



# the canadian amateur

April 1976

Number Four

## WARC '79: Toward a Canadian proposal

Ottawa: From reading recent bulletins and letters received from various Amateur radio clubs and individual Amateurs it appears that a list of proposed frequencies for ITU World Administrative Conference 1979, circulated by another organization, is being wrongly attributed, in some cases, to the Canadian Amateur Radio Federation Inc. This list of frequencies is one which is currently being considered by the Amateur Radio Advisory Committee of the US Federal Communication Commission in their preparation for WARC 79.

In response to a request of the DOC, a Canadian proposal is being drafted by a special committee of your Federation for submission to the DOC. This is a lengthy and complicated technical undertaking and the DOC has noted that the CARF committee should take their time. A preliminary paper has already been submitted to the Department without the specific frequency requirements as these are still in the process of formulation. These requirements are being worked out in conjunction with those of other Canadian users. At the same time direct liaison with the FCC ARAC is being maintained in order to ensure that the recommendations of the Federation will be as compatible as possible with those proposed for US Amateurs.

The contents of the draft of the Canadian propos-

## Sails extended on CTS satellite

The giant sails on Canada's recently launched Communications Technology Satellite were successfully extended in early February in a series of complicated manoeuvres executed by Canadian space scientists and engineers.

The two 22 foot sails, studded with 27,000 solar cells, are now providing the spacecraft with power to operate. The Canadian-built CTS is the world's most powerful communications satellite,

Tension was high as a team of 40 scientists and engineers at the Communications Research Centre near Ottawa controlled a four-hour sequence of manoeuvres ending at 4:00 a.m.

The satellite, 22,300 miles above the equator in geostationary orbit, first had to be despun and oriented so that its antennas point toward the earth. Then, engineers sent a signal that forced off two covers that had been protecting the folded sails during and after launch. Finally, in response to another command, the giant sails unfolded accordion-like and locked flat.

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al will be made known to the Amateurs and comment will be solicited before any final paper is submitted to the DOC.

## CZ20 Relocated

Radio Amateurs Serving the Olympics (RASO) has reported that, due to certain modifications relating to the construction of the Olympic Stadium, the QTH of amateur radio station CZ20 has now been relocated to the College Marie Victoria, Pavillon Champagnat at 7125, rue Marie Victorin Montreal.

These premises offer the advantage of a substantially larger operating area, thus allowing for a more representative showcase of amateur radio.

### Inside This Issue

- Ballot for election of Ontario and Pacific Directors
- Profiles on Director Nominees
- and more news on the Canadian Amateur scene

# BALLOT

## For election of Ontario and Pacific Directors

### Ontario Directors

ONTARIO MEMBERS - please:

1. Vote for your Ontario Directors by marking X in circle opposite your choice on this ballot and return to CARF before closing date - May 15, 1976.
2. You may vote for two candidates.

3. All returns will be kept secret. If you wish to remain anonymous, tear off top portion of this ballot with mailing label.

4. Return to:

Secretary C.A.R.F.  
P.O. Box 356,  
Kingston, Ont. K7L 4W2

### Pacific Director

PACIFIC MEMBERS - please

1. Vote for your Pacific Director by marking X in circle opposite your choice on this ballot and return to CARF before closing date - May 15, 1976.
2. You may vote for one candidate.

Harold Braun VE3DWH	<input type="radio"/>
Fred Robinson VE3GCP	<input type="radio"/>
Croft Taylor VE3OR	<input type="radio"/>

Peter F. Driessen VE3BBQ	<input type="radio"/>
Frank Merritt VE7AFJ	<input type="radio"/>

To be used by Amateurs in those regions only

**CARF**

**the  
canadian  
amateur**

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PO Box 66, Islington, Ont. M9A 4X1.

# From the Front Office

The content of THE CANADIAN AMATEUR reflects the positive attitude of your national Federation to Amateur Radio. The CARF Board, responsible for policy and over-all management of the affairs of the Federation, is convinced that an editorial policy based on mutual trust and confidence promotes cordial relations between Amateurs and Amateur organizations and demonstrates mature, responsible national leadership.

THE CANADIAN AMATEUR, although primarily a news publication, is also the house organ of the national society. As such, its contents, as far as possible, give an unbiased view and attempt to air all sides of any controversial matter. Only in this manner can the Amateurs of Canada possess the information necessary to make reasoned comment and exercise their individual judgment in a democratic manner.

The main projects of your national Federation, in early 1976, are the drafting of the Canadian Amateur submission to the DOC Canadian Interdepartmental Committee for WARC 79, the publication of the Canadian Amateur Certificate Study Guide (forecast for end April) and the codification of Canadian regulations pertaining to Amateur Radio.

The CARF WARC 79 Committee has been hard at work since its formation in May 1975 and has received excellent comment and ideas from many Amateurs and Amateur organizations. If you, or your group, have anything to say on this most important document, send your comments to Box 356.

The publication of the Study Guide involves not only a great deal of work but also requires a sound financial position. The authors have based the Guide on the new DOC examinations, offering a logical approach for instructors and students alike to the level of knowledge necessary to qualify. The national Federation must bear the heavy expenses incurred in the publishing.

As with the publication of the Radio Regulations Handbook, now in the third printing of the second edition, sales of the initial printing can be expected to merely recoup the costs of type-setting proof correction, printing, publishing and circulation. Subsequent printings will show some profit and enable CARF to forge ahead with additional Manuals and Handbooks.

