# TCA

The Canadian Amateur

Canada's Amateur Radio Magazine

La Revue des Radioamateurs Canadiens

MAY-JUNE – MAI-JUIN 2015

Publications Mail Agreement # 40028682 Registration # 09866

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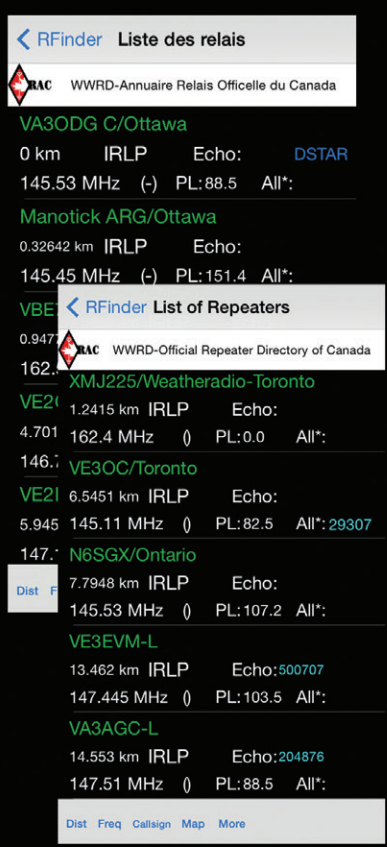


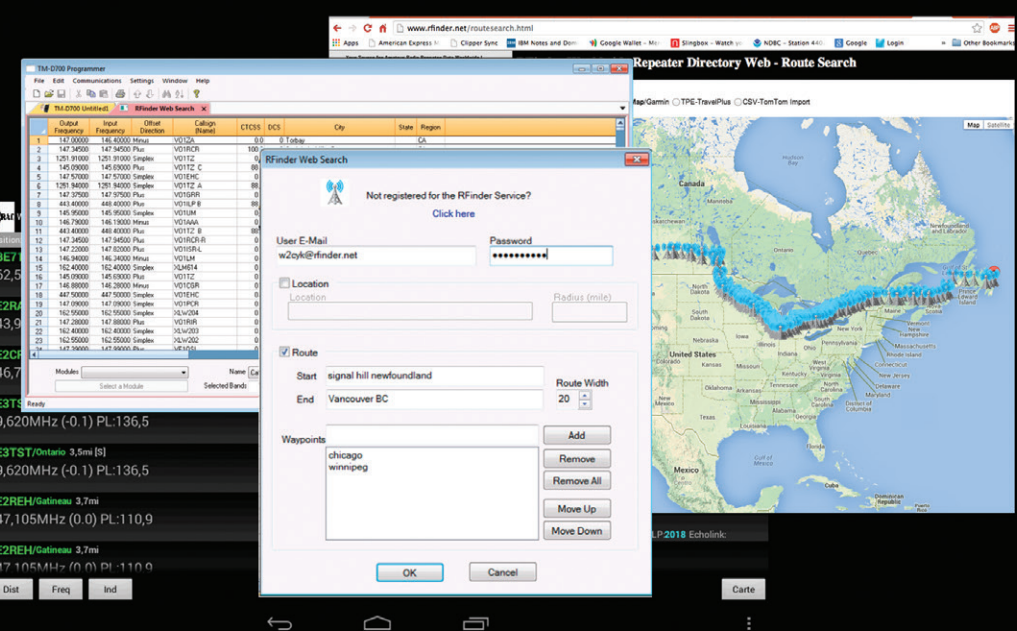

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MAY & JUNE 2015 | MAI & JUIN 2015

# Canada's Amateur Radio Magazine
# La Revue des RadioAmateurs Canadiens

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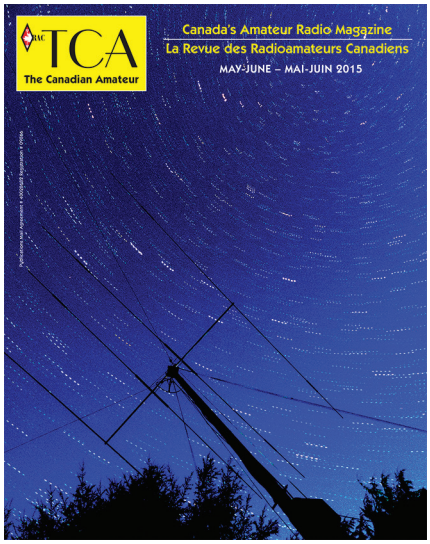


