact with a Guide group it helps. Dates Feb. 20-22, 1987.

1967-1987

It's been brought to my attention that CLARA isn't the only one celebrating 20 years in 1987. CARF is too, so congratulations CARF from the YLs. 1967 was truly a national year. Our two national Amateur Radio groups were born. Since then they've gone through the growing pains and are now dependable organizations. All this is due to a lot of work from a lot of people over the years. To them I say "Thanks." We couldn't have done it without the help from each and every one of you.

87 Celebration Convention Sept. 11-12-13, 1987. Forums are in the process of planning now. All other activities are all set. A Committee is busy working on all those 'wee extras' the YL conventions have.

I would like to mention that you don't have to be a member of CLARA to come celebrate with us. All YLs are invited and those that as yet don't have their calls but are working on it—it's a good chance to mix and meet other YLs. For further info write 87 Celebration Convention c/o Cathy VE3GJH, 56 Stockdale Crescent, Richmond Hill, Ont. L4C 3S9, Canada.

YL OF THE MONTH JOSIE VE5QB

She's known as Josie VE5 Queen Bee.

Her interest in Amateur radio began with her and her brother Leo (now VE5DT), after reading an article in the North West Farmer by a Mr. Coates about Amateur Radio and how it was a nice hobby for a young boy.

They ordered a handbook and wrote to the Department for rules and regulations. They acquired a key and started sending Morse Code. All this was around 1930.

After a few months Josie went to Regina, took and passed the exam,

with a bit of human interest humour. It seems a Mr. Pottle was the examiner and he asked her whether they had a transmitter built. She said, "Yes, but we can't get it to Oskillate." She received her certificate from the Marine Dept. (now DOC).

It took them another four months to get on the air. Josie said the thrill of that first QSO made up for all the trials and tribulations.

She commented that getting on the air had certain side effects, e.g. fires in the wood stove went out because operating took over and we'd forget to put wood in the stove, cakes rose and fell, potatoes were put on the table partially done—or the reverse, and all because SHE was upstairs at the hamset!

The wood for the stove wasn't ever cut or brought in, the cows' milkings were delayed. With experience they learned to cope and managed to make time for the necessities of life.

During what she called the "Dirty 30's" she said they were limited as to power on the farm. They used batteries or Ford spark coils. They still enjoyed many hours of happy radio times and made many new friends.

World War II came and with it orders from Ottawa to cease all Amateur radio activity and dismantle the station.

When the war was over they resumed radio activity. By that time she had married and moved to Glenavon, Sask. She had daily QSOs with her brother on CW. Then they received their phone endorsement. Now her Mom could hear her voice during the QSO. She didn't operate much during family raising time.

When electricity came to the rural areas and transceivers became available she once more spent much time with her favourite hobby. ■

Queen's University researchers receive \$121,000 contract

KINGSTON— Communications Minister Flora MacDonald today announced that a \$121,000 contract has been awarded to Queen's University for a Study of Space Communications Spread Spectrum Systems. The study will be undertaken by their Electrical Engineering Department, under Drs. Paul Wittke, Peter McLane and Stan Simmons.

This area of study is part of a Department of National Defence (DND) contract with the Department of Communications (DOC), through its Communications Research Centre, in accordance with an agreement for research support of military programs on a cost-recovery basis.

The two-year study is principally concerned with the development

technology to protect transmissions to satellites from intentional interference (jamming). The spread spectrum system will artificially expand the bandwidth of a signal being sent to a satellite and then compress the signal back to its original width when it reaches the satellite, with a nominal loss of quality. The time and frequency aspects of the user's signals will be synchronized with the satellite's computer.

Results from previous research carried out by Queen's Electrical Engineering Department on the efficient use of satellites while assuring optimum protection for signals are expected to provide valuable assistance in completing the current study.

SOCIAL EVENTS

NPARC BIG EVENT NO. 9

The Niagara Peninsula ARC announces their Big Event No. 9, to be held on Saturday, Feb. 7 at the Canadian Auto Workers' Hall, 125 Bunting Road, St Catharines, Ont. Hamfest 0800-1400, dinner dance 1800 on. Tickets \$19 per person.

Talk-in VE3NRS 147.240/840, simplex 146.520. Details from Peter Mitroff VE3DSW, 8 Marsten Drive, St Catharines, Ont. L2N 3C7, 416-935-6732.

Local hotels and motels offer a discount for an overnight stay.

GRAND PRIZE 2 metre mobile radio. Tickets at Hamfest and Dinner Dance only.

John Connor VE1BHA
18 Deerfield Dr., Apt. 1112,
Nepean, Ont. K2G 4L2

CONTEST SCENE

Feb. 14-15 Dutch PAC Contest
14-16 YLRL YL-OM Phone
Contest
21-22 ARRL DX CW Contest
Mar. 7-8 ARRL DX Phone Contest
28-29 CQ WW WPX SSB Contest

The results to last year's CQ 160 Contest are out, and the VEs turned in an outstanding performance, both on phone and CW.

Leading the Canadian Morse brigade was VE3BVD with 391k, which was good for the number four

position amongst W/VE entrants. Two places back was VE6OU/3 with 320k, while VE1ZZ turned in 219k.

In the phone competition, VE3MFA topped all W/VEs with 210 thousand points. VE3PN turned in 98,637 points which earned him ninth place overall. In the multi-single phone competition, VE3KRP placed ninth overall with 107 thousand.

Another score that catches my eye is that of VESUF on CW. I'm certainly not a 160 expert, but I suspect that working 14 countries from Saskatchewan on 160 is not easy.

Incidentally, I was talking to a veteran 160 op about these results, and we were commenting on the fact that they took three pages this year. It used to be that a half page was enough from the 160 Contest results. My, how times have changed!

I have two early contest scores from the CQ CW Contest to report. VO1SA had about 2200 QSOs single operator all band, and VE2LJ had just over 1 million points multi-single.

Then there was this comment overheard on 20 metres Monday morning after that contest: "The 80 metre log periodics are working really well!" This was from a well-known American big gun. Hmmm. Log periodics?? Plural??

You know, there's a lot to be said for traffic handling.

Well, unfortunately (or is it fortunately) that's about it for this month. Pretty short. Next month, we will talk about the WPX Contest. See you then.

1985 CQ 160M CONTEST— CANADIAN RESULTS

MODE	CALL	SCORE	QSOs	MULT	CNTRYS
CW Single Operator	VE3BVD	390,780	864	90	35
	VE6OU/3	320,489	718	89	34
	VE1ZZ	219,240	276	105	67
	VO1MP	157,716	308	78	39
	VE3INQ	140,379	386	73	23
	VE3KP	138,970	437	65	15
	VE3OME	127,286	418	62	15
	VE5UF	109,440	345	64	14
	VE5RA	90,960	315	60	9
	VE3LSK	55,284	221	51	8
	VE7BS	35,280	162	40	3
	VE3CWE	24,219	129	39	4
	VE2DVI	23,522	127	38	4
	VE1TE	21,941	127	37	3
	VO1QU	19,869	81	37	16
	VE3ST	9,632	60	32	4
	VE7DXU	8,980	94	20	2
VE6CB	6,125	52	25	2	
VE3HCT	1,428	21	14	2	
Phone Single Operator	VE3MFA	210,648	654	67	15
	VE3PN	98,637	419	49	8
	VE5RA	35,203	156	47	5
	VE7ERY	22,838	124	38	4
	VE5UF	16,164	94	36	5
	VE3CWE	14,065	100	29	2
	VO1MP	11,781	50	33	9
	VE2DVI	11,222	73	31	4
	VE3NBE	9,480	65	30	3
	VE2QO	4,641	46	21	2
	VE6CB	3,200	43	16	2
	VE3ST	2,793	30	19	2
	VE4SK	675	15	9	1
	Multi-op	VE3KRP	107,240	398	56

Bill Loucks VE3AR and Art Blick VE3AHU have been instructed by the CRRL and CARF boards respectively to discuss a possible merger of the two organizations. Expect them to report in early 1987.

WRITE YOUR M.P.

As requested in *The Canadian Amateur* I have written my M.P. concerning the question of electromagnetic compatibility posed by the Jack Ravenscroft incident.

My M.P. forwarded my letter to the Minister of Communications Miss Flora MacDonald. I am enclosing a copy of her reply, I think you will agree it is a carefully considered response.

I do trust it will be of value to you.

Gordon Ball VE3CSH, P. Eng.



Two CARF pioneers: Art Blick VE3AHU (left) and Bill Loucks VE3AR. Photo by VE3CKM.

10 DAY MONEY-BACK GUARANTEE

You may order any GARANT TD-Trap Dipole, any GARANT GD-Windom Dipole, any GARANT GB-Beam, or any EMOTATOR 105TSX, 502CXX or 1105MXX for a 10-day no-risk inspection. Have a look at them in the privacy of your home and if you don't like what you see return the item pre-paid to our warehouse. We'll refund the full purchase price less shipping charges. We trust in what we sell!

GARANT ANTENNAS		(SHI)	EMOTATOR ROTORS		(SHI)
GB33DX	410.00 + ASK		105TSX	\$ 290.00	7.00
GB43DX	555.00 + ASK		502CXX	\$ 460.00	9.00
GB+7	160.00 + 10.00		1105MXX	\$ 680.00	11.00
TD-2005/S	125.00 + 6.90		1200FXX*	\$ ASK	15.00
TD-2005/HD	135.00 + 7.90		1500FSX*	\$ ASK	26.00
TD-160	60.00 + 6.90		EV-700*	\$ ASK	9.00
GD-6/500W	95.00 + 6.90		EV-700DX*	\$ ASK	18.00
GD-6/2KW	195.00 + 7.90		#303	\$ 50.00	6.90
GD-8/500W	125.00 + 7.90		#300	\$ 85.00	6.90
GD-8/2KW	215.00 + 7.90		#1211	\$ 60.00	6.90
GD-7/500W	115.00 + 8.90		#1213	\$ 70.00	6.90
GD-7/2KW	215.00 + 8.90		#1217*	\$ ASK	6.90
GD-9/500W	145.00 + 9.90		105PSX*	\$ ASK	7.00
GD-9/2KW	240.00 + 9.90		502PSX*	\$ ASK	7.00
GD+2	40.00 + 6.90		*These items are not stocked regularly!		
GD+160	60.00 + 7.90				

PAYMENT: VISA, MASTERCARD, MONEY ORDER, or CERTIFIED CHEQUES. Prices are subject to change without notice. Ont. residents add 7% sales tax. NO SALES TAX ON ORDERS FROM OTHER PROVINCES!

MARVANA'S - ANTENNAS

45 Silverstone Drive Suite 202
Rexdale, Ontario M9V 4B1
Phone 416 745-5590 or 945-8830



QSL CARDS/ CARTES DE QSL



- CARF B - RED MAP, BLUE PRINTING ON BUFF BRISTOL
 CARF W - RED MAP, BLUE PRINTING ON WHITE BRISTOL

250 - \$32.50
(THIS FORMAT ONLY)

ADDITIONAL 250's
\$ 10.50 (when ordered
at the same time)

ONTARIO RESIDENTS
ADD SALES TAX

CALL _____ NAME _____
ADDRESS _____

INDICATE CALL SIGN STYLE
1. (as sample shown)

2. VE3GDZ 3. VE3GDZ
4. VE3GDZ

INDICATE LOGOS TO BE PRINTED
(maximum of 3)



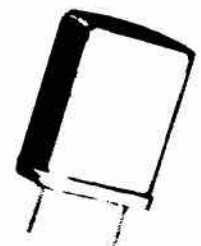
FOR SAMPLE OF THIS CARD, SEND A STAMPED SELF-ADDRESSED ENVELOPE. WHEN ORDERING ALLOW APPROX. 8 WEEKS FOR DELIVERY. SEND COMPLETED ORDER FORM TO VE3GDZ - BRUCE MCCOY, 1128 BRYDGES STREET, LONDON, ONTARIO, N5W 2B7

LAND/MOBILE CRYSTALS

Fast, Reliable Delivery of a Quality Product
Competitive Prices
No Minimum Order



Maintaining Crystal Requirement Data for
Virtually All Two-Way Radios and Pagers



Call Us For Frequency Changes of
Channel Elements, TCXO'S, ICOMS, etc.