The codification of the Canadian Radio Regulations and sections of the Radio Act pertaining to Amateur Radio was a monumental task and undertaken by the national society at the request of DOC. Copies of the draft have been forwarded to the provincial Amateur societies and CARF Affiliated members for comment and approval. The codification, when accepted and published by DOC, will fill the need for a comprehensive and complete official compendium of rules and legal reference and obviate the need to search through the pages of the

Radio Act, etc. to find those that apply to Amateur activities.

Development of projects of this nature is a function of any national society and your national Federation has a proud record of achievement in these matters. Success in present and future projects and services of benefit to the Amateurs of Canada is assured through the enthusiastic dedication of CARF's official family backed by the increasing support, both financial and moral, of the membership.

Our doors are always open to any Amateur, or Amateur organization, that desires to work with the Federation in furthering the well-being and activity of the Amateur Experimental Service. We have all come a long way since CARF was formed in Canada's Centennial Year, working together, and the future is full of promise.

## CTS sails

Continued from Page 1

Immediately, the batteries aboard the spacecraft began to charge, confirming the success of the manoeuvre.

Control of CTS, launched Jan. 17 by NASA, had been turned over to Canadian scientists earlier. It is the first time the complicated solar sail mechanism had been extended in space.

The powerful satellite will be used in an experimental program in communications beginning in April.

## RASO News

The target of 65 operators suggested by COJO to operate Olympic Amateur Radio Station CZ20 has now been attained.

Other licenced operators interested in the formation of a reserve volunteer group for this occasion should advise their clubs.

RASO has also completed the distribution of a limited supply of Olympic QSL cards specially conceived for XJ or XN prefix QSO confirmations.

Any radio Amateur requiring a further number of these cards should address himself to the QSL manager of his district.

## DOC issues booklet

The Department of Communications has issued in booklet form the 'Radio Act and Office Consolidation of the Orders and Regulations, 1976' all in an 8½ x 11 format, bilingual edition. This replaces the papers forming the Radio Act, Regulations and those multiple amendment that had to be pasted or written in.

It is obtainable from Information Canada from those of its bookshops still open or by mail (K1A 0S9, Ottawa) for \$2.50. The catalog number is YX75-R-1/1975.

This in no way replaces the Federation's publication, The Canadian Amateur Radio Regulations Handbook, which is still a necessity for an Amateur to understand the application and a Radio Inspector's interpretation of the Act and the regulations.



Canadian Repeater Advisory Group

Only one addition to the repeater list is noted for this month ... Elliot Lake, Ontario, is proposing a repeater but the frequencies and call are not known at this time.

With the interference problems generated into and by 220 MHz band operation, it is unlikely that there will be any more rumblings about it becoming a citizens' band in the US. In the meantime, back at the ranch, there are a number of 220 repeaters springing up in Canada and a talk with W2ODC, a former chairman of the ARRL VHF advisory committee, produced some information on problem frequencies which have cropped up in the US. These are caused by interaction with TV and FM stations. If you are contemplating a 220 MHz repeater, write to CRAG for details on these "problem frequencies."

For those groups using or planning to use autopatch it may be of interest to note that if you charge a fee or membership for the group or club sponsoring the establishment and maintenance of the repeater there appears to be no problem. If, however, you are thinking of charging users a separate fee or a set fee related specifically to the autopatch you may find problems with your local phone company because it was stated to CRAG on good authority

that 're-sale' of common carrier telephone service is not permitted under the various acts incorporating telephone companies.

Next month, with the vacation season about to start, we plan to publish an up-to-date Canadian repeater directory. It appears to be a popular feature but we could use some comment from readers to make it better ... as an example, we have listed Quesnel, British Columbia, on 146.46-147.00 and have yet to find out what the call is! How about that, BC readers ... is there really a machine in Quesnel?!

## Cu vi parolas Esperaton?

DX fans will be interested to know that the problem of understanding that rare one because he is speaking an unknown tongue or horrible English or French does have a solution ..... learn to speak Esperanto, the international language! Its grammar is logically constructed and easy to learn.

Dedicated to better communication among Amateurs through the spread of Esperanto, the International League of Esperantist Radio Amateurs was founded recently. Its president is W2CIL and its secretary is G4MR in Hungary.

According to an open letter from ILERA received by VE3BRS, Esperanto was the official language of the International Radio Association, the forerunner of the International Amateur Radio Union. The ILERA would like to see Esperantist specialty groups formed in each country to undertake such tasks as the translation of Amateur technical material to Esperanto, to translate the Amateur vocabulary, and to print a special QSL card concerning Esperanto.

There are Esperanto clubs in most major cities in Canada and an Esperanto net on 14266 kHz every Monday at 1800 GMT. For further info, contact your local Esperanto organization or VE3BRS, Bruce Spanton, 1325 Essex Street, Ottawa, Ont. K1H 7P1 (tel. 613-733-2327).

Oh yes, the headline, spoken as "choo vee pah-rollass espair-anton", translates as "Do you speak Esperanto?"

## RSO Convention '76

The 9th Annual RSO Convention will be held at the Don Valley Holiday Inn in Toronto October 22, 23, 24, 1976.

All activities will be held on the premises, including forums, business meetings, exhibitors, and flea market. Social activities in the hotel ballroom will include a Friday Night Eyeball Buffet and Dance, and the Annual Banquet on Saturday Night. The ladies program for the non-hams is a more ambitious one than usual, and the XYL's should find this convention interesting as well.

Up to date information about the proposed program and speakers is forthcoming.

For complete registration information, write to: RSO Convention Committee, Box 313, Don Mills, Ontario.