*"Here is a photo of my Mosley TA-33 triband Yagi antenna situated in Bamfield, British Columbia. It is a series of time exposures taken to pinpoint the antenna heading relative to the pole star.*

*It was taken on an early January morning with a Lumex FZ 200 at F2.8, 60-second exposure at ISO 800.*

*It's a series of five pictures taken a few minutes apart, all stitched together using Photoshop CS6.*

*The moon is rising in the south and the antenna is pointing toward Asia. Bamfield is a small fishing village on the west coast of Vancouver island.*

*There is no road access at our location so we must improvise. The antenna mast is a 10 metre aluminium pole previously used in a shrimp trawl and the concrete base was mixed by hand."*

*– Marc Phillips, VE7MWP*

## ARTICLES WANTED

**We would love to receive your articles – both technical and non-technical.**

**Please send them to the TCA Editor at tcamag@yahoo.ca.**

**The deadlines for the next issues of TCA are May 15, July 15, September 15 and November 15.**

**For RAC Membership Inquiries and Change of Address please contact RAC HQ at: rachq@rac.ca**

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## TECHNICAL



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## NEWS

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

Articles, reviews, letters, features, suggestions, photographs and essays are welcomed. Manuscripts should be legible and include the contributor's name, call sign, phone number(s) and addresses (mail, email and packet, as applicable).

For a complete Author's Guide visit: http://www.rac.ca/authors_guide.htm





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*The Canadian Amateur*, publié six fois par an, est destiné à fournir aux radioAmateurs, à toute personne intéressée à la radio et à l'électronique et au grand public, des informations de toute nature relatives à la science des télécommunications.

Nous acceptons avec plaisir tout article, étude, suggestions, photos et lettres. Les manuscrits soumis doivent être lisibles et porter le nom de l'auteur, son indicatif, son ou ses numéros de téléphone ainsi que ses adresses postales, courriel et paquet s'il y a lieu. Si vous avez envie d'écrire pour *TCA :* http://www.rac.ca/authors_guide.htm




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## THE RAC QSL BUREAU SYSTEM

The **RAC Outgoing QSL Bureau** service is available to RAC members, RAC affiliated clubs (club call only) and QSL Managers who are members of RAC. Your RAC membership number must accompany each shipment of QSL cards.

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# *Silent Keys – In Memoriam*

With regret, we record the passing of these Amateur Radio operators.
Nous avons le regret de vous annoncer le décès des radioamateurs suivants.

VA7ANB – Adrien Bouvier, of Oliver, BC, at age 83, on January 9, 2015.

VE1NE – Jack Gilholm, of Port Morien (Cape Breton), NS, at age 85, on January 6, 2015.

VE1PM – Harold Gammon, of Bathurst, NB, at age 95, on January 7, 2015.

VE2AZQ – Jacques Ethier, of St-Jean, QC, at age 78, on August 1, 2014.

VE2BG – Robert Gauthier (VE2TBG), of Trois- Rivières, QC, at age 71, on November 18, 2014.

VE3BZT – John Ludwig, of Mount Hope, ON, at age 69, on January 1, 2015.

VE3EGP – John Shields, of London, ON, at age 84, on January 20, 2015.

VE3EKH – Donald Boudreau, of Toronto, ON, at age 94, on September 28, 2014.

VE3EVF – Don Higgins, of Strathroy, ON, at age 87, on January 23, 2015.

VE3GRS – Gerald Spracklin, of Mississauga, ON, on January 13, 2015.

VE3MUH – Gary Hall, of Newcastle, ON, at age 73, on January 20, 2015.

VE3MZH – Mike Pecore, of North Bay, ON, on February 25, 2015.

VE3NYB – Ken Rowland, of Hanover, ON, at age 90, on December 31, 2014.

VE3OYO – Robert Poirier, of Cassleman, ON, at age 57, on January 29, 2015.

VE3RJT – Romney Abel, of London, ON, at age 60, on January 9, 2015.

VE3RSG – Robert Smith, of Mount Albert, ON, on February 11, 2015.

VE4BD – Alton Breault, of Deloraine, MB at age 97, on January 14, 2015.

VE4CDK – Kate Palsson, of Winnipeg, MB, at age 94, on January 20, 2015.

VE4JA – Jack Adams, of Russell, MB, at age 78, on January 20, 2015.