LESMITH CRYSTALS

....People and Precision

Write or call for more information

Lesmith Limited

P.O. Box 846, 54 Shepherd Rd., Oakville, Ontario, Canada L6J 5C5
Telephone (416) 844-4505 • Telex O6-982348

Paul Cooper VE3JLP
RR 2 Metcalfe Ont.
K0A 2P0

•CQ DX•CQ DX•

TRAVELS ABROAD

I spent two weeks in November in the UK, partly to visit family members and partly to try to establish contact with Amateur Radio over there, particularly DXing. Looking back on a fairly hectic holiday, I'm reasonably satisfied with my efforts. I made contact with several Amateurs and Amateur organizations but the trip has not yet yielded much hard DX news which would be of interest to readers of the column.

A pleasant day was spent with Brett Rider G4SLQ of the Radio Society of Great Britain at their new headquarters at Potters Bar just north of London. Also, I was fortunate enough to time my visit to coincide with a meeting at the Institution of Electrical Engineers organized by the 'Antennas and Propagation' group and called 'HF Frequency Management'. (I've just realized that the British are finally calling the radiating element an 'Antenna' rather than 'Aerial'!)

Being a retired member of the IEE, I found I could attend the whole day session for nothing; in fact all I paid for was the noon buffet lunch. Sitting at the back of the comfortable Faraday room with a large audience of engineers I found several of the short papers interesting with various spin-off items which might interest fellow DXers. A senior engineer from the BBC External Service, G.S. Spells, gave a good paper on the continuing task the BBC short wave services face in picking appropriate frequencies for their 80 odd transmitters. Frequencies are changed four times a year and have to be coordinated with other shortwave broadcasters through the ITU.

Obviously here was a man who had to have a really good grip on propagation, so in the tea break... everything stops for tea in the UK, you know... I cornered him and asked what his predications were for the end of cycle 21 and the start of 22. "Oh, 21 ended last July," he assured me, going on to explain that his staff were now working on the frequencies to use for the summer of 1987 and were using a Sunspot number of 20. So there you are, I think the views of the BBC external service on propagation ought to carry a bit of weight!

Another paper covered 'Predictions using a microcomputer' and included a very impressive demonstration of the latest prediction software running on an Acorn micro with an external pack of four Megabytes of RAM. I'll

return to this paper when I do a future column on propagation programs.

BANNED COUNTRY LIST

The Department of Communications has just issued a revised list of those countries which forbid Amateur radio communications with their nationals. The list now looks like this:

Angola	D2,3
Burma	XZ
Ethiopia	ET
Ghana	9G
Iraq	YI
Surinam	PZ
Thailand	HS
Zaire	9Q
Saudi Arabia	HZ

It's good to see that Turkey, TA, is now off the list. This certainly makes sense as many of us have been hearing the odd Turkish station operating quite openly during the last six months. I guess it's the old problem of the wheels of bureaucracy grinding very slowly.

A number of the DX newsheets have been sounding warnings about the imminent demise of Amateur radio in Uganda, 5X. Meanwhile Gerry 5X5GK continues to provide many with their first contact with Uganda and is often looking for QSOs with Canadian stations. He hails from Ontario and runs a medical mission station on an Island in Lake Victoria. Let's hope the rumours are false, I know Gerry relies on Amateur Radio to keep his clinic running smoothly.

The big surprise here is Saudi Arabia. Amateur radio had been tightly controlled there for years, in fact I only know of one station that was on the air regularly, HZ1HZ. However it's a drastic further step to ban Amateur radio altogether.

I've telephoned the embassy here in Ottawa twice now but it appears nobody there knows anything about Amateur radio and they don't seem inclined to take up the matter with their counterparts in Riyadh.

TAIWAN, GOOD NEWS!

While in England I discovered a new (to me) Amateur Radio magazine *Ham Radio Today*. While the magazine does not have a DX column as such, operating news is covered and I found of particular interest a two-page article on the current situation in Taiwan by Tom King VK2ATJ. As many of you will know, Taiwan has been kept on the air, and off the 'Most wanted countries' list, by the efforts of one man, Tim Chen BV2A and BV2B. The situation has now eased and 12

new Amateurs were licensed about a year ago with the prospect of further licences being granted as more locals sit the annual exams. South East Asia is one of the more difficult parts of the world to reach from my home QTH but I shall be looking out for these new stations over the next few months.

DX NETS

I've received several requests from readers to provide up to date information on DX Nets. I've had it on the 'items for a future column' list for a number of months now, wondering where I could lay hands on a comprehensive listing. Then the current issue of *QRZ DX* arrived and there was a reference to OE2DYL who apparently publishes a regularly updated list.

The details are: Dieter Konrad, Bessarabierstrasse 39, A-5020 Salzburg, Austria. Send \$3 (U.S.) or 4 IRCs and ask for list 6/87. I intend to write to Dieter for the list and providing I don't violate his copyright I'll be publishing at least highlights from it in a future column.

COOPER'S BEEFS

This month we will briefly consider that pesky fellow who starts calling CQ without checking to see if the frequency is clear. I suggest a two stage check we should all follow if we want to call CQ. First of all, look for a quiet spot to make your call, then when you've found one LISTEN to confirm it really is clear. Step two is to transmit a brief, "Is the frequency busy?" or the equivalent in CW, which is QRL? I usually repeat step two to be quite sure before launching into a CQ.

Step two is important because you may be in the skip zone of one of a pair of stations using the frequency. If this is the case you won't hear one of the stations at all when he is transmitting and so imagine there's no one using the frequency. With luck the other end of the QSO will hear your inquiry and give you a quick call, whereupon you QSY and start the whole process again.

I don't want to belabour the point, but there are an awful lot of thoughtless people out there who just plunge in with their CQ calls. This is frequently right on top of a QSO I'm struggling with already because the DX station I'm working is down at S1 and I really need a clear frequency to copy him!

BITS AND PIECES

CX0, South Shetland Islands— Thanks to VE3NOS for the news that another expedition is planned to these islands. The call will be CX0XY and they should be on the air during the first two weeks of February, the exact date will depend on the Uruguayan Air Force, who are providing the transportation. The organizing group are the same Amateurs who put Flores Island, CV0V, on the air in December 1985. QSL manager for the expedition will be CX2CS.

FH, Mayotte— FH/W6KG is currently (mid-December) active with one particular frequency mentioned, 3.501 MHz around UTC, which is their sunrise. This is the YASME

expedition to the Indian Ocean which started on Reunion last month. By the time you read this I expect they will have moved on to other DX locations. There are planned stops at D6, S7 and 8Q so keep checking the bands for pile-ups in this direction, it will probably be Iris and Lloyd!

XF, Revilla Gigedo— Long Skip reports that the group that ran the FO0XX Clipperon DXpedition plan to put this island on the air in March 1987. The call will be XF4ZU. Watch this column for further details as they become available.

3B8, Mauritius— Long Skip reports the following activity from this part of the Indian Ocean:

3B8FP on 14.227 MHz at 2045 UTC
3B8CF on 7.005 MHz at 0238 UTC

3B8FP on 14.183 MHz at 1930 UTC.
5A, Libya— After a long period of silence there are reports that there is an authorized station operating from Libya, although under pretty severe restrictions. 5A0A is being operated by SP6RT, who has been in Libya for several months. He can only work CW on 21.005 MHz, no split operations, and he may not answer any questions. Some sources say his hours of operation are also restricted to 0900-1000 UTC but this may not be true.

This looks like an impossible one for VEs as the chances of propagation on 15 metres, at the times quoted are just about zero! I shall report any further developments on this one. While on the subject of 5A those of you who worked G3KJI/5A during 1980 and 1981 will be pleased to hear that his cards will be accepted for DXCC credit.

VE2, Zone 2— A recent contact with Kent Chown VE2LJ produced further information on his operating habits which should help those of you looking for a Zone 2 QSO. Most of Kent's operating is on CW so look for him in the first 10 kHz of each band. The times are as follows:

80 Metre CW 2200-0000 UTC
40 Metre CW 1100-1300 UTC
20 Metre CW 1400-1800 UTC.

Peter Island— The Northern Californian DX Foundation has just announced that there will be a DX operation from Peter Island during a 24 hour period between Dec. 28 and Jan. 4. Where is Peter Island? It's a rocky, inhospitable spot just off the coast of Antarctica at latitude 68 South, Longitude 90 West. My trusty atlas indicates that much of it is covered with ice and snow year-round.

Our intrepid DXer will be Bob Winter KD7P who is the chief Radio Operator of the U.S. Coast Guard ice breaker, Polar Sea. He will be helicoptered in with his equipment, much of which will be provided by NCDXF. Operations will be concentrated on 14.145 MHz, listening up, with some CW operations too. Depending on propagation there may also be operations on 40 and 15. It's unfortunate that the arrangements for this operation developed so fast that it wasn't possible to give everyone more advance warning. By the time you read this the expedition will be history so here's hoping that at least some of you get into his log. Good luck!

Thanks are due to the following sources for some of the material appearing in this column: VE3NOS, QRZ DX, Long Skip, G.S. Spells (BBC, External Service), Sarah Cooper, VE2ZP, NCDXF.

SWAP SHOP

FOR SALE HOME in Nakusp, B.C., 733 Columbia Crescent. Nine yrs. young, 1450 sq. ft. plus 325 sq.ft. court-yard-sundeck. Beautifully fenced and landscaped. Double garage, Sauna with pool. Underground wiring, sewer, street lights, side walks. EXCELLENT DX-Location. Curling, fishing, golf, Hot Springs, Ski Hill. Contact VE7EHD, 604-265-3175.

FOR SALE Oscilloscopes: Hickock 500 series, dual trace and differential amp, delaying sweep, \$350; Eico 460, \$190, new tubes; Heath 10-4540-6" square CRT, solid state, \$230. All in top mint condition with manuals. Reason for sale: have new scope. Also, HF Linear Amplifier, 400 watt out, ALS4 Ameritron 10-160, new tubes, original spares, manual, used three months, \$550. Reason for sale: home brew kilowatt Hi. Barrie Coates VE7AQK, Box 3463, Langley, BC V3A 4R8 (604) 581-0924.

FOR SALE Yaesu FT107M transceiver, no power supply, with Shure desk mike. Solid state, top condition, \$600.00 or offer. Yaesu YO901 Multiscope, top condition, \$300.00 or offer. Prices FOB Victoria B.C. Will ship. Phone 604-595-6680. D.H. Carter, 1716 Denman St., Victoria, B.C. V8R 1Y4.

FOR SALE RF Power Meter, Heathkit Model HM-102 with manual, \$20.00. Electronic keyer, Heathkit Model HD-1410, \$30.00. Paul Pierrard VE3OFF, 1327 Essex St., Ottawa, Ont. K1H7P1. (613)-521-8182.

FOR SALE Six Brand New Eimac 4-400's in sealed containers. \$65 each. Pete Orobko VE7FY, 12347 Davison St., Maple Ridge, B.C. V2X 5N5. Ph. 604-463-4904.