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BOX 126 - AGINCOURT - ONTARIO - CANADA

## Nominations - Pacific Director



### Profile: Peter Dreissen VE7BBQ

Peter Dreissen was born in Victoria, BC, and had his elementary schooling in the Netherlands. In 1966 he returned to Vancouver, BC, and completed an Honors B.Sc. degree in Physics and Mathematics from University of British Columbia in April '76.

He worked for the RF group at TRIUMF, a nuclear research lab at the University of BC. This work involved the operation and maintenance of a 2 megawatt 23 MHz amplifier needed to generate a sufficiently high RF voltage to accelerate protons in the cyclotron to high energies.

Peter is also active in music; he plays piano, pipe organ and trombone, and performs professionally with the Vancouver Symphony Orchestra on a part-time basis.

He was first licensed as VE7BBQ in June 1970, and received his Advanced Certificate in 1971. He joined CARF in April 1973, and is a member of the BC FM Communications Association, Canadian DX Association, University of BC Amateur Radio Society, Vancouver Repeater Association and the BC DX Club. He has operated all bands 160 to 2 m, CW, SSB and RTTY and is presently active in antenna experimentation and contest operating from station VE7WJ, where he has won several first place certificates. He is interested in all facets of the Amateur Radio hobby, and keeps up to date by means of the weekly ham newsletters, HR Report and West Coast DX Bulletin. His application for a ten meter beacon licence is currently pending with DOC. Future projects include a six meter beacon as well as setting up to work through the satellite.

Peter looks forward to an opportunity to represent the interests of the Amateurs of the Pacific Division with CARF.

After being bitten by the radio bug at about 10 years of age, Frank built his first 'homebrew' receiver at age 12. During the normal progression of events, a Ham licence would have resulted but for the Second World War. Radio shop and then TV shop experience provided a preparation for 18 months of electronics schooling in the Army. After a tour of duty with the Armed Forces in Germany working in the field of communications electronics, he left the Army for civilian life. The next 14 years were spent working in a number of fascinating areas of electronics in the aerospace industry.

In 1957, Frank was first licensed. Since then he has worked most bands and all modes with the exception of TV. Most of his operating time was CW with a generous sprinkling of RTTY. While in the LA Section, he functioned as the SEC for three and a half years and had a MARS net. Building or 'homebrewing' equipment has always been a major interest and down through the years he has built an interesting assortment of gear.

### Profile: Frank Merritt VE7AFJ



Moving to Canada in 1968, the call changed from K6YCX to VE7AFJ. Most operations remain on CW with a smattering of RTTY. At all times there is an assortment of projects in progress. Over the years many of his most fruitful experiences have been oriented around Amateur radio and he says "many of the finest people I have met have been Hams".

"Few of us indeed are fortunate enough to work close to their area of major interest," Frank says. "Every day is an experience in Hamming it up."

## Nominations - Ontario Directors

### Harold Braun VE3DWH

Harold has had the call VE3DWH since 1960. He is a plant engineer for the Cluthe Manufacturing Co. in Waterloo, Ontario.

Born in that town in 1932, his active interest in

radio is attested to by his activities as Past President of the Kitchener-Waterloo ARC.

He is currently a Radio Society of Ontario delegate for the Kitchener area and is active on 75, 20 and two meters. His interest in emergency work made him one of those prominent in the Amateur operations during the Guatemala disaster.

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RF output impedance.....	50 ohms (unbalanced)
Carrier suppression.....	Better than 40 dB
Sideband suppression.....	Better than 40 dB
Spurious radiation.....	Less than -60 dB
Maximum frequency deviation (FM).....	±5kHz
Repeater frequency shift width.....	600kHz
Tone burst time.....	0.5—10 sec.
Modulation.....	SSB—balanced modulation FM—variable reactance frequency shift AM—low power modulation
Microphone type.....	500ohm dynamic microphone
Af response of transmitter.....	400Hz—2,600Hz (-9dB)
If frequencies.....	SSB, CW, & AM—10.7MHz FM—1st IF—10.7MHz, 2nd IF—455kHz
Receiver sensitivity.....	SSB & CW—0.25µV input for 10dB S/N FM—1µV input for 30dB S/N AM—1µV input for 10dB S/N
20dB noise quieting.....	Less than 0.4µV
Image rejection.....	Better than 60 dB
If rejection.....	Better than 60 dB
Bandwidth.....	SSB, CW, & AM: More than 2.4kHz at -6dB FM: More than 12kHz at -6dB
Selectivity.....	SSB, CW, & AM: Less than 4.8kHz at -60dB FM: Less than 2.4kHz at -50dB
Receiver Af output.....	More than 2watts (at 10% distortion, 8 ohm load)
Receiver Af output impedance.....	8 ohms
Frequency stability.....	Within ±2kHz during one hour after one minute of warm-up, and within 150Hz during any 30 minutes thereafter
Squelch sensitivity.....	0.25µV
Power consumption.....	Transmitting: Maximum 95 watts (120-220V AC), 4 amperes (13.8V DC) Receiving (no signal): 4.5W (120-220V AC), 0.8 amperes (DC 13.8V)
Power requirements.....	120-220V AC, 50—60Hz; 12—16V DC (standard DC voltage—13.8V DC)
No. of semiconductors used.....	Transistors—63, HTCs—17, ICs—3, diodes—100
Dimensions.....	Width 278mm (10.9 in.) Height 124mm (4.9 in.) Depth 320mm (12.6 in.)
Weight.....	11kg (24.3 lbs.)
Equipment provided.....	500ohm dynamic microphone (1), 2 ampere and 5 ampere fuses (one each), extension speaker plug (1), auxiliary feet (2), pin-type plugs (2), AC cord (1), DC cable (1)

• Specifications and designs are subject to change without prior notice

# Fred Robinson VE3GCP

Fred Robinson, VE3GCP, has been a very active member of the Hamilton Amateur Radio Club Inc. since the 1960's and has taken an active part in many of the club programs.