VE5PX – Dave Knutson, of Prince Albert, SK, at age 78, on January 21, 2015.

VE6AKF – Richard Haley, of Edmonton, AB, at age 57, on January 13, 2015.

VE6CA – Les Card, of Calgary, AB, at age 95, on January 27, 2015.

VE7HI – Floyd Beardsell, of Aldergrove, BC, at age 86, on January 4, 2014.

VE7ITS – Evelyn Beardsell, of Aldergrove, BC, at age 82, on December 13, 2014.

VE7MYX – Maurice Yunik, of Aldergrove, BC, at age 72, on January 26, 2015.

*Note: In the above list an * indicates that a call sign has been reissued. The list of Silent Keys is prepared by volunteers at RAC Headquarters. Please send obituary notices by email directly to rachq@rac.ca.*

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RAC

Please see the Help Wanted item on page 8

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Acting: Allan Boyd, VE3AJB

**QUEBEC**
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**Volunteers Needed**

Please see the Section Manager's Election Notice on page 60

# Feedback: Readers write to The Canadian Amateur

### HAM RADIO RETAILERS

I can't criticize Amateur retailers in Canada, except to suggest that they advertise more. There are outlets in Guelph and Vancouver, for example, that never advertise in TCA. They should, as they carry useful homebrew materials.

I want to compliment Dirk, VY1NM, for his excellent columns. His latest, on how to construct a wire yagi-uda, prompted me to review Joel Hallas's antenna in May 2011 *QST*: a skeleton-sleeve two-band dipole using ladder line. It could also become a dual band yagi based on Dirk's suggestions.

Joel agreed, and designed me a skeleton-sleeve two-band yagi. So I cut two thin poles from my cedar woodlot, recycled some used ladder line and am about to construct a yagi like Dirk's. This antenna will be supported at one end and will be rotated by my securing the other end's halyard at an appropriate ground position.

I'll let you know how it turns out, and hope you will pass my thanks to Dirk for his highly practical ideas and clear writing style.

*Charles Hooker, VE3CQH*
*East Garafraxa, Ontario*

### QRP: TEN FREE dB

I've been licensed for 69 years. For much of that time, I've been interested in learning what QRP can do, and it's plenty, as your March-April edition testifies. Well done.

I have from the start felt that a legal limit of, say, 10 watts might bring out floods of creative but neglected solutions to ham radio opportunities. One of these is intensive speech processing, which can go a long way to overcoming, for phone hamming, a lot of the performance superiority of CW.

"I can't believe this", exclaimed a ham in Quito, Ecuador, "You're barely moving my meter but you're Q5."

I was running about 10 watts to a 6F6 (6F6, that's a vacuum tube, sonny, one of those big glass bottles with the red-hot rod up the middle that weighed several ounces and could do only one thing) in the days before "QRP" had been defined.

How this was possible can be summed up as follows: clipping, filtering and AGC. (Note: AGC is Automatic Gain Control.)

The average power in human speech is very low, as a glance at an oscilloscope screen will tell you. It's mostly sharp peaks superimposed on a very low squiggle of much less sharp peaks, containing, overall, very little energy. There goes three dB. But you can get them back by savagely clipping off those peaks in a simple diode clipper with adjustable bias, and amplifying what remains, a far more "meaty" signal.

The intelligibility of human speech is in the audio band from about 300 to 3,000 Hertz. But the energy content is concentrated between about 50 to 300 Hertz. There goes another three dB (although women's voices, pitched higher, are better in this regard – that's why women were dispatchers for the RAF in the Battle of Britain). But you can get them back by mercilessly filtering out all audio below 300 Hertz and above 3,000 Hertz. You must do this anyway because the clipping squares off the sine waves in speech and generates lots of harmonics that you must eliminate.

Normal human speech varies a lot in volume levels as one moves his head and for other reasons. A lot of what you say is thus lost in your own homebrewed QSB. There goes another three dB. Fast-acting AGC, built exactly as for a receiver, can compensate for this.

So there you are, using AM or SSB, a free nine or 10 dB without exceeding QRP levels. (Note that the numbers of dB that I have suggested are order-of-magnitude, illustration only; it's hard to predict how a given installation will come out.)

Now, before you incurable DIYers start plugging in soldering irons, do some homework because you will wind up designing something. Read up on the subject in the *Handbook*. This isn't a how-to article. Research your current rig; some are fully clipped-filtered-AGCed, some aren't. You must have decent lab equipment, hopefully including a scope (although a very sensitive multimeter will serve) because you are working at the millivolt level. There are powerful chips on the market that will do some or all of this in one place.