FOR SALE Canadian Army WW 2 No. 19 set complete. Ian McAuley VE3MYO. Phone 613-525-1770 or write R.R. 1 Dunvegan, Ont. K0C 1J0.

FOR SALE Complete stainless steel hardware kit and insulation for TH3 MK3 Beam. Brand New. \$78. 416-491-4824. Fouad Khouri VE3FCN, 4 Gleneagle Cres., Willowdale, Ont. M2J 3H3.

WANTED: Drake R7A receiver in good condition or other professional/semi-pro solid state receiver such as RACAL, Collins, JRC, etc. Have cash. Vic Chantrand, Box 325, RR 3 Manotick, Ont. KOA 2N0. or 613-642-6057 eves.

WANTED: Type 82 dual trace module for Tektronix type 585A Oscilloscope. Tino Zottoal VE2GCE, 5443 Mac Mahon Ave., Montreal, Quebec H4V 2C1.

WANTED: Model SB-220 Linear Amplifier, must be clean and in good working condition, or 2nd choice, a Henry Model 3KA. Will pay top price plus shipping charges. Serious replies only. 'A'-W.C. Linkletter, Freeport, N.S. BOV 1B0, Tel. 902-839-2756.

FOR SALE: Two 8122, 400 W dissipation tetrodes, plus an air system socket including elaborate screen bypass capacitor. \$98 shipping included. Ed Leahey, 54 Clairmont St., Thorold, Ont. L2V 1R8.

WANTED: Collins 30L-1 Linear. Must be in good condition. VE5QY Cliff Erbach, 145 Grant St., Moose Jaw, Sask. S6H 5Y9.

FOR SALE: Collins R391 receiver, mint condition, with manual, \$300. Also 1920's antique radios, old radio books and manuals, tubes- all types. Vic Chantrand, Box 325, RR 3 Manotick, Ont. KOA 2N0.

Send your 'Swap Shop' notices to the TCA Swap Shop, Box 356, Kingston, Ont. K7L 4W2. Single insertion is \$1.00 minimum (10 words) and \$1.00 for each additional 10 words. To renew, send copy and payment again. Please print or type, and put your membership number and call (not counted) at the end of your ad. Include your full address with postal code; if using a phone number, include the area code. TCA accepts no responsibility for content or matters arising from ads. This feature is for the use of members wishing to trade, buy or sell personal radio gear. It is not open to commercial advertising.

ONCE OUT

Trolitron!

TEN-DAY MONEY-BACK GUARANTEE

If not satisfied after purchase, return merchandise within ten days for a refund of the full price less all shipping charges.

<p>GARANT</p> <p>ANTENNAS</p> <p>GD-6/500W 99.95 GD-6/2KW 199.95 GD-8/500W 129.95 GD-8/2KW 219.95 GD-7/500W 139.95 GD-7/2KW 229.95 GD-9/500W 159.95 GD-9/2KW 249.95 GD+2 34.95 GD+160 67.95</p>	<p>EMOTATOR.</p> <p>ROTATOR SYSTEMS</p> <p>105TSX \$ 399.95 502CXX 459.95 1105MXX 659.95 1200FXX 979.95 Thrust Bearing #303 54.95 Thrust Bearing #300 94.95 #1211 (optional) 64.95 #1213 (optional) 74.95</p>
--	--

ONTARIO RESIDENTS ONLY:
Add 7% sales tax.

NO EXTRA FEES FOR SHIPPING & HANDLING for the above items! S.H.I. is already in the price!

TERMS OF PAYMENT: Money order or certified cheque. Personal cheques require 4 weeks' clearing time.

Prices are subject to change without notice. SEND \$1.00 (FULLY REFUNDABLE WITH PURCHASE) FOR TROLITRON ENTERPRISES CATALOGUE OF GARANT & EMOTATOR ITEMS - CONTAINS TECHNICAL INFORMATION AND ILLUSTRATIONS. Send all orders prepaid to -

TROLITRON ENTERPRISES
 2 Bloor Street West, Suite 100-251,
 Toronto, Ontario, M4W 3E2

NEED TECHNICAL INFORMATION? Any time before or after purchase call **GARANT INFO HOT-LINE: 1-807-767-3888.**

GARD ENTERPRISES
 402 - 457 EDINBURGH RD. S.
 PHONE 1 - 519 - 823 - 5962
 GUELPH, ONTARIO
 N1G 2Y5

<u>GARANT ANTENNAS</u>	<u>S.H.I.</u>	<u>EMOTATOR ROTATORS</u>	<u>S.H.I.</u>
GD330X \$ 375.00	* \$ 18.00	105TSX \$ 205.00	\$ 7.00
GD400X \$ 510.00	* \$ 24.00	502CXX \$ 445.00	\$ 9.00
GD+7 \$ 176.00	\$ 10.00	1105MXX \$ 645.00	\$ 11.00
TD-2005/S \$ 122.00	\$ 6.70	1200FXX \$ 955.00	\$ 15.00
TD-2005/HD \$ 130.00	\$ 7.90	#323 \$ 47.00	\$ 6.00
TD-160 \$ 56.00	\$ 6.90	#300 \$ 85.00	\$ 6.90
GD-6/500W \$ 95.00	\$ 6.90	#1211 \$ 57.00	\$ 6.90
GD-6/2KW \$ 105.00	\$ 7.90	#1213 \$ 67.00	\$ 6.90
GD-8/500W \$ 115.00	\$ 7.90		
GD-8/2KW \$ 205.00	\$ 7.90	* OUTSIDE OF ONTARIO THESE ITEMS	
GD-7/500W \$ 125.00	\$ 8.90	ARE SHIPPED FRIEGHT COLLECT.	
GD-7/2KW \$ 215.00	\$ 8.90	- S.H.I. = SHIPPING, HANDLING AND	
GD-9/500 \$ 145.00	\$ 9.90	INSURANCE.	
GD-9/2KW \$ 235.00	\$ 9.90	- RESIDENTS OF ONTARIO ADD 7 %	
GD+2 \$ 29.00	\$ 6.90	SALES TAX TO PRICE AND S.H.I.	
GD+160 \$ 59.00	\$ 7.70	- NO SALES TAX ON ORDERS OUTSIDE	
GD-3AL500W \$ 85.00	\$ 6.90	OF ONTARIO.	
GD-3AL2KW \$ 179.00	\$ 7.90	- PAYMENT: MASTERCARD,	
TD-3AL1:1 \$ 39.00	\$ 6.90	CERTIFIED CHEQUE,	
TD-TRAFS \$ 85.00	\$ 6.90 (PAIR)	MONEY ORDER	

FRANCHISED DEALER
FOR GARANT AND EMOTATOR

TECHNICAL DATA HOTLINE
1-807-767-3888

WHAT A DEAL!

- TCA— The Canadian Amateur Radio Magazine (11 issues per year)
- FREE QSL Service!
(Many Amateurs save the cost of membership with this service alone!)
- Lots of great CARF publications available!
Study Guides, Handbook and the new CARF Reference Files
- Access to Special Awards & Contests
- Authoritative answers to your questions and much more!

JOIN

 NOW!

ALWAYS WORKING
FOR THE CANADIAN AMATEUR

Product Review

Kenwood TM-2550A

Recently a Kenwood TM-2550A 2 metre transceiver was received from Glenwood Trading Company of North Vancouver, for evaluation. This radio will satisfy any 2 metre buff who must have the latest in bells and whistles. The test radio was the 45 watt version. Both 25 watt and 70 watt models are also available.

PERFORMANCE

The test unit met or surpassed the manufacturer's claims in all areas except for output power. This was measured at 39 watts on a Bird 43 wattmeter into a Bird dummy load. Adjustment of the internal power control would not increase the power beyond the 39 watt level. The only other negative point noticed was the 25% duty cycle recommended by Kenwood. When compared to other

manufacturers, this seems low, although the manufacturer could be very conservative on the ratings.

The receiver section far exceeded factory claims. Sensitivity was measured at .13 uV for 12 dB Sinad. Selectivity and freedom from front end overload was excellent.

FEATURES

Upon first viewing the radio and reading of the many capabilities incorporated into it, my first reaction was dismay. After reading the operator's manual, all functions were found to be easily mastered. Unlike most manuals, functions were well described and following the recommended procedures produced the desired result.

There are 23 multi-function

memories available. These cover frequency selection, offsets, scanning, subaudible tones, and 15 7-digit telephone numbers. Offsets are programmed at plus or minus 600 Hz, although other offsets can be entered using the 'OS' key. Nonstandard frequency pairs can be entered into channels 16/17 and 18/19.

Automatic telephone number dialing can be accomplished by depressing the 'phone' button while the PTT is activated. Any of 15 phone numbers can be entered into the memory. This feature should be useful under mobile conditions. All function controls are lighted but due to the small size of the buttons, visibility is not that good, especially when the radio is mounted under the dashboard of a vehicle. The 'LCD' display is large and very visible under all conditions. Most operating parameters of the radio are shown on this display.

Scanning can be selected to sample the memory channels or the entire band, with time delay or carrier scan stop delay. The time delay is internally adjustable. Priority channels can also be selected.

The Kenwood 'Digital Channel Link System' was not in this radio. This option allows automatic connection with other similarly equipped radios as well as automatic QSY, selective calling, vacant channel location, and many other functions, by use of 5 digit code groups.

The 2550A measures 7" wide by 2.36" high by 8.5" deep and weighs 4.4 kg.

CONCLUSION

During the 3 week period that I used the radio, it performed flawlessly. The many features available were overkill in this area, but in an area of heavier 2 metre population, it would be a very welcome companion in a vehicle. Kenwood put a lot of thought and quality in this radio and it will not soon be outdated. In the day of radios that are too complex to be readily used and enjoyed, this one is definitely user-friendly. Now all I have to do is talk the wife into the necessity of having one.

Le service QSL de FRAC

Le but de cette note est d'expliquer la procédure pour l'utilisation du service QSL international de FRAC. Veuillez consulter le Manuel de l'opérateur pour l'utilisation du service QSL en général. Voir le chapitre sur la façon de faire parvenir vos cartes QSL.

Le service d'envoi des cartes QSL de FRAC se charge de l'envoi de vos cartes QSL dans le monde entier. Ce service est gratuit à tous les membres de FRAC. Si vous envoyez beaucoup de cartes, les frais de votre souscription seront tôt récupérés du au coût élevé du service postal quand les cartes sont expédiées directement.

Veuillez observer les règles suivantes quand vous utilisez le service FRAC d'envoi des cartes QSL:

- 1 Classer les cartes (DX) alphabétiquement par préfixe.
- 2 Classer les cartes canadiennes par ordre numérique de préfixe.
- 3 Veuillez placer les petites quantités de cartes dans des enveloppes en papier épais et bien scellées. Envelopper les grosses quantités de cartes avec précaution de préférence dans du carton. N'utilisez pas de brocheuse!

4 Veuillez adresser vos envois comme suit:

Diagram of an envelope with the following text:

4 Veuillez adresser vos envois comme suit:

Ligne supérieure de votre étiquette TCA

Nom, indicatif d'appel
Adresse de retour
FRAC NO.

(Frais postaux exacts)

FRAC (CARF) BUREAU QSL
NATIONAL
B.P. 66
ISLINGTON, ONTARIO
M9A 4X1

Utilisez cette adresse non pas B.P. 356, Kingston

5. **NE PAS RECOMMANDER** les envois de cartes. Cette pratique est plus dispendieuse et occasionne souvent des retards et par conséquent, n'est pas réellement nécessaire.