His Amateur Radio activities include, teaching night school for persons who desire to obtain the general class licence; conducting special classes to permit many blind personnel to get their ticket;

an RSO delegate from the Hamilton region for most of the years that RSO has been active; a member of the executive of the Hamilton club and holding many positions; Chairman of the very successful 1974 RSO convention which was held in Hamilton.

The executive of Hamilton ARC highly recommends Fred as a person they are sure will pursue with all of his capability the task of representing Ontario at large as a determined person who is anxious to see CARF succeed.

## Croft Taylor VE3OR

Croft, born in Quebec City in 1928, was first on the air in 1950 as VE2BAA and in 1954 held the call VE2MR. Moving to Ontario in 1968, he drew the call VE3OR. With Bell Telephone for 25 years after a stint in the Canadian Armed Forces which culminated as OCO 712 Communications Squad in Montreal. Croft masterminded the release of surplus teletypes to Amateurs from coast to coast.

As President of the Eastern Ontario Telephone Pioneers, Croft has been involved in care, storage

and distribution of teletype machines for deaf persons who have it hooked to their telephones.

As well as these activities, Croft takes time off from his senior Bell position in the supervision of military phone net engineering to be the Radio Society of Ontario delegate from the Ottawa area and member of CARF, ARRL, Canadian Amateur Radio Teletype Group and the Quarter Century Wireless Association. He played an important role in the preparation of briefs which finally convinced the Ontario government recently to issue call sign vehicle licence plates.

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## IARU Region 1 News (Europe/Africa)

### Radio Society of Swaziland

The IARU has announced the formation of the Radio Society of Swaziland. The founding meeting was held in September 1975 with more than 20 persons present. The roll of founding members shows that only two active Amateurs are not yet members of the Society.

The address of the Secretary is P.O. Box 21, Ezulwini, Swaziland.

The Society has applied for membership in IARU and they will become the 43rd member society of Region 1 when their membership application has been ratified.

### Call Signs

The following call sign series have been allocated, provisionally, by the ITU:

Mozambique (Rep of) - D2A-D3Z; Cape Verde (Rep of) - D4A-D4Z; Liberia (Rep of) - D5A-D5Z.

### New Members of the ITU

The Democratic People's Republic of Korea and the People's Republic of Mozambique have acceded to the International Telecommunication Convention and are now member societies of the Union. There are now 146 member countries comprising the ITU.

### Austria

Amateur special prefixes may be used by Austrian Amateurs for the period April 1 to June 30, 1976, to celebrate 50 years of Amateur Radio in that country.

The special prefix will be 'OE 50' used in place of the normal 'OE' prefix such that OE1ZZ becomes OE50/1ZZ.

### Cyprus

Please note that the official QSL Bureau address is now: P.O. Box 1267, Limassol, Cyprus as the previous address in Famagusta can no longer be used.

### Norway

In April 1975 there were 3,702 licenced Amateurs in Norway. Membership in the NRRL, Norway's national society stands at 2,525.

### IARU Region 1 HF Band Plan

For RTTY the following frequencies are recommended:

3580-3620; 7035-7045; 14,080-14,100; 21,080-21,120; 28,050-28,150 kHz.

For intercontinental working: CW - 3500-3510; PHONE - 3790-3800 kHz with USSR Amateurs using 3635-3650 for phone.

For SSTV: 3735; 7040; 14,230; 21,340; 28,670 kHz - all plus or minus five kHz.

## BC DX Club to host Convention

The British Columbia DX Club will host the 1976 Pacific Northwest DX Convention Aug. 7 and 8 at the Hotel Georgia in downtown Vancouver. Registration fee of \$20 includes the DX Banquet, and DX breakfast Sunday morning. An excellent DX oriented program is assured. Advance registration and further information may be obtained from VE7BVH, 7110 - 232 St., Langley, B.C.

# Report of March Executive Meeting

Kingston 22 Mar: For the past few months the 'administrative' and 'operational' activities of the Federation have been split. Administration has been handled by the Kingston HQ Staff (finances, membership, publications, publicity, QSL Services, etc) Operations, including contact and liaison with the federal government, government agencies and the US FCC, have been handled by an Ottawa-based group under the direction of the Vice President; with the President acting in over-all control of both groups.

This split has greatly simplified the work of the National Executive with the Quarterly meetings largely devoted to discussion of present and future activities of the national society.

The executive meeting on 21 March dealt with several topics including QSL Services (Jean Evans, VE3DGG, Chairman) - a change in financial arrangements for the CARF National QSL Bureau was approved with the Chairman using a Petty Cash balance to pay expenses incurred. Details of the volume of QSL Cards, both incoming and outgoing, were given, the steady growth of both types was noted and the Chairman was complimented for the efficient manner in which the Bureau was managed.

DOC Liaison (Art Stark, VE3ZS, Chairman); - cod-

ification of the Canadian regulations pertaining to Amateur radio has been completed and copies are in the process of distribution to CARF officials, provincial societies and Affiliated organizations. Copies of this major work (approx 150 pages) are available from CARF at a cost of \$10.00 and details will be published in the May issue of THE CANADIAN AMATEUR.

Membership (Dr. H. Greenidge, VE3DWA, Chairman) - the membership report outlined the increase of membership for 1975 - 915 - and the steady, increasing growth in the first two months of 1976. Several suggestions for further publicising the worth and activities of CARF and to speed up membership renewals were discussed.