A speech processor is best built as a well-shielded vestibule device right after the microphone, with audio levels carefully regulated. If buying new, insist on knowing how much of this processing is built-in.

Avoid products said to provide "natural" speech, because comm-quality speech is heavily processed and it sounds like it – it is definitely low-fi.

And BTW, whether running one or 100 watts, all this processing gives you the same advantage; perhaps an extra 10 dB, free! Have fun!

*Frank Gue, VE3GUE*
*Burlington, Ontario*



### BIRTHDAY CAKE

My wife conspired with one of my staff, Zia Hameed, to create this birthday cake for me.

Zia is a programmer by day, but in his off hours is a very talented pastry chef.

He researched ham radios and came up with a very close replica of an Icom HF rig.

In sugar content, this model far exceeds all other rigs I have every operated.

*Greg Mason, VE4AMN*
*Winnipeg, Manitoba*

# A MESSAGE FROM THE PRESIDENT / UN MESSAGE DU PRÉSIDENT

Geoff Bawden, VE4BAW
204-257-1414
ve4baw@rac.ca

I am pleased to say that RAC volunteers will once again be out and about throughout 2015.

RAC will be at Dayton and Southern Ontario in May and then in Saskatchewan in July.

It is important that we continue to be accessible so that RAC members have an opportunity to meet with us and ask questions.

As has been the case for many years, this year's Hamvention will be held at the Hara Arena Complex on the north side of Dayton, Ohio from May 15 to 17. This is the fifth year in a row that Radio Amateurs of Canada will be operating a Booth at Dayton. RAC officers, Directors and many other RAC members will be there to meet and greet and to tell you what Radio Amateurs of Canada has been doing for you lately. So come visit us at Booth BA0436 and talk to your RAC volunteers. We're in the same area as the ARRL and the booths of other international Amateur Radio organizations. Better yet, contact us and volunteer to work at the booth. Further information, including advance ticket sales and motel accommodations, can be found online at: http://www.hamvention.org

Since 2010, RAC has held planning meetings every two years in order to plot our course. This year, the meeting will be in the Toronto-Mississauga area with the cooperation and support of the Mississauga and Peel Amateur Radio Clubs. Previous planning meetings laid the course for the return of RAC to solvency as well as discussing policy matters of interest to Canadian Amateurs. A public session will be held on the evening of Saturday, May 23 and there will be presentations by members of the RAC Executive, Directors and other key volunteers. We look forward to seeing you at the public session. We also expect to have an online meeting for those who cannot come in person. Complete details will be made available on the RAC website.

I am also looking forward to seeing you at the 2015 RAC Annual General Meeting which will take place in Martensville, Saskatchewan on Saturday, July 4. Not many national societies have an annual meeting and I hope that you take advantage of the opportunity to ask questions of your representatives. Once again, we will have an Internet connection to allow our members to attend no matter where in the country they may be. Many thanks to the Meewasin Amateur Radio Club for hosting our meeting in conjunction with the 2015 Saskatchewan Hamfest. For more information, please see the AGM notice on page 11.

I am pleased to announce that Mr. William ("Bill") Boskwick, VE4BOZ/VE4IR, has accepted the position of Chief Field Services Officer (CFSO). This is an Executive level position within RAC and reports directly to the President. One of the significant roles within Field Services is the enabling of Amateur emergency communications at the regional level.

Il me fait plaisir de vous annoncer que des bénévoles de RAC s'impliqueront dans des activités à l'extérieur tout au cours de 2015. RAC participera aux activités de Dayton et dans le sud de l'Ontario en mai et par la suite, en juillet, en Saskatchewan.

Il est important pour nous de continuer à être accessibles de manière à ce que les membres de RAC puissent avoir l'occasion de nous rencontrer et de nous de poser des questions.