6. Si vous désirez recevoir une preuve que FRAC a reçu votre envoi de carte QSL, veuillez inclure une enveloppe pré-adressée au une carte postale avec timbre avec le mot "RECEIPT" imprimé.

7. Si un colis était endommagé sur réception (très rare), FRAC vous fera parvenir une liste des cartes reçues de sorte que vous pourrez vérifier s'il y en a eu de perdues dans le courrier.



Past, Present, Future

Past

Since its creation in 1967, the Canadian Amateur Radio Federation has been very actively involved in the national Amateur scene. CARF has been standing behind Canadian Amateurs, studying, working and solving problems. Every aspect of Canadian Amateur Radio has benefitted from their work: from Antenna Rights to Repeaters to Equipment Tariffs to National Symposia to helping establish the Canadian position for the international WARC '79.

Present

CARF is still faced with local, national and international problems on a daily basis. CARF knows what Canadian Amateurs want, and their needs are represented in every action. Ongoing discussions with the Department of Communications help keep everyone informed. And CARF makes sure Canadians know what's happening in the pages of TCA, the National Amateur Radio Magazine, always packed with fresh information and updates.

Future

Being in touch with the current Amateur Radio scene, CARF is always looking ahead to a shining future in Canada. CARF is always involved in upcoming changes to exams and regulations, and in new developments in Amateur Radio technology.

There are dozens of ways to benefit from a CARF membership... including a subscription to TCA and a FREE QSL Service.

JOIN NOW!

by filling out the form at the back of this issue.



Canadian Amateur Radio Federation

P.O. Box 356, Kingston, Ontario, Canada K7L 4W2
613-544-6161

Always working for the Canadian Amateur

Technical Editor:
 Bill Richardson VY1CW
 RR 1, Site 20, Box 63
 Whitehorse, YT Y1A 4Z6

Notes on the FOXX

BY VE3DQB

The thrill was exactly the same as the one I remember, on that day long ago, when a W9 returned to my plaintive CQ from Espanola, Ontario—my first-ever QSO.

The difference is, that this time I used a one watt transceiver, homebrewed, a FOXX. If I remember correctly, this is my first entirely homebrewed station: in those long ago first days I used an R1155 with a homebrewed transmitter, and long before that I had built many simple regenerative receivers, but was not on the air with a transmitter.

For those who have only recently joined us, FOXX is a transceiver devised by George GM3OXX, using a novel circuit. The PA transistor doubles as a detector. The entire circuit board is two inches (50 mm) square. There is RIT, and the frequency control is by a VXO. (RIT is Receiver Incremental Tuning, so that you can hear a station directly on your transmitting frequency, and a VXO is a Variable Crystal Oscillator.)

I built my FOXX some months ago, and tested it into a 50 ohm dummy load. I adjusted it to give one watt output, as called for in the instructions, and built an ATU with an old broadcast receiver capacitor control. The capacitor was larger than the entire transceiver, so, after briefly

testing the unit, I replaced the capacitor with one out of a transistor radio.

The entire transceiver then fitted into an outlet box, very neat, though I say it myself. I have always been fond of these conduit boxes: they are strong and serviceable.

However, the output was now down to a small fraction of a watt. After painstaking replacement of just about every component in an attempt to find the trouble, I at length discovered that the transistor capacitor did not work well at 7 MHz. Putting the thing in parallel with an airspaced unit showed nearly one watt out with the transistor capacitor at minimum capacity; at maximum capacity, with the air-spaced one adjusted to resonate the circuit, much less.

I took the tiny capacitor off the tuner, and fitted the station general-purpose antenna, a Garant Windom. Stations came and went in the passband, which is, of course, quite wide. The 7 MHz stations audible in Hawkesbury are mostly far off on this continent, and I had the volume control at full open all the time. I imagine that a station nearby would call for a volume reduction.

All seeming well, I put the absorption meter (The Helpful Handful, in *The Amateur* some years ago) near the ATU, and tried the

transmitter. When the passband was empty, I called CQ. When other stations called CQ, I replied. After an hour or so, I got a bite. Chris W8JSY called CQ, I replied, and he came back! I don't know if he had been told what happens to boys who tell fibs, but he gave me a 559. I scarcely remembered how to throw the TR switch but I sent a long reply, and then I found Snag 2.

Chris got the first half of my transmission well enough, but not the second half. On the second go-around I realized that power output fell off substantially during a long transmission, the absorption meter reading told me that. So after I'd signed with Chris, I tried a key-down test (dummy load, my finger on the output transistor). The temperature of the transistor rose as the output fell.

So I took a bit of 20 gauge aluminum and cut a strip to fit the transistor. I formed it into a heat sink, blackened it in a candle flame, and fitted it. Key down again, output fell slightly, but not excessively.

So now I have a fully operational, one-watt input, transceiver. Next job is to see if I can find one of the tiny capacitors capable of handling HF, and get the thing back into its box. And then, we'll see about a VFO. Shouldn't be difficult.

I've taken voltage readings round the circuit, and tabulate them here for reference.

Voltage Chart—FOXX

Receive:	Q1	Q2	Q3	Q4	Q5
Base	-2	8	0	0.6	1.6
Collector	.	0	3.6	1.6	8
Emitter	0	0.1	12	0	1
Transmit, key down:					
Base	-2	1.6	12		
Collector	3	12	12		
Emitter	0	12	12		

* depends on RIT setting.

12 volt supply, 7.05 MHz crystal. Current drawn: 12½ mA on receive, 185 mA on transmit.

Readings taken with 30,000 ohms per volt meter. (Do not expect exactly the same readings—components differ slightly in their performance.)

The Canadian Amateur pays for technical contributions. Write up your project and send it to VY1CW, whose address is at the head of this Section.

Our signal using a Viewstar PT-Z000A and TH-7 is amazing. Sure hope people come to work VE3VCA this summer. I get a pile-up every time.

Here is one hour's operating on April 27, 1986, TU210, E14ZH, UQ1GWC, EA3AJY, EA8BLP, GW4HSH, SH3BH, VE6JW/DL. The last six called me!

Call CARF in Kingston and try the station!

Ron VE3IDW

The Chirpsounder

BY VY1CW

The equipment to be described here would be welcomed into every hamshack if the price were within our budgets. Unfortunately, at the present time, only military and large commercial organizations can afford the Chirpsounder.

The Chirpsounder system is comprised of one or more transmitters, one receiver, and a spectrum monitor. The manufacturer, BR Communications, 1249 Innsbruck Drive, Box 61989, Sunnyvale, California 94088, calls this a 'Tactical Frequency Management System.'

SYSTEM OPERATION

The system uses two or more transmitters, depending on the number of propagation paths to be analyzed. The transmitters emit an FM or CW signal that is swept from 2 to 30 MHz linearly. Sweep rate can be either 50 or 100 kHz per second. These signals are time synchronized with the receiver. Output power is varied between 2 and 100 watts, into the same antenna system used in the regular communications network. In this way, antenna patterns and propagation conditions are taken into account. Channel spacing is 3 kHz

which results in 9,333 channels being tested between 2 and 30 MHz.

Spectral analysis of the receiver local oscillator and the incoming signal produces a CRT display showing time delay versus frequency and received power versus frequency. This provides a readout of the optimum frequency for use on the path between the transmitter and receiver.

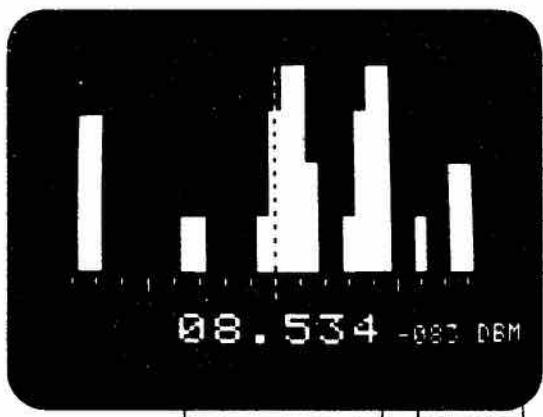
The preferred frequency will be as high as possible subject to signal strength versus noise, using a few ionosphere hops as possible, and showing the greatest freedom from fading. Often when multipaths are open between two points, data transmissions will be interfered with because of phase shifts resulting from signals arriving at the receiver from different propagation paths. This can also cause problems if voice communications are employed with inexperienced operators.

In the past, systems using pulse sounding equipment was used to try to determine propagation paths. These systems used high power transmitters, in the 20 kW range. These caused desense in nearby receivers, and different modulation techniques could not be examined.

Stepsounding was also tried and was found unsatisfactory since only a few frequencies could be sampled because the actual communications equipment was used.

The Chirpsounder system provides the following data, all displayed on

Page 38

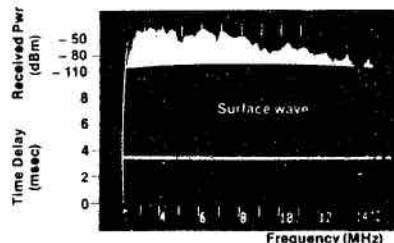


Center Frequency Lowest Received Power Threshold

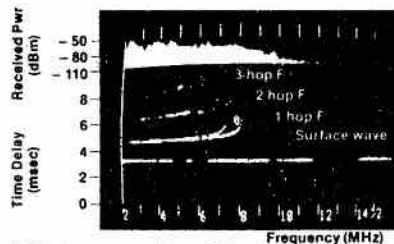
FIGURE 1

Received Power
(dB, lowest threshold)

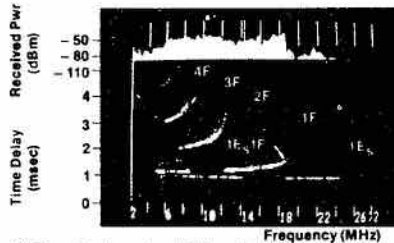
Example of current ("C") display of amplitude vs. frequency, 100 kHz display width, updated each 11 seconds.



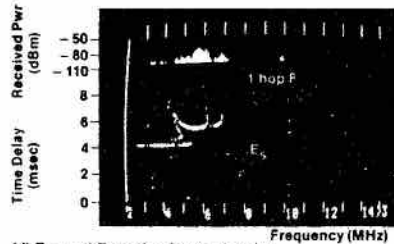
(a) Surface wave only



(b) Surface wave with multi-hop F-modes



(c) E_s, mixed, and multi-hop F modes



(d) E_s, and F-mode skywave only

FIGURE 2

the CRT, as shown in the accompanying photographs (see Fig. 1).

- 1- Where are clear channels?
- 2- Is a channel presently occupied?
- 3- Has a specific channel been used within the past 5 or 30 minutes?
- 4- At what amplitude was the signal?
- 5- At what level was fading of the signal?
- 6- What type of modulation was used? e.g. - CW, SSB, RTTY, etc.
- 7- What is the background noise level?
- 8- What is the signal to noise ratio?
- 9- Has a wideband or noise signal appeared in the last 30 minutes?
- 10- What is the optimum frequency for use?
- 11- What propagation path is being used? e.g. - F layer, direct path, multi-path, etc.

CONCLUSION

HF communications is much more

reliable when this data is available to the operator and a renewed interest in HF communications is being shown by many military and commercial users. For many years, satellite communications was believed to be the most reliable, but is now becoming apparent that data transmissions can be jammed, satellite reliability is not as good as projected, and with modern military technology, satellites can be removed from orbit or destroyed.

I think everyone will agree that a Chirpsounder would be the ultimate hamshack accessory, but alas, dreams are cheap. Possibly some day we may see this equipment on the surplus market. Equipment designator numbers are, complete unit, AN/TRQ-35V, transmitter, T-1373/TRQ-35V, receiver, R-2081/TRQ-35, and spectrum monitor, R-2093/TRQ-35V. The manufacturer can provide literature

which more fully explains the equipment and their brochure is well worth sending for.