WARC 79 (Art Stark, VE3ZS, Chairman) - a full report of the work of this vital committee for the past year was made. Noted that the committee has been functioning in very close relationship with Dr. J. Belrose, the DOC official responsible for formulating the official Canadian Amateur position paper. Support for the Amateur proposals is being gathered from other users of the radio spectrum and close contact maintained with the FCC Amateur Radio Advisory Committee. The draft of the documents now in preparation will be circulated and publicised when completed and the final documents will be based on the feedback obtained. Any Amateur, or Amateur organization, that is considering making a separate submission to the DOC is advised to work with the established CARF WARC 79 committee to ensure a unified approach.

Publications (Steve Campbell, Chairman) - a projected change to the format and content of THE CANADIAN AMATEUR was discussed and approved. A larger edition will be necessary due to the steady increase of advertising and circulation and it is expected that the new format will start in the near future. Content and format will reflect the many excellent suggestions for improvement received and the Editor will require more copy particularly of a local and area nature. The Editor is looking for Amateurs to write columns such as DX, VHF (beside auto-repeaters), Contests and Awards, XY activities, Provincial Society Activities, as regular features. Any Amateur interested is requested to contact Box 356, Kingston.

The Radio Regulations Handbook is now in its 3rd printing of the Second Edition and copies of this printing have just been received for circulation. The Canadian Amateur Radio Certificate Study Guide (cost \$5.00 per copy) is in the hands of the publisher and copies are expected before the end of April.

The official Minutes of the meeting will be published in a future issue of The Canadian Amateur.

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# Hamfest '76

Halifax Amateur Radio Club



As host club, The Halifax Amateur Radio Club, welcomes you to attend Hamfest '76, The Maritime Amateur Radio Convention for 1976, at St. Mary's University Convention Centre, Halifax, N.S., August 20, 21 and 22, 1976.

Available for the Convention are: Live-in accommodations, complete dining facilities, free parking, private rooms - single or double, apartments - 2 bedroom with 2 beds per room, bath, shower, etc., supervised swimming pool (professional life guards).

Situated in Downtown Halifax, the prices are extremely reasonable: Single room (private) \$9 per day; Double room (private) \$15 per day.

You may extend your visit up to two weeks with all the above facilities: Single room, 7 days \$45; Double room, 7 days \$79; 2 bedroom apt. with kitchen, 7 days \$135.

For your convention kit, write or telephone Leo G. Perry VE1AML, Box 663, Halifax, N.S.; telephone 902-463-6668.

Two complete programmes - one for OMs, XYLs and YLs (Amateurs). One for XYLs and Jr. Ops sponsored by the XYL's Auxiliary.

Convention Center is in a High Rise Complex, all under one roof!

## Overseas Hams



(Dave Nessman, DA2ZV (VE2ZV), has reported an interesting account of Canadian Hams operating overseas, appearing below. We hope to carry, in the future, further details on these Amateur operations .....Editor.)

Many Amateurs may not realise that there are a significant number of Canadian Hams who are operating outside of Canada. The majority of these are members of the Canadian Armed Forces. In addition to those Hams operating with our UN peacekeeping forces in Egypt, Israel and Cyprus, there is also a very active Canadian Amateur Radio Club in Lahr West Germany, whose members are using DA1 and DA2 call-signs.

In the fall of 1974, the Canadian Forces Europe (CFE) Lahr Amateur Radio Club was formed, with a membership holding at between 20 and 35 members including students working towards their Canadian Provisional licences. Once these have been attained, our new Hams then can apply for their German licences to operate in this country under the Canadian West German reciprocal operating agreement.

## report by Dave Nessman DA2ZV/VE2ZV

Permanent club premises were obtained over the last year and more recently, a club station (DA2CF) has been established. DA2CF should be on the air on a regular basis by the end of January 76, using a Yeasu FT401B transceiver and a 5-element, 3-band beam up 70 feet.

As we are always looking for QSOs with our friends back home, we would like to make all VE and VO stations more aware of our presence overseas, and of the fact that we are, in fact, fellow Canucks.

At the present time, active member stations in the Lahr area include DA2CF The Club, DA1IF Tom, DA1IT Bob, DA2YF Frank, DA2ZV Dave, DA2WL Burt, DA2WC Rick, DA2WO Phil, DA2CB Christine, DA2BW Bill, DA2WP Jens.

Our membership also included civilians employed by DND overseas as well as servicemen and their wives.

This year's Ham Radio class will be finishing in the early Spring and hopefully we will have another 10-15 new Canadian DAs to add to the roster in the coming months.



# Classic

		CLASSIC		TRAP MASTER		
Model		CL-33	CL-36	TA-33	TA-33Jr.	TA-36
Forward Gain	on 10 meters	reference dipole 08.0 db	isotropic source 10.1 db			
	on 15 meters	reference dipole 08.0 db	isotropic source 10.1 db	08.8 db	08.0 db	08.0 db
	on 20 meters	reference dipole 08.0 db	isotropic source 10.1 db	10.1 db	10.1 db	10.1 db
Front-to-Back Ratio	on 10 meters	15.0 db	20.0 db			
	on 15 meters	20.0 db	20.0 db	20.0 db	20.0 db	20.0 db
	on 20 meters	20.0 db	20.0 db			
Power Rating	AM/CW	1 KW	1 KW	1 KW	300 wts.	1 KW
	P.E.P. SSB input to the final	2 KW	2 KW	2 KW	1KW	2 KW
Number of Elements		3	6	3	3	6
Maximum Element Length		27'	29' 9"	28'	26' 8"	29'
Boom Length		18'	24'	14'	12'	24'
Recommended Mast Size (diameter)		2"OD	2"OD	1½"OD	1½"OD	2"OD
Turning Radius		16'	19' 3"	15' 6"	14' 9"	19' 3"
Wind Surface Area (in square feet)		6	10.7	5.7	4.3	10.7
Wind Load (EIA Std. 80 MPH)		120 lbs.	210 lbs.	114 lbs.	86 lbs.	210 lbs.
Assembled Weight (approximately)		42 lbs.	69 lbs.	37 lbs.	20 lbs.	69 lbs.
Shipping Weight-via truck (approximately)		45 lbs.	71 lbs.	41 lbs.	28 lbs.	71 lbs.
Price		\$270.00	\$360.00	\$238.00	\$174.00	\$395.00