Comme cela a été le cas pendant des années, cette fois-ci encore, le Hamvention aura lieu au complexe Hara Arena dans le nord de la ville de Dayton, Ohio, du 15 au 17 mai. C'est la cinquième année consécutive que Radio Amateurs du Canada occupe un kiosque à Dayton. Les responsables de RAC, des directeurs, et plusieurs autres membres de RAC seront au poste pour vous accueillir, vous souhaiter la bienvenue et vous confier ce que Radio Amateurs du Canada a fait pour vous ces derniers temps. Venez nous voir au kiosque BA0436 et discuter avec vos bénévoles de RAC. Nous partageons le même espace que l'ARRL et de plusieurs autres organisations radioamateures internationales. Mieux encore, communiquez avec nous pour travailler au kiosque. Plus d'informations, dont celles prévoyant la réservation de chambres de motel et l'achat de billets sont disponibles à l'adresse suivante : http://www.hamvention.org

Depuis 2010, RAC a tenu des réunions de planification biannuelles pour mieux prévoir son action. Cette année, la réunion se tiendra à l'aréna régional Toronto-Mississauga avec la coopération et le soutien des clubs Mississauga et Peel Amateur Radio. Des réunions semblables ont précédé le retour de RAC à la solvabilité tout autant qu'elles ont permises de débattre de sujets d'intérêt pour les amateurs canadiens. Une session publique aura lieu le samedi soir, le 23 mai alors que des membres de l'Exécutif de RAC, des directeurs et d'autres membres bénévoles feront des présentations. Nous espérons votre présence à cette session publique. Nous souhaitons aussi pouvoir tenir une réunion en ligne pour ceux qui ne peuvent être présents. Les détails au complet sont disponibles sur le site web de RAC.

Je souhaite aussi vous voir à l'Assemblé générale 2015 de RAC qui se tiendra à Martensville, Saskatchewan, le samedi 4 juillet. Peu de sociétés nationales peuvent se permettre une assemblée annuelle. J'espère que vous profiterez de cette occasion pour poser des questions à vos représentants. Une fois encore, nous aurons un lien Internet qui permettra à nos membres de participer à l'assemblée peu importe où ils se trouvent au pays. Mille mercis au club Meewasin Amateur Radio d'accueillir notre réunion en même temps que le hamfest 2015 de Saskatchewan. Pour plus d'informations, voyez l'avis concernant l'AGM à la page 11.

Il me fait plaisir d'annoncer que monsieur William ("Bill") Boskwick, VE4BOZ/VE4IR, a accepté le poste de responsable en chef des Services extérieurs sur le terrain (CFSO). C'est un poste de niveau exécutif qui est redevable directement au président de RAC. Un des rôles importants des Services extérieurs sur le terrain est d'assurer les communications radioamateures au niveau régional.

Les communications d'urgence radioamateures (EmComm) ont été utiles au cours de crises comme les inondations et les feux en Alberta et au Manitoba et les ouragans à Terre-Neuve. La réponse en urgence aux sinistres est de la responsabilité des provinces et des municipalités au Canada. La région locale ou la section a la responsabilité de s'entendre avec la province et les municipalités.

Amateur emergency communication (EmComm) has been involved in such crises as floods and fires in Alberta and Manitoba and hurricanes in Newfoundland. Emergency disaster response is a provincial/municipal responsibility in Canada. The local region or section has responsibility for dealing with their province and municipalities.

Bill comes to RAC with a significant leadership and communication background in the Canadian Armed Forces. For a complete profile please read the Message from the RAC Chief Field Services Officer on page 59.

I want to take this opportunity to thank all of the RAC volunteers who continue to work so hard to support Amateur Radio from coast to coast to coast.

Many of our volunteers have literally spent decades helping Amateurs by volunteering with Canada's national society: spending their time, effort and money to support Amateur Radio. They said they were willing to do so and they did it!

*Geoff Bawden, VE4BAW*
*RAC President and Chair*

Bill arrive à RAC avec un bagage de leadership appréciable en communication acquis au sein des Forces armées. Pour un résumé complet, il suffit de lire le message du responsable en chef des Services extérieurs sur le terrain à la page 59.

J'aimerais profiter de l'occasion pour remercier tous les bénévoles qui continuent de travailler fort au soutien du radioamateurisme d'un océan à l'autre.

## RAC WILL BE AT DAYTON! RAC SERA À DAYTON!

The Radio Amateurs of Canada will once again be at Dayton for Hamvention 2015 from May 15 to 17. This is the fifth year in a row that Radio Amateurs of Canada will be operating a Booth at the Dayton Hamvention.

This is the 64th year of the Dayton Hamvention, sponsored by the Dayton Amateur Radio Association. Each year, a specific theme – such as Amateur Radio clubs, global friendship or the advent of digital modes – spotlights one of the many facets of the Amateur Radio Service. This year's theme "Local Clubs: the Heart of Ham Radio" puts the emphasis on the "invaluable and unique role ham radio clubs around the world have played in their communities".