IONOGRAMS

In Fig. 2, there are two distinct parts of the display. The lower portion shows the relative time delay versus frequency and is known as an 'ionogram.' The upper part shows received power versus frequency.

Time delay increases as the trace moves vertically up the display. The signal that travels the shortest distance will be towards the lower part of the display. Signals near the top of the display will be via multi-hop F layer propagation.

Figure 2A- The mode is surface wave only since there is a constant time delay and no difference in received power versus frequency.

Figure 2b- In this display, there is a weaker surface wave together with multiple 'F' modes. An excellent choice of frequency would be 8.5 MHz. This is surface wave only with high received power and no multipath time delay. As an example, 5.5 MHz would be a poor choice since there is a 6 millisecond delay because of multipath signals.

Figure 2c- This plot was over sea water. Sporadic E and F modes occur. Sporadic E can be distinguished by its variability with time. The best range for communications would be 14 to 17 MHz. Since there is no multipath, received power is high, and the noise level is lower than other parts of the spectrum. Figure 2d- Here only 5.2 to 6.2 MHz will provide good communications because of no multipath and fairly high received power levels.

If you have a technical question, send it to Bill VY1CW. If— unlikely, but if— he can't answer it, he'll find someone who can.

NATIONAL QUIET ZONE

The FCC has adopted rules to reinstate the definition of the National Quiet Zone. The area is bounded by 39 deg. 15' on the north, 78 deg 30' on the east, 37 deg 30' on the south, and 80 deg 30' on the west. The quiet zone protects sensitive radio astronomy operations and the Naval Research Laboratory at Sugar Grove, WV. Amateurs must get permission from the National Radio Astronomy Observatory at Green Bank, WV., before placing a repeater or an automatic beacon in operation in the protected area.

W5YI Report

Our Certificate of Thanks

Do you know anyone who instructed an Amateur radio class last fall? If you do, please let Debbie know, for they surely deserve one of these certificates.

Write Debbie at Box 356, Kingston, Ontario K7L 4W2.



The Canadian Amateur Radio Federation thanks -

_____ CALL SIGN _____

FOR SERVING AS A _____

DATE _____ SIGNATURE _____

Clean soldering iron tips are a snap if you have a piece of sponge in half of one side of a parts drawer. Wet it and leave the drawer on your bench during any project.

Easy to find next time because solder and extra tips are in the same drawer.

TCA welcomes all articles submitted for publication.

Or use a plastic component container with the flip lid which helps keep the sponge from drying out between jobs but is harder to locate each time.

Moe VE6BLY

We pay for Technical articles. Send them to our Technical Editor, Bill Richardson VY1CW, RR 1, Site 20, Box 63, Whitehorse, YT Y1A 4Z8.

Antennas

BY VE3DQB

MATCHING A DIPOLE TO 50 OHMS

A simple dipole is a good match to 75 ohm coaxial, and is usually perfectly acceptable by the transmitter. With other antennas, it is not so simple a task.

There are two problems in connecting the coaxial line to the antenna. The antenna impedance may be widely different from 50-73 ohms; and a centre-fed dipole is balanced to ground at the feedpoint, whereas one conductor of the coaxial—the outer braid—is at ground potential.

These problems can be ignored, and, for example, 50 ohm coaxial can be connected straight to a dipole at its

centre. The 73 ohms of a dipole will cause a standing wave on 50 ohm coaxial, and the grounded braid will distort the radiation pattern. Neither of these deficiencies will prevent the antenna from working and giving a satisfying performance. However, at high power, and when the pattern is important, these things must be attended to.

For tubular, self-supporting antennas, the commonest matching device is called the **GAMMA MATCH**. This is shown in Figure 89. It consists of a rod parallel to the antenna, a variable short-circuit from rod to antenna, and a capacitor connecting the rod to the inner conductor of the coax. The braid is connected directly to the centre of the antenna.

To adjust the gamma match, the

transmitter is set to the chosen centre frequency. That is, the centre of the phone or CW band, or the band centre, or perhaps the frequency of a local net. It is then tuned for proper performance into a dummy load. The meter readings are noted. Then the transmitter is connected to the antenna lead, turned on for measurements, off for adjustments.

The antenna capacitor is turned, and the short circuit position varied until the position at which the meter readings are identical to the dummy load readings is found.

This procedure should ideally be performed with the antenna at its working height. If this is impossible, the antenna is lowered until the gamma device can be reached, the adjustment made, and then checked at height. The performance may well be acceptable: if not, further cut-and-try adjustment can be done.

Such adjustment means many trips between the shack and the antenna, unless a friendly ham can be roped in to help. If an antennascope and grid-dipper (explained in Chapter 14) are available, the work can be done at the antenna before the coax is connected.

The antennascope is energized by the grid-dipper at the chosen frequency and coupled to the antenna by a few turns of wire across the coax connector (Figure 90). The impedance of the antenna can be read on the antennascope, and the effect of adjustments seen immediately.

If coax an exact half-wavelength (electrical length) long at the centre frequency is available, the antenna can be checked at height by the antennascope. The effect of nearby conductors on the impedance can be detected like this.

The gamma match corrects both impedance and balance-to-unbalance conditions. If the impedance match is not a problem, then a **BALANCE-to-UNbalance** device, a **BALUN**, can be used to remove the unwanted RF current from

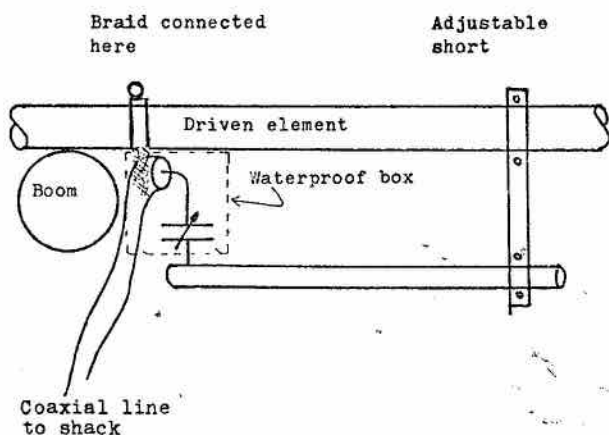
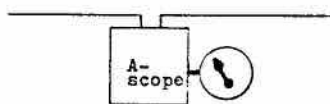


Fig. 89— The gamma match. This is the commonest way to connect a coaxial line to an all-metal beam.

Fig. 90— The antennascope is connected directly to the antenna at its terminals. If this is not possible, an exact number of half-wavelengths of feedline can be used between the instrument and the antenna.



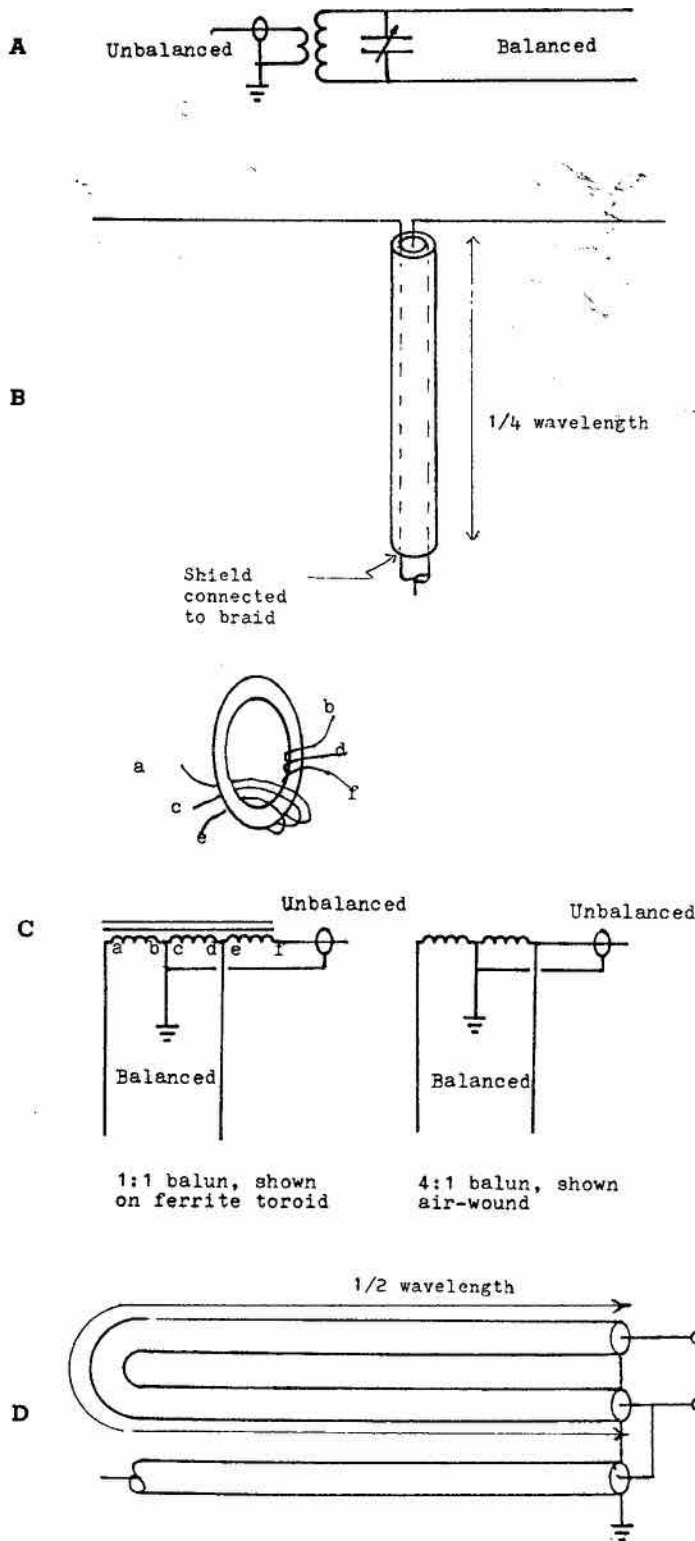


Fig. 91— The balun at A is a sleeve of tubing over the top quarter-wave of the coaxial line, and connected to its braid at the bottom end. The balun at B both converts unbalanced to unbalanced, but provides a 4:1 stepdown while doing so.

the coax braid. If an impedance match is required, some balun types can provide this, too.

Figure 91 shows several kinds of balun. At 91a two coils, magnetically coupled, are used. This balun is often used at the transmitter end of a balance feedline to transform the balanced, high impedance load of the line to 50 ohm, unbalanced. It is less usually used at the antenna end. It needs retuning when changing frequency.

If the coils are wound on a ferrite doughnut-shaped core, it becomes broadband, so, needing no tuning, it can be used at antenna height.

To feed a dipole with coax at its natural frequency, a quarter-wavelength shield may be slipped over the coax at the antenna end, and short-circuited to the braid of the coax at its lower end, Figure 91b. Current induced in this shield has a node one-quarter wave below the open-circuited end, so the braid from this point to the transmitter end of the line is effectively grounded.

Figure 91c shows a set of balun coils, which may be wound in air or on a ferrite core.

The fourth balun, Figure 91d, is a half-wavelength of coax connected as shown. This balun steps the impedance of the antenna down by a factor of 4. A 200 ohm antenna impedance will match 50 ohm line perfectly by way of this balun. The balun coax may be coiled for convenience.

MATCHING TO MULTIBAND ANTENNAS

A transmitter can be matched successfully to a one-band antenna by any of the ways described above. If the antenna is to be used on more than one band, the problem is different.