THE FOLLOWING INFORMATION APPLIES TO ALL OF THE ABOVE ANTENNAS.

Feed Point Impedence . . . 52 ohms

VSWR (at resonance) . . . 1.5/1

Recommended Transmission Line . . . RG-8/U

## 2 Metre Antennas

D12 Diplomat 5/8 ground plane \$35.50

### BASE ANTENNA

MY-144-9 E1. 14dB 2KW Yagi \$49.50

MY-144-5 E1 10dB 2KW Yagi \$39.50

MM-144 5/8 mobile C/W spring and base \$31.50

### ROTORS

AR-30 \$55.00

AR-40 \$66.50

CD-44 \$129.00

HAM II \$189.00

Wire for AR-30 and AR-40 12¢ ft.

Wire for CD-44 and HAM II 20¢ ft.

RG-58U coax 12¢ ft. RG-11U 23¢ ft.

RG-8U 23¢ ft. RG-'8U foam coax 25¢ ft.

## Eico Multimeters

4A3 4000 ohms per volt

20A3 20,000 ohms per volt \$22.50

100A4 100,000 ohms per volt \$52.50

PL-259 connectors for coax \$ 1.25

Chassis connectors \$ 2.50 (single hole)

Also DelHi and ROHN towers, etc.....

Prices subject to change



## RV-4C

Covers 10, 15, 20, and 40 meter bands. Power rated at 750 watts AM/CW and 2000 watts PEP input on SSB. Feed point impedance 52 ohms. Height approximately 22'. Recommended mast size 2" OD. Shipping weight 10 lbs., 4 ozs.

\$77.50

RV-8C conversion for 80 meters

... \$44.25

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## TECHNICAL TALKS

Gord VE3LV  
KWARC Bulletin

The VHF-UHF-Microwave buffs take delight in getting their noise figure down.

What is this noise figure, and what does it do for us?

First: it's a power ratio, normally expressed in db and equals

$$10 \log \frac{\text{Signal to noise ratio at the input}}{\text{Signal to noise ratio at the output}}$$

Second: it's a figure of merit when applied to a single stage amplifier or a system of amplifiers, such as a receiver.

It is a direct indication of how much a receiver degrades the signal to noise ratio at the input as the signal passes through a system.

### Example 1

If the input signal to noise ratio is 100 and the output signal to noise ratio is 50, then the receiver has degraded the input signal to noise by  $\frac{100}{50} = 2$

and 2 times in power equals 3 db

Therefore the noise figure = 3 db

A perfect receiver would not change the S to N ratio as the signal passed through and the  $\frac{S/N \text{ in}}{S/N \text{ out}} = 1$

and the noise figure would be 0 db.

So how does a receiver degrade the signal to noise ratio? By adding noise of its own, that's how.

### Example 2

An amplifier has 100 units of noise output and a gain of 100 times in power. The equivalent input noise is therefore one unit.

## ..... About Noise Figure

Now suppose the input is composed of 100 units of signal and one unit of noise from the antenna.

The total signal input is 100 units

The total noise at the input is 2 units

Both the signal and total noise are amplified by 100. So the output is composed of 100 x 100 or 10,000 units of signal and 2 x 100 or 200 units of noise.

$$\text{NF then is } \frac{S \text{ to N input}}{S \text{ to N output}} = \frac{100/1}{10,000/200}$$

$$= \frac{100}{50} = \text{power ratio} = 2 \text{ db}$$

Critical areas where noise figure can be improved:

1. The antenna, by its directivity and angle of reception, the signal to noise ratio will be higher than a random piece of wire.

2. The feed line, by using a low loss line the signal power at the receiver input will be larger than when a high loss line is used.

3. The first amplifying stage in the receiving system. It should have a low noise figure. It determines the overall noise figure of the system because its output noise is so much larger than the equivalent noise input of the second stage that the overall noise figure is not degraded much by the second stage noise.

### Example 3

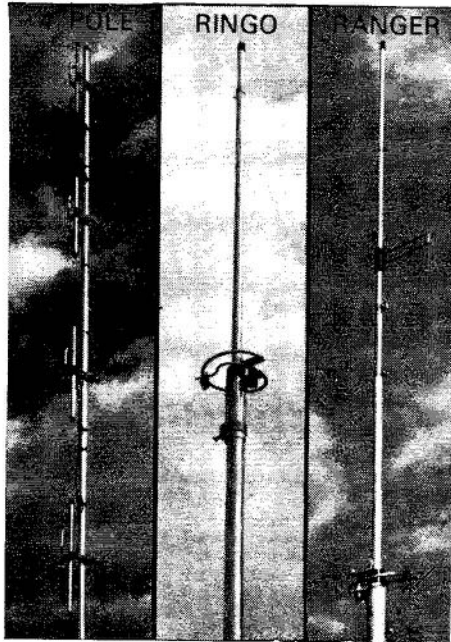
If the noise figure of the RF stage is 3 db or times 2 power ratio and the gain equals 20 db or times 100 power ratio and the mixer noise figure is 10 db or times 10 power ratio, the overall noise figure of the two stages is:

# 220 FM

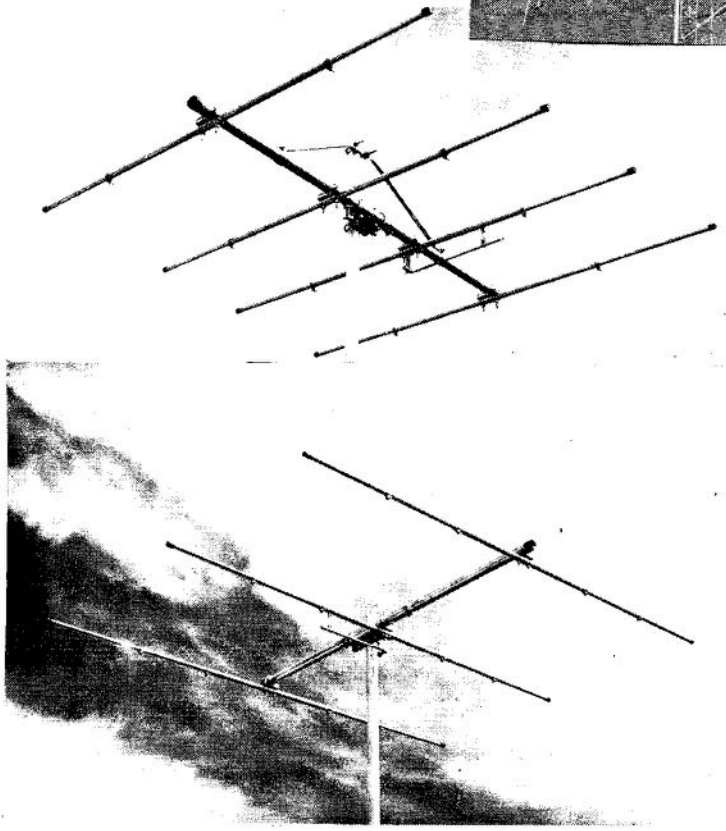
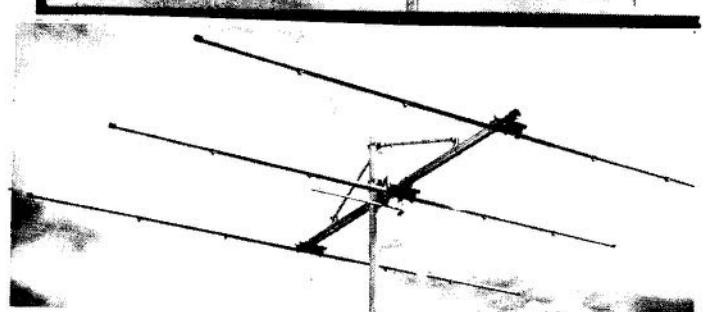
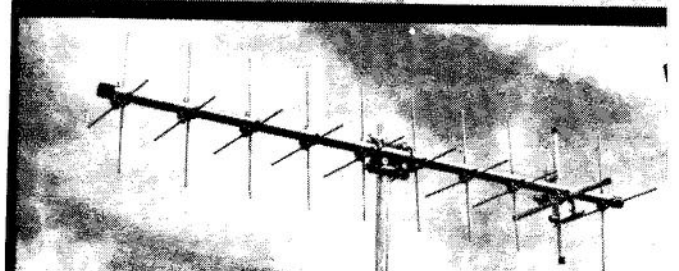
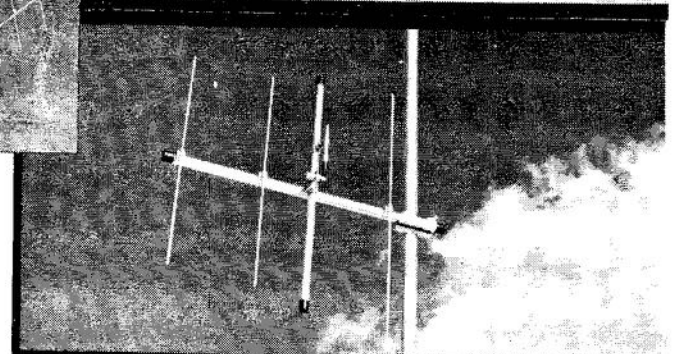
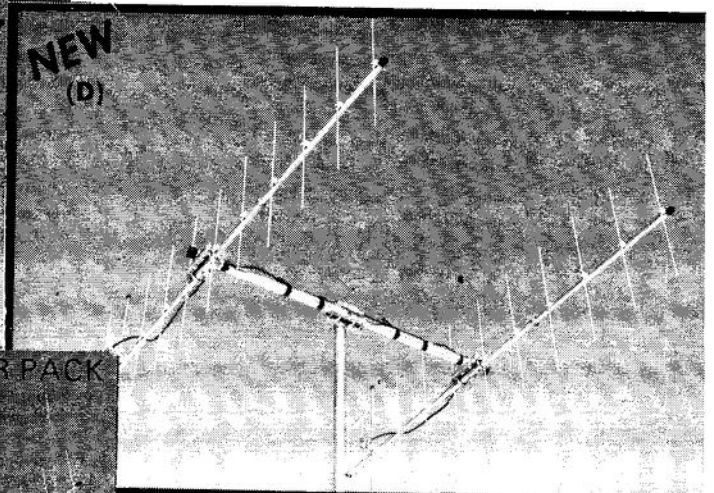
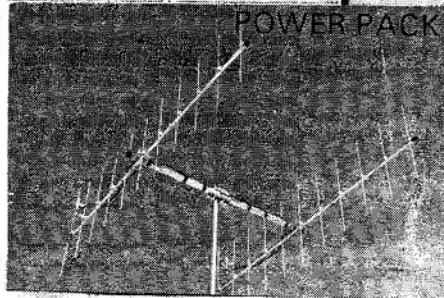
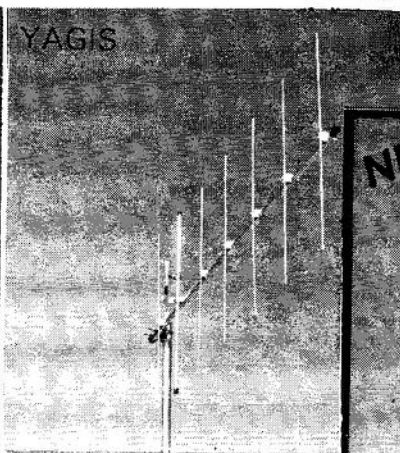
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10 METERS