As has been the case for many years, this year's Hamvention will be at the Hara Arena Complex on the north side of Dayton, Ohio. Further information, including advance ticket sales and motel accommodations, can be found online at: http://www.hamvention.org.

So come visit the Radio Amateur of Canada booth BA0436 and talk to your RAC volunteers. Better yet contact us and volunteer to work at the booth: RAC Headquarters racgm@rac.ca; or by telephone at 1-877-273-8304.

Radio Amateurs du Canada, encore une fois sera présent au Hamvention 2015 de Dayton du 15 au 17 mai. C'est la cinquième année consécutive que Radio Amateurs du Canada occupe un kiosque au Hamvention de Dayton.

C'est le 64ième anniversaire du Dayton Hamvention, commandité par l'association Dayton Amateur Radio. Chaque année, un thème spécifique tel : les clubs radioamateurs, l'amitié généralisée, l'arrivée des modes numériques ou l'accent sur les nombreuses facettes des services radioamateurs. Cette année le thème "les clubs locaux : le coeur du radioamateurisme" met l'emphase sur le rôle unique et inestimable des clubs radioamateurs dans leur communauté et dans le monde.

Comme c'est le cas depuis plusieurs années, le Hamvention cette année se tiendra au complexe Hara Arena dans le nord de Dayton, Ohio. Plus d'informations, incluant l'achat de billets en avance et la réservation de motels, sont disponibles en ligne http://www.hamvention.org

Venez visiter le comptoir BA0436 de Radio Amateur du Canada et dialoguer avec vos bénévoles de RAC. Mieux, communiquez avec nous au siège social de RAC : racgm@rac.ca; 1-877-273-8304, et offrez vos services bénévolement pour travailler au kiosque.

Plusieurs de nos bénévoles se dévouent depuis des décennies pour aider les amateurs en travaillant bénévolement avec notre société nationale canadienne, donnant temps, effort et argent pour soutenir le radioamateurisme. Ils se sont montrés volontaires et ont agit en conséquence!

*Geoff Bawden, VE4BAW*
*RAC Président-directeur général*

*– Traduction par Claude Lalande, VE2LCF. Merci Claude!*

# AROUND THE CORNER...

**People, Places, News and Events on the Canadian Amateur Radio Scene**

### RAC ANNOUNCES NEW CHIEF OF FIELD SERVICES ORGANIZATION

RAC is pleased to announce that Mr. William ("Bill") Boskwick, VE4BOZ/VE4IR, has accepted the position of Chief Field Services Officer (CFSO). This is an Executive level position within RAC and reports to the President.

One of the significant roles within Field Services is the enabling of Amateur emergency communications at the regional level.

Amateur emergency communication (EmComm) has been involved in such crises as floods and fires in Alberta and Manitoba and hurricanes in Newfoundland. Emergency disaster response is a provincial/municipal responsibility in Canada.

Bill comes to RAC with a significant leadership and communication background in the Canadian Armed Forces (see page 59).

*Geoff Bawden, VE4BAW*
*RAC President*

### RAC ANNONCE LA NOMINATION D'UN NOUVEAU CHEF DE L'ORGANISATION DES SERVICES EXTÉRIEURS SUR LE TERRAIN

RAC est heureux d'annoncer que monsieur William ("Bill") Boskwick, VE4BOZ/VE4IR, a accepté le poste de responsable en chef des Services extérieurs sur le terrain (Chief Field Services Officer – CFSO). C'est un poste à l'exécutif de RAC, responsable au président.

Une des fonctions importantes des Services extérieurs sur le terrain est d'assurer les communications radioamateures d'urgence au niveau régional.

Les communications d'urgence amateures (emcomm) ont été utiles au moment de crises comme les inondations et les feux en Alberta et au Manitoba et les ouragans à Terre-Neuve. Répondre en urgence aux désastres est une responsabilité provinciale et municipale au Canada.

Bill se joint à RAC avec une expérience appréciable en communication et leadership acquise au sein des Forces armées (voir la page 59).

*Geoff Bawden, VE4BAW*
*Président de RAC*

### UPDATE ON THE RAC NATIONAL INCOMING QSL BUREAU

Member societies of the International Radio Union (IARU) operate a worldwide system of QSL Bureaus. Radio Amateurs of Canada, as the Canadian member-society, operates a National Incoming Bureau (see page 3), and sponsors the Incoming Bureaus for the 12 Canadian call areas.