Trap antennas can be used on several bands, with the feedpoint impedance not too far from 50 ohms on all of them. Such antennas are commercially available for all HF bands, with 10-15-20 metre beams well represented. A 40-metre dipole will usually accept power at 15 metres, too.

But any length of conductor can be used as an antenna. ANY length of wire, from the shack to a support out of reach of the passer-by, can radiate and yield QSOs. Its impedance will vary widely with frequency, but it is always possible to match it to a transmitter.

Several dipoles can be cut to length on different bands and connected at the centre to coax with satisfactory results. A length of 3- or 4-conductor wire, such as is used by telephone companies, can be cut as shown in

Figure 92 to yield a useful multi-band dipole.

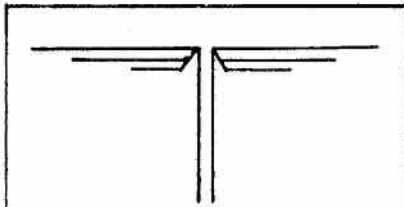


Fig. 92— Several dipoles cut for different wavelengths can be connected together at the feedpoint.

However, for matching a transmitter to a variety of impedances, such as will be found at the end of a random length of wire, a TUNER is needed.

An antenna tuner is merely a transformer that can be set to match the 50 ohm transmitter impedance at one

end, and a wide range of loads at the other. At its simplest (Figure 93) it is a coil of wire which can be tapped from the transmitter coax and by the antenna. To save the difficulty of finding the right place to tap the coil, a capacitor can be used, Figure 94.

In these two figures the coil is an autotransformer. It can be modified for use on balanced lines, Figure 95, or, once the correct tapping positions for several bands on a given antenna have been found, a multi-position switch can be wired in.

More flexibility is available if the tapping is avoided. A LINK coil can be coupled to the large inductor in two possible ways. The link may be varied in position to vary the coupling; this used to be a popular way of coupling the line to the transmitter tank before TVI made harmonic suppression methods preferable. Or the link may be fixed and tuned by a series capacitor, as in Figure 96.

The output side of the transformer can also be made infinitely variable with a capacitor— two capacitors for balanced lines. There are many variations of these circuits shown in the textbooks, and Figure 97 shows some of them.

A random length antenna may be a dipole cut for another band, or it may be a truly random length, being only what is practicable at the site. Balanced random length antennas (Hertz antennas) have the advantage that the ground connection is less demanding than unbalanced ones. A dipole fed with open-wire line is about the best simple multiband antenna available. The open-wire line extends to the shack, or at least to a position where an antenna tuner can be easily adjusted, Figure 98.

To be continued

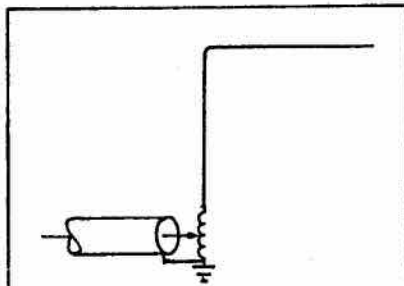


Fig. 93— Matching an antenna to the line— tapped coil.

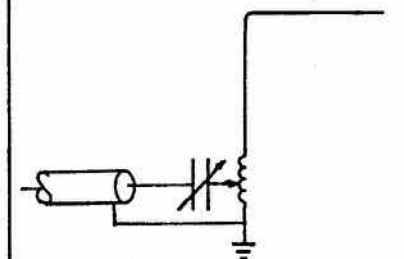


Fig. 94— Avoiding line adjustments of matching by tapping by provision of a capacitor between line and tap.

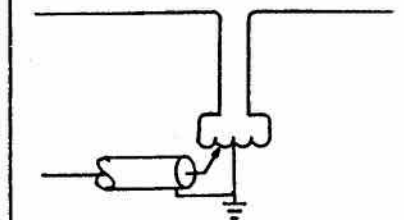


Fig. 95— Matching a balanced line by tapped coil.

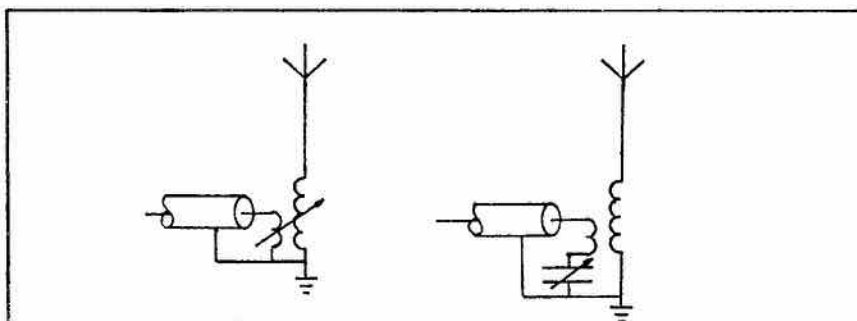


Fig. 96— Link coupling. The link may be tuned by varying its position with respect to the main coil, or by a capacitor in series with the link.

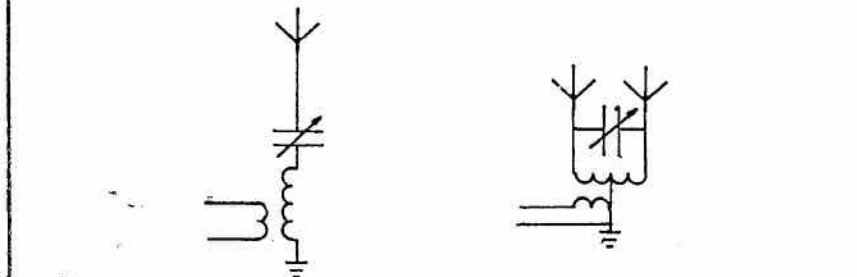


Fig. 97— The antenna may be tuned by a series or parallel capacitor, and matched to the line in that way.

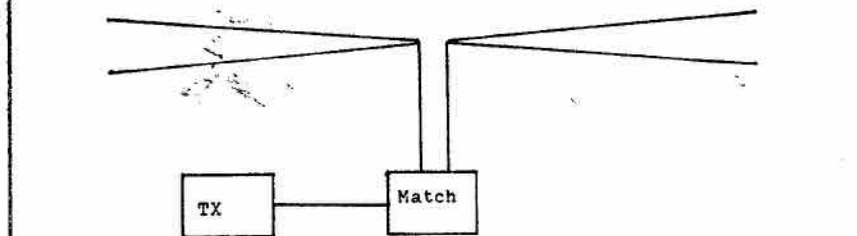


Fig. 98— Spreading the ends of two antennas cut for the same frequency, fed at the same point, increases the bandwidth over a single antenna. At 80 metres, the ends should be spread one foot.

Try these!

From Recent DOC Examinations

5. When attempting to establish contact with any station, the signal 'CQ' and your call sign should be transmitted:

- 1) a sufficient number of times to permit a station to tune to the frequency in which you are calling.
- 2) not more than once.
- 3) not more than three times.
- 4) not more than five times.

5. Lorsque vous essayez d'entrer en communication avec n'importe quelle station, vous devez transmettre le signal 'CQ' et votre indicatif d'appel:

- 1) autant de fois que c'est nécessaire pour permettre aux stations de s'accorder sur la fréquence d'appel.
- 2) une seule fois.
- 3) au plus trois fois.
- 4) au plus cinq fois.

6. The symbol 'F2' denotes:

- 1) telephony by pulse modulation.
- 2) telegraphy by amplitude modulation using the keying of a modulating audio frequency, or the keying of the modulated emission.
- 3) telegraphy by the on-off keying of a frequency modulating audio frequency or by the on-off keying of a frequency modulated emission.
- 4) telegraphy by frequency modulation without the use of modulating audio frequency (frequency shift keying).

6. Le symbole 'F2' désigne:

- 1) la téléphonie utilisant la modulation par impulsions.
- 2) la télégraphie par modulation d'amplitude obtenue par la manipulation d'une fréquence audible de modulation ou par la manipulation de l'émission modulée.
- 3) la télégraphie par manipulation par tout ou rien d'une fréquence audible de modulation de fréquence, ou par manipulation par tout ou rien d'une émission modulée en fréquence.
- 4) la télégraphie par modulation de fréquence sans fréquence audible de modulation (manipulation par déplacement de fréquence).

7. A person holding a radio operator's certificate of proficiency that qualifies him to operate an amateur station using the band 433-434 MHz for packet transmission must not exceed an occupied bandwidth of

- (1) 100 kHz
- (2) 2.5 kHz
- (3) 1.0 kHz
- (4) 1000 kHz

7. Le titulaire d'un certificat l'autorisant à agir comme opérateur d'une station d'amateur dans la bande 433-434 MHz pour la transmission par paquets ne doit pas occuper une largeur de bande excédant:

- 1) 100 kHz.
- 2) 2,5 kHz.
- 3) 1 kHz.
- 4) 1000 kHz.

8. The 'Q' signal' abbreviation indicating that you want the other station to send slower is:

- 1) QRL 3) QRM
- 2) QRN 4) QRS

8. Le Code Q indiquant que vous voulez que l'autre station transmette plus lentement est:

- 1) QRL. 3) QRM.
- 2) QRN. 4) QRS.

9. In order of priority, an urgency signal comes immediately before

- 1) a distress signal.
- 2) a safety signal.
- 3) a government priority message.
- 4) no other communications.

9. En ordre de priorité, un signal d'urgence vient immédiatement avant:

- 1) un signal de détresse.
- 2) un signal de sécurité.
- 3) un message de priorité de l'Etat.
- 4) aucun autre message.

10. Amateur third party communications is

- 1) a simultaneous communication between three operators.
- 2) the transmission of commercial or secret messages.
- 3) the transmission of non commercial or personal messages to or on behalf of a third party.
- 4) none of the above.

10. Les communication de radio-amateur au nom de tierces personnes sont

- 1) des communications simultanées entre trois opérateurs.
- 2) la transmission de messages commerciaux ou secrets.
- 3) la transmission de messages non commerciaux ou personnels à

destination ou de la part d'une tierce personne.

4) aucune des réponses cidessus n'est valable.

11. Transmitter power must be reduced for night time operation in the: 1) 1.8 to 2 MHz band.

- 2) 220.0 to 220.1 MHz band.
- 3) 28 to 29.7 MHz band.
- 4) 7 to 7.3 MHz band.

11. Pendant la nuit, on doit diminuer la puissance de l'émetteur dans la bande:

- 1) 1.8-2 MHz.
- 2) 220-220.1 MHz.
- 3) 28-29.7 MHz.
- 4) 7-7.3 MHz.

12. All Amateur stations, regardless of the mode of transmission used, must be equipped with:

- 1) a reliable means of determining the operating radio frequency.
- 2) a dummy antenna.
- 3) an overmodulation indicating device.
- 4) a d.c. power meter.

12. Toutes les stations d'amateur, quel que soit le mode d'émission, doivent être munies:

- 1) d'un dispositif fiable permettant de déterminer la radiofréquence d'exploitation.
- 2) d'une antenne fictive.
- 3) d'un indicateur de surmodulation.
- 4) d'un appareil de mesure de la puissance en courant continu.

13. The 'Q' signal which signifies "who is calling me" is

- 1) QRS? 3) QRZ?
- 2) QRL? 4) QRO?

13. Indiquer le signal 'Q' qui signifie "Par qui suis-je appelé?"

- 1) QRS? 3) QRZ?
- 2) QRL? 4) QRO?

SYMPOSIUM

CARF, in order to encourage relations between the two organizations, invited CRRL to rejoin us in sponsoring the 1987 Amateur Radio Symposium. We are glad they accepted the invitation, and we look at this as one further sign of cooperation between the two organizations.