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$$\text{NF of RF} + \frac{\text{NF of mixer} - 1}{\text{Gain of RF}}$$

or

$$2 + \frac{10 - 1}{100} = 2.09 \text{ or } 3.2 \text{ db}$$

So the relatively high noise figure of the mixer has only degraded the overall noise figure by 0.2 db.

Notice that this is mainly due to the gain of the first stage. It is considered good practice to have at least 12 db gain in an RF stage. At microwave frequencies where the first stage has loss instead of gain such as a double balanced mixer, then the first IF stage must have a low noise figure, and the mixer loss held to a minimum.

By the way, this is how the TV Cable people get away with using 40 to 50 amplifiers in cascade. The input is made fairly high to each amplifier so its noise contribution is small.

## Some Facts

1. You will notice that the noise figure measurement does not consider band width because it is a ratio of two ratios  $\frac{\text{input S/N}}{\text{output S/N}}$  and that's why

it's a good figure of merit.

2. However, noise power is proportional to band width and if the amplifier band width is wider than required to pass the signal, more noise will be in the output. For example, a 100 Hz filter for CW improves the output signal to noise but not the noise figure. The old trick of using an audio filter for CW was in effect reducing the band width.

3. Antenna noise - even a perfect signal is degraded by the noise developed by the resistive component of the antenna impedance and is proportional to the temperature of the signal source. For earth station to earth station where the antenna is looking at the horizon, the temperature is considered to be about 290 degrees Kelvin (about room temperature centigrade). But when the antenna is directed above the horizon and has no side lobes, the temperature could be as low as 10 degrees Kelvin (280 degrees below room temperature centigrade). This reduces antenna noise and increases the signal to noise ratio at the antenna.

Then it requires a very low loss line to the receiver and a very low noise figure to make use of this small but relatively noise free signal.

4. Noise figure has come into prominent use since WW2 because of the use of higher frequencies for radio use, communications, data transmission, etc.

So why wasn't it important for HF, 2 to 30 MHz? It's because atmospheric and Galactic noise is high in this range and the antenna signal to noise is low, so a low receiver noise figure is wasted. The noise is high due to the skip propagation and because electric storm noise and man-made noise as well as Galactic noise has a lot of energy at these frequencies.

At VHF and higher, the strength of the noise is

much lower and skip propagation is not a factor. At HF, however, even a physically small antenna has a large capture area and the signal plus noise level at the rcvr input is fairly large. Therefore the overall rcvr performance is controlled mainly by the input signal to noise ratio.

The following acceptable noise figures for an HF receiver were listed in Ham Radio, October 1975: 80 meters - 37 db; 40 meters - 27 db; 20 m - 24 db; 15 m - 20 db; 10 m - 15 db.

This was for a 2.1 KHz band width and 100 ft. of RG8U feed line.

This is why the low cost rcvrs of the 1930's were adequate and why commercial rcvrs were designed for 10 db noise figure, more than adequate.

5. Starting at about 50 MHz, antenna performance, low loss feed lines and noise figure become very important. Since noise is much lower at the higher frequencies, a smaller signal can be useful, but only if we are careful not to add any more noise than we can help, until it is through the RF stage. Remember that any loss ahead of the RF amplifying device adds directly to the noise figure. For instance if the RF device noise figure is 1 db the input tuned circuit loss is 1 db and the feed line loss is 2 db we end up with a noise figure of 4 db which means that our output S/N is less than half the antenna S/N ratio.

6. Noise figure is always based on power ratio. To convert this to voltage ratio:

$$\text{Voltage ratio} = \sqrt{\text{power ratio}}$$

so a noise figure of 6 db equals times four power ratio and times 2 in voltage ratio.

7. Another fact is that if the rcvr input is matched to the line, the signal at the rcvr input is reduced to one half. The noise is as well, but it means that the equivalent rcvr noise must be that much lower to preserve the S/N ratio.

---

### BANNED COUNTRIES LIST

Iraq, Khmer Republic\*\*, Libya, Pakistan, Somalia, Turkey, Viet-Nam\*. Peoples Democratic Republic of Yemen.

\* - Stations XV5AA, XV5AB and XV5AC were authorized to exchange communications with Amateurs of other countries by the former Saigon regime.

\*\* - Station XU1AA has been authorized to exchange communications with Amateurs of other countries.

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