Cards received by the National Incoming Bureau, from IARU member societies and others, are sorted and forwarded to the Incoming Bureau in each Canadian call area.

*All domestic cards (VA-VE-VY) to Canadian Amateurs should be sent directly to the RAC National Incoming Bureau, and **not** to the Outgoing Bureau. This service is **only** available to RAC members. Domestic cards sent to the Outgoing Bureau will experience a delay.*

Only cards for destinations outside Canada should be sent to the Outgoing QSL Bureau.

*National Incoming QSL Bureau*
*Sponsored by: Loyalist City ARC*
*Len Morgan, VE9MY, Manager*
*Box 51 Saint John, NB, E2L 3X1*

### LE BUREAU DE QSL ENTRANT NATIONAL DE RAC

Les sociétés membres de l'UIRA (IARU) opèrent des bureaux de QSL à l'échelle mondiale. Le RAC, en tant que membre et sociétaire de cette union, gère un bureau national des QSL entrants (voir la page 3) et commandite les bureaux provinciaux des QSL entrants dans les douze régions canadiennes d'appel.

Les cartes reçues des divers bureaux de l'UIRA sont triées et envoyées aux bureaux provinciaux.

*Toutes les cartes domestiques (VA-VE-VY) destinées aux amateurs canadiens devront à l'avenir être envoyées directement au bureau national des QSL entrants de RAC et **non** au bureau des QSL sortants. Les cartes domestiques envoyées au bureau des QSL sortants subiront un délai.*

Seulement les cartes destinées à l'extérieur du Canada seront envoyées au bureau des QSL sortants.

*Bureau de QSL entrant national*
*Commandité par: Loyalist City ARC*
*Len Morgan, VE9MY, gérant*
*Boîte postale 51*
*Saint John, NB E2L 3X1*

## HELP WANTED

### TREASURER

The Radio Amateurs of Canada is looking for a Treasurer who is a Chartered Accountant, Certified General Accountant or Certified Management Accountant. A certification in Amateur Radio is optional.

As RAC's financial advisor, we need someone to provide direction on the accounts and act as liaison with the external auditors. Experience with QuickBooks would be an asset.

Radio Amateurs of Canada is a non-profit corporation providing services to members and has a mandate to enhance Amateur Radio in Canada.

Please speak with your friends; there must be a RAC member who either qualifies or can approach someone for this volunteer position. Certification in Amateur Radio is not a requirement for this position.

Interested parties please contact RAC Headquarters at 720 Belfast Road, Suite 217 Ottawa ON, K1G 0Z5 or by email at racgm@rac.ca.

### RAC CORPORATE SECRETARY

We are actively seeking the services of a volunteer to fill the position of RAC Corporate Secretary. This is a challenging responsibility that requires attention to detail and the ability to capture accurate notes and records of meetings, among other responsibilities.

A detailed position description may be viewed in the RAC Administration Manual, Section 2.19. The Secretary reports to the RAC President; this position is available immediately.

Interested parties please contact RAC Headquarters at 720 Belfast Road, Suite 217 Ottawa ON, K1G 0Z5 or by email at racgm@rac.ca.

**Deadlines for TCA**

July-August 2015: May 15
September-October 2015: July 15
November-December 2015: September 15

Please send all submissions
by email to the Editor at:
tcamag@yahoo.ca
Or by mail to:
The Editor
720 Belfast Road, Suite 217
Ottawa, ON K1G 0Z5

# SIX METRES AND DOWN

## "A REAL FINE AURORA SESSION ON VHF..."

**Dana Shtun, VE3DS**
**14 Ashwood Crescent**
**Toronto, ON M9A 1Z3**
**E: ve3dss@rac.ca**
**W: www.qsl.net/ve3dss**

### 10 GHz RECORD

Two Amateur Radio microwave enthusiasts in Australia are claiming a new distance record on 10 GHz.

On January 5, during a tropo opening across the Great Australian Bight, VK6DZ and VK7MO exchanged reports over a 2,732 kilometre path using JT4F mode as well as SSB. The distance surpasses, by 36 kilometres, the previous World Record of 2,696 kilometres from Southern Portugal to Cape Verde Island.