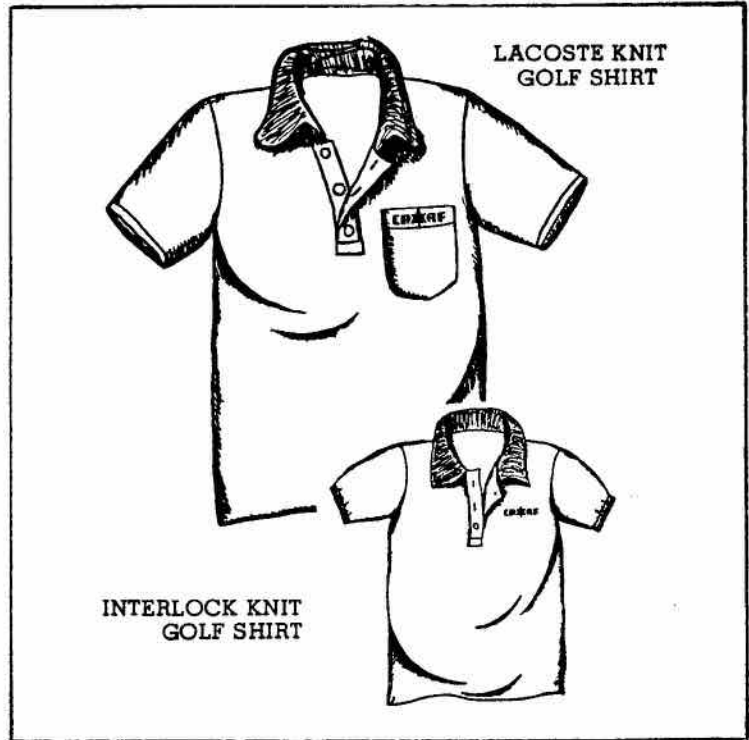
CARF News Service



BOMBER JACKET

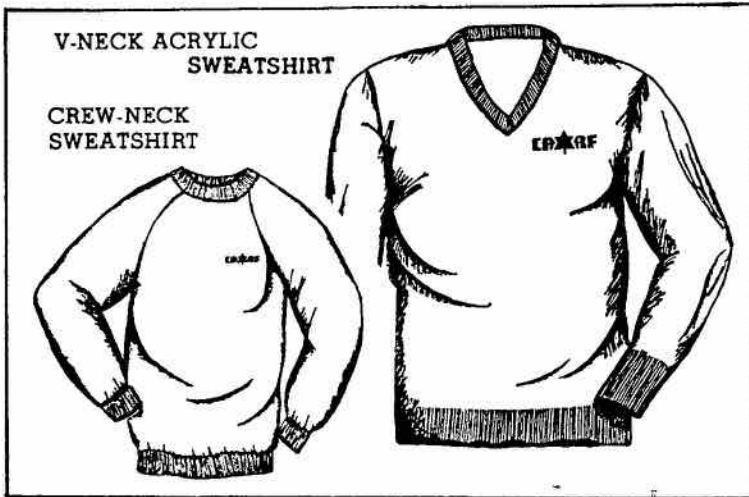


WARM-UP JACKET



LACOSTE KNIT GOLF SHIRT

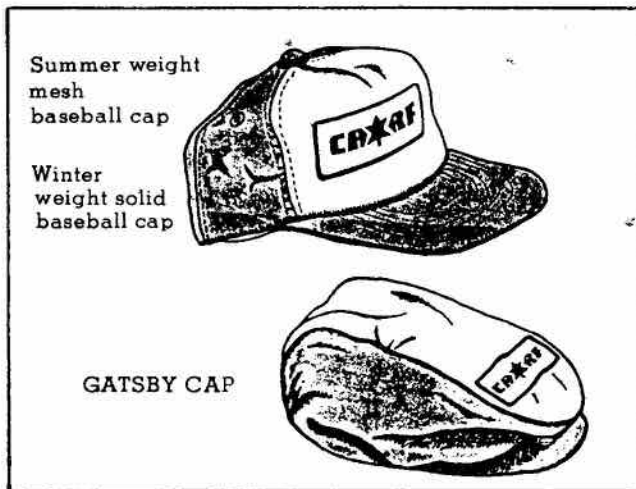
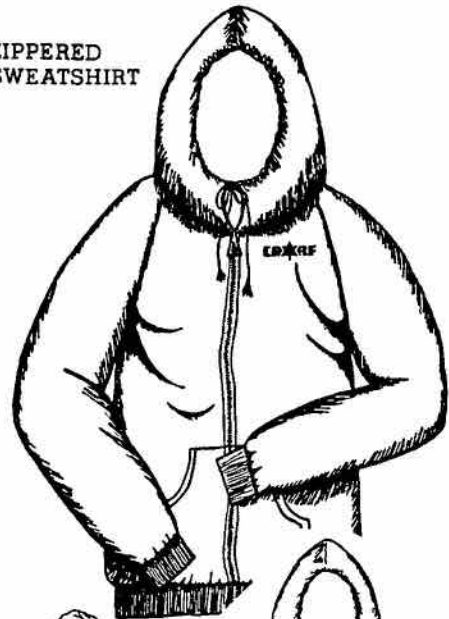
INTERLOCK KNIT GOLF SHIRT



V-NECK ACRYLIC SWEATSHIRT

CREW-NECK SWEATSHIRT

ZIPPERED SWEATSHIRT



Summer weight mesh baseball cap

Winter weight solid baseball cap

GATSBY CAP

WINDCHEATER JACKET



PULL-OVER SWEATSHIRT



Men's Medium = Ladies' Lg.
Men's Small = Ladies' Med.

■ = Not Available

	MEN'S				LADIES'			UNIT COST	CALL YES/NO	TOTAL
	S	M	L	XL	OS	S	M			
BOMBER JACKET Blue								\$34.95		
White										
WARM-UP JACKET Blue								\$29.95		
White										
WINDCHEATER JACKET Blue								\$34.95		
White										
ZIPPERED SWEATSHIRT (with hood) Blue								\$22.95		
White										
PULL-OVER SWEATSHIRT (with hood) Blue								\$21.95		
White										
CREW-NECK SWEATSHIRT Blue								\$18.95		
White										
V-NECK ACRYLIC SWEATSHIRT Blue								\$24.95		
White										
LACOSTE KNIT GOLF SHIRT (with pocket) Blue								\$18.95		
White										
INTERLOCK KNIT GOLF SHIRT (no pocket) Blue								\$18.95		
White										

SUB TOTAL:
ORDER SUB TOTAL:
ITEMS PERSONALIZED at \$3.00 PER ITEM:
SHIPPING CHARGES on orders under \$75.00
7% PST to Ont. residents only
TOTAL

\$3.50

Call Sign for Personalized Orders _____

HATS: ONE-SIZE (Cannot be personalized)	
Summer-weight mesh baseball cap	\$5.25
Winter-weight solid baseball cap	\$6.25
Gatsby cap	\$6.95
SHIPPING ON HAT ORDER ONLY	\$1.00
TOTAL	

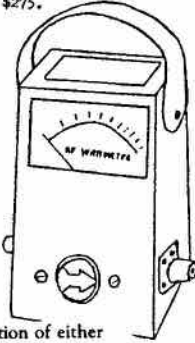
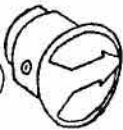
NAME _____
ADDRESS _____
CITY _____ PROVINCE _____
POSTAL CODE _____ DATE _____

Orders received prior to the 15th of the month will be made up that month; orders after the 15th will be made up the next month.

COAXIAL DYNAMICS

MODEL 81000-A
Directional RF Wattmeter
\$275.

Standard Elements
\$93.
(not included with 81000-A)



FOR ACCURACY

Shock Mounted "Taut Band" Meter
± 5% of full scale reading.
(Elements interchangeable with Bird)
115 mm (4 1/2") Mirrored Scale.

FOR VERSATILITY

Quick Match Connectors
Internal Line Section

FOR DURABILITY

Nickel Plated Plug-In Elements
2 Year Limited Warranty

Selection of either
UHF or N connectors
included in Wattmeter
price. Others available.

The MODEL 81000-A completely satisfies proposed CSA standard for bounce & vibration (CSA-STD-C22.2 No. 152-1976), as well as US Navy standard for shipboard mechanical vibration (MIL-STD 160).

STANDARD ELEMENTS (CATALOG NUMBERS)

Power Range	Frequency (MHz)						
	2-30	25-40	50-125	100-250	200-5	4-1.0	
5 watts	82012	82020	82028	82036	82045		Low Power
10 watts	82013	82021	82029	82037	82046		
25 watts	82014	82022	82030	82038	82047		Milliwatt
50 watts	82004	82015	82023	82031	82039	82048	
100 watts	82005	82016	82024	82032	82040	82049	Elements
250 watts	82006	82017	82025	82033	82041	82050	
500 watts	82007	82018	82026	82034	82042	82051	- slightly higher priced
1000 watts	82008	82019	82027	82035	82043	82052	
2500 watts	82009						
5000 watts	82010						

**GREAT LAKES
ELECTRONICS**

54 Clairmont St., Thorold, Ontario L2V 1R8.
1-416-227-5799 VE3CF

ANNOUNCEMENT

TIME LIMITED SPECIAL !

SAVE UP TO \$ 40. Get a GD-special balun and build a window antenna. You supply the wire & endinsulators. We sell you the special 2KW PEP balun and the instruction sheets for the GD-6, GD-7, GD-8, and GD-9 for only \$ 149 plus \$ 7.90 S.H.I. (Garant list price is \$ 189 plus S.H.I.)

SAVE UP TO \$ 49. Order an EMOTATOR rotator system 105TSX or 502CXX or 1105MXX and receive the #303 thrust bearing at no extra cost. (Garant list price is \$ 49 plus S.H.I.)

SAVE UP TO \$ 10. Order the well known GARANT trap dipole TD-2005/HD (heavy duty version) and pay only the price of the TD-2005/S (standard version).

Special starts Jan. 2, 1987 and ends February 14, 1987 (postmark on envelope). Take advantage of this time limited special and save \$\$\$.

GARANT ENTERPRISES
227 County Blvd., Dept. TC-287
THUNDER BAY, ON, P7A 7M8, PH. (807)767-3888

BARD ENTERPRISES
402-457 Edinburgh Road S.
GUELPH, ON, N1G 2Y5, PH. (519) 823-5962

TROLITRON ENTERPRISES
2 Bloor Street W., Suite 100-251
TORONTO, ONTARIO, M4W 3E2

TOP OF THE LINE

TS-940S SP-940 MC-60A



or **CONCERNED ABOUT THE BOTTOM LINE**

PS-430 TS-440S SP-430



WE HAVE THE KENWOOD RADIO FOR YOU.



GLENWOOD TRADING COMPANY LTD.

278 East 1st St., North Vancouver, B.C. V7L 1B3

ORDER DESK
(604) 984-0405

These, and many other fine Ham radio products are detailed in our latest mail-order catalogue. Write for your free copy today.

CARF Publications

CARF Emergency Cards	<input type="checkbox"/> 3/\$1.00	_____
CARF Log Sheets (Package of 25)	<input type="checkbox"/> \$3.00	_____
CARF Message Forms	<input type="checkbox"/> \$2.25	_____
CARF Sew-On Crests	<input type="checkbox"/> \$2.50	_____
CARF Logos (adhesive sticker)	<input type="checkbox"/> 4/\$1.00	_____
Canada Flag Lapel Pin	<input type="checkbox"/> \$1.00	_____

TEXTS AND STUDY GUIDES

Certificate Study Guide, 1984 Edition	\$15.00	_____
Advanced Study Guide, 1985 Edition	\$15.00	_____
Instructors Guide For Amateur Licence	\$4.50	_____
Information Guide for Advanced Certificate	\$10.00	_____
CW into Foreign Languages	\$6.00	_____

Special Club Discount of 15% for orders of 10 or more of The Certificate Study Guide and/or the Advanced Study Guide to the same address. The price is now F.O.B. Kingston by your selection of carrier.

CANADIAN AMATEUR REFERENCE GUIDE

Basic H.F. Antennas <i>By Art Blick VE3AHU, 23 Pages</i>	\$2.25	_____
Contests: Radiosport <i>12 Pages</i>	\$1.75	_____
The Amateur Bands <i>12 Pages</i>	\$2.25	_____
Routine Daily Operating <i>16 pages</i>	\$1.75	_____
DX <i>By John Gilbert VE3CXL, 15 Pages</i>	\$2.25	_____
Establishing An Amateur Station	\$2.25	_____
<i>By the late Bud Punchard VE3UD, 11 Pages</i>		
Monitoring And Reference Frequencies <i>19 Pages + Updates</i>	\$3.50	_____
Digital Transmission Techniques <i>By John Iliffe VE3CES, 31 Pages</i>	\$3.25	_____
Cable Television Signal Leakage	\$3.50	_____
<i>By Tony Van Wouw VE7CCI, 19 Pages</i>		
Emergency Communications <i>By Ken Kendall VE3IHY, 11 Pages</i>	\$1.50	_____
Amateur Radio Towers— Your Rights and Obligations <i>By Bill Wilson VE3NR, 15 pages</i>	\$2.50	_____
Binder— 2" D-Ring with CARF Logo	\$9.00	_____
<i>For Reference Sections</i>		

CASSETTE TAPES

The Amateur Bands	\$2.25	_____
Routine Daily Operating	\$1.75	_____

Add \$1.00 Postage and Handling

\$1.00

Total— Please Remit by Cheque, Money Order, Mastercard or Visa

Name: _____

Call: _____

Address: _____

Postal Code: _____

Canadian Amateur Radio Federation
Federation des Radioamateurs Canadiens
P.O. Box 356, Kingston, Ont. K7L 4W2

613-544-6161

10 DAY MONEY-BACK GUARANTEE

You may order any GARANT TD-Trap Dipole, any GARANT GD-Windom Dipole, any GARANT GB-Beam, or any EMOTATOR 105TSX, 502CXX or 1105MXX for a 10-day no-risk inspection. Have a look at them in the privacy of your home and if you don't like what you see return the item pre-paid to our warehouse. We'll refund the full purchase price less shipping charges. We trust in what we sell!

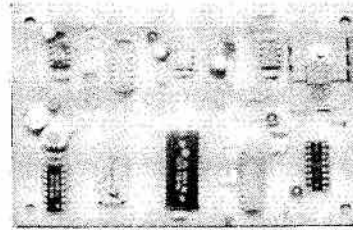
GARANT ANTENNAS		(SHI)	EMOTATOR ROTORS		(SHI)
GB33DX	\$499	+ 18	105TSX	\$299	7.00
GB43DX	\$669	+ 24	502CXX	\$499	9.00
GB+7	\$189	+10.00	1105MXX	\$749	11.00
TD-2005/S.	\$127	+ 6.90	1200FXX*	\$999	15.00
TD-2005/HD	\$137	+ 7.90	1500FSX*	\$ 4,195	26.00
TD-160	\$ 57	+ 6.90	EV-700*	\$ 889	9.00
GD-6/500W	\$ 99	+ 6.90	EV-700DX*	\$ 1,590	18.00
GD-6/2KW	\$199	+ 7.90	#303	\$49	6.90
GD-8/500W	\$119	+ 7.90	#300	\$89	6.90
GD-8/2KW	\$219	+ 7.90	#1211	\$59	6.90
GD-7/500W	\$129	+ 8.90	#1213	\$69	6.90
GD-7/2KW	\$229	+ 8.90	#1217*	\$ 69	6.90
GD-9/500W	\$149	+ 9.90	105PSX*	\$ 139	7.00
GD-9/2KW	\$249	+ 9.90	502PSX*	\$ 169	7.00
GD+2	\$ 29	+ 6.90	*These items are not		
GD+160	\$ 59	+ 7.90	stocked regularly!		

Prices are subject to change without notice. PAYMENT with VISA, MASTERCARD, CHEQUE or MONEYORDER. TECHNICAL DATA HOT-LINE 1-807-767-3888. Franchised dealer for GARANT and EMOTATOR. Manitoba residents ONLY add 6% sales tax. All shipment is FREE only for the month of February.

ODURO ENTERPRISES, Box 3045
210-565 Corydon Ave. Winnipeg. MB. R3C 4E5.
Tel. 1(204) 284-4558

INTRODUCING

the SC-100 SELECTIVE CALLER



NOW you can enjoy the advantages of private selective calling at a very low price.

Installation is FAST and EASY. Just connect the SC-100 between the speaker Jack of your rig, and speaker.

Now only hear the people who dial your own special, field programmable, 3-digit code. This lets you always stay readily available, but without the distraction of unwanted conversation and annoying intermodulation.

The SC-100 is the perfect solution for both fixed and mobile stations wishing total accessibility.

The SC-100 comes on a compact, high quality p.c. board that measures only 9 cm x 14 cm (3.5 in x 5.5 in).

HXF ELECTRONICS
Box 73, Station "A"
Islington, Ontario
M9A 4X1

(416) 621-3733

Special Introductory
price until
January 30, 1987
.....\$119.00

Regular Price \$159.00
(Ontario residents
please add sales tax)

VOLUNTEERS

The Canadian Amateur Radio Federation has an immediate need for volunteers to fill positions within the CARF organization. This includes various committees, executive positions and nominations/volunteers for the upcoming election of the Board of Directors.

As a member of this team, you will be involved in the decision making process of a Canadian corporation responsible for representing Amateurs to government agencies and ensuring that the rights of Amateurs are protected.

We need you! We need your input!

Please send your applications or nominations to the CARF Secretary, Box 356,
Kingston, Ontario K7L 4W2.

THINK CANADIAN!

THINK !



Subscription only **\$25.00** per year

Full Voting Member **\$25.00** per year
pour un an

Membre a part entière
avec droit de vote

Associate Member **\$25.00** per year
(Non voting, non licensed or
foreign call signs) pour un an

Membre associé
(Adhérent sans droit de vote,
sans licence ou détenteur d'indicatif
d'appel étranger)

Members residing
outside Canada Same as above, except in U.S. Funds
to cover additional postage costs.

Membre résidant
à l'étranger Même que membre associé, mais en
monnaie U.S. pour couvrir les frais
postaux.

Additional Family Members \$2.00 for each year extra per person
\$30.00 for life

Membres d'une même famille \$2.00 par année par personne
A Vie \$30.00

Life Membership **\$375.00**

Adhésion a vie (Full or Associate/Membre votant ou associé)

Total

Name _____

Nom _____

Call _____

Indicatif d'appel _____

Address _____

Adresse _____

City _____ Postal Code _____

Ville _____ Province _____ Code Postal _____

Membership #, if renewal

Date _____ No d'adhérent si renouvellement _____

Mastercard and Visa Service now available:

Master-charge et Carte Visa acceptées:

Card # _____

No de la Carte _____

Expiry Date _____

Date d'expiration _____

Signature _____

Canadian Amateur Radio Federation Federation Des Radioamateurs du Canada

P.O. Box

B.P. 356 Kingston, Ontario, Canada K7L 4W2
613-544-6161



ARMACO

THE **FT-767** **GX**

"WHEN ONLY THE BEST WILL DO!"



- 100 WATT ALL MODE
- ALL BAND
- BUILT IN POWER SUPPLY
- INTERNAL HF ANTENNA TUNER
- FRONT PANEL KEYPAD ENTRY
- AUTOMATIC FREQUENCY TRACKING FOR REPEATERS
- 3 OPTIONAL VHF MODULES
- UHF 10W MODULES (2M, 6M AND 70CM)
- 4 INTERNAL CPU'S
- BUILT-IN KEYS
- AUTOMATIC SWR & WATTMETER WITH DIGITAL DISPLAY
- 10 MULTI-FUNCTION MEMORIES
- CAT SYSTEM
- FTS-8 CTCSS (OPTION)
- DTMF OPTIONAL HAND MIC.

Contact **Armaco Electronics Ltd.**
for Colour Brochure and
Name of Your Nearest **YAESU** Dealer



YAESU

THE IC-735 HF TRANSCEIVER



BUY YOUR HF FOR PERFORMANCE, NOT BY THE POUND

- All HF Band Transceiver/
- General Coverage Receiver
- HM-12 Scanning Mic Included
- 12 Memories/Frequency and Mode
- 105dB Dynamic Range
- All Modes Built-In USB, LSB, AM, FM, CW

The IC-735 is a heavyweight when you compare features and performance. Other transceivers may weigh more than the advanced IC-735 compact HF transceiver, but inch-for-inch and pound-for-pound, the IC-735 outweighs them all.

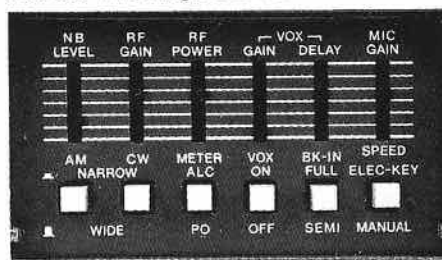
Ultra Compact. Measures only 3.7 inches high by 9.5 inches wide by 9 inches deep and weighs only 11.1 pounds. Without question, the IC-735 is the best HF transceiver for mobile, marine or base station amateur operation.

All Amateur Band Coverage. It's a high performer on all the ham bands, plus it includes general coverage reception from 100kHz to 30MHz. May be easily modified for MARS operation.

12 Memories. Frequency and MODE may be easily stored and retrieved in the 12 tunable memories.

Exceptional Receiver. To enhance receiver performance, the IC-735 has a built-in receiver attenuator, preamp, and noise blanker. PLUS it has a 105dB dynamic range and a technologically advanced low-noise phase locked loop for extremely quiet rock-solid reception.

Simplified Front Panel. Controls which require infrequent adjustment are placed behind a unique hatch cover on the front panel of the radio. The hatch cover is designed to protect seldom used controls from being accidentally knocked off line, but also provides easy access. The large LCD readout and con-



veniently located controls enable easy operation, especially important for the mobile environment.

More Features. FM built-in, HM-12 scanning mic, program scan, mode scan and memory scan. Switchable AGC, automatic SSB selection by band and RF speech processor. Continuously adjustable output power up to 100 watts, 12V operation, 100% duty cycle and deep tunable notch filter.

Options. A new line of accessories are available, including the AH-2 mobile antenna system, AT-150 whisper quiet automatic bandswitching antenna tuner for base station operation and the PS-55 power supply. The IC-735 is also compatible with most of ICOM's existing line of HF accessories.

See the IC-735 performance heavyweight at your local authorized ICOM dealer.



ICOM America, Inc., 2380-116th Ave NE, Bellevue, WA 98004 / 3150 Premier Drive, Suite 126, Irving, TX 75063
ICOM CANADA, A Division of ICOM America, Inc., 3071 - #5 Road, Unit 9, Richmond, B.C. V6X 2T4 Canada

All stated specifications are approximate and subject to change without notice or obligation. All ICOM radios significantly exceed FCC regulations limiting spurious emissions. 7351086