VK6DZ was portable at Torbay Hill, 24 kilometres west of Albany in Western Australia. He was running 10 watts to a 60 cm dish. VK7MO was portable at Cape Portland in northeastern Tasmania, running 50 watts to a 77 cm dish.

Several other noteworthy 10 GHz contacts were completed the same day. VK6DZ worked VK5KK over a 1,920 kilometre path on JT4F mode, and VK5DK over a 2,062 kilometre path on SSB. VK5KK was portable at Crafters, 10 kilometres southeast of Adelaide in South Australia, running 5 watts into a 75 cm dish. VK5DK was portable at Mount Burr, 40 kilometres northwest of Mount Gambier running 5.5 watts into a 60 cm dish. All stations were GPS locked.

### ST. PATRICK'S DAY SOLAR STORM

Finally, we had an example of a real fine aurora session on VHF!

It has been too long a spell without something during Cycle 24 and many new folks have not had the pleasure of working a "buzz" session on VHF. Well, it all started with a bang as a Coronal Mass Ejection (CME) hit us in the early hours of March 17, and it kicked the A index to a whopping 117 with the K at 8. While the solar flare triggering this was relatively mild, all things came together to generate a G4 magnitude solar storm including a strongly south pointing Bz. So what this means is that the HF bands go ***dead*** and the VHF band go ***live***. So while everyone was drinking green beer, we hams were having a jolly time working DX.

Signals were pretty awesome on 6 metres. I got on with the Kw and had the callers stacked 10 deep at every call. It was great to hear so many new calls in there, and with the auroral distortion it was a challenge to pull calls out.

One caller, however, broke my S meter and that was Dave, N4DB, in FM07, who commented that I was rather strong down there as well.

*In 45 years, I have not heard a 50 MHz auroral signal that strong from a station that far to the south!*

In addition, we worked VE3CTT in FN07, VE3RX in EN96, VE2XK in FN07, VE2DLC in FN54 and pretty much everyone else from FN65 through EN50. Sadly, we didn't have a strong auroral E opening later that night, but did hear VA6EME while he worked VE2XK, but that old "hot spot" moved the wrong way and we lost signals.

Peter, VE7PS, reported working 17 stations on 50 MHz from Grand Forks, British Columbia – the most ever in one session from out there. Peter worked VA6LM in DO33 for his best DX and heard W7OUU in DO22.

**John, VE7DAY, sent the following report:**

"It started for me when Perry, VA7FC called to tell me there was an auroral opening.

16:18 VE6KC in DO20 worked.

22 grids worked, including VE7XV in CO90, VE7PS in DN09, VE7VZ in DN09 and VE7CA in CN89.

Oh, I worked Perry, VA7FC, in CN79.

I heard a lot of signals that I could not pull out of the noise but most were 52A, 55A to 57A and 59A, very good copy.

At one point K7CW was 10 to 15 over 9 aurora.

There were other big signals as well.

I don't remember an auroral event lasting this long, about 11 or 12 hours in total. There were two interruptions in propagation but it kept coming back.

I called CQ before closing down and K7CW said there was still aurora on my signal but I was much weaker.

The sky was overcast so there was no auroral display that I could see.

This afternoon March 18, Steve, VE7SL, is hearing parts of Dale, CE2AWW's CQ from Chile. I cannot hear anything from him."

Incidently, Dale, CE2AWW, was worked by Michel, VE2XK, on March 18 with signals in solid for 35 minutes in Northern Quebec. Here in Toronto, we heard Dale briefly in the afternoon of the 19th.

I skipped up to 222 MHz and worked three stations including W9ZIH in EN51 with 59A signals both ways, followed by K8RYU in EM99, and K4RTS in FM08, for my best Auroral DX on 222 MHz.

There were a couple of other callers but signals took a fade as they do on aurora and we lost them. In addition, the "hot" spot was moving rapidly and it took a bit of juggling to track it and work people.

Up on 432 meanwhile, I had alerted Peter, VA3ELE, around 2000Z to the potential for this storm and, sure enough, he made four contacts on 432 MHz aurora including KU8Y in EN61 with 59A signals and N4PZ in EN52. Peter was pleased as punch at making those contacts being there at the right time for the intense but short opening on UHF Aurora.

Needless to say 144 MHz was hot as well, with stations having a ball working DX all over the east and Midwest. Stan, VA3ST, reported working 26 stations on 144 with his best DX into EM95 in North Carolina, and out to EM18 in Kansas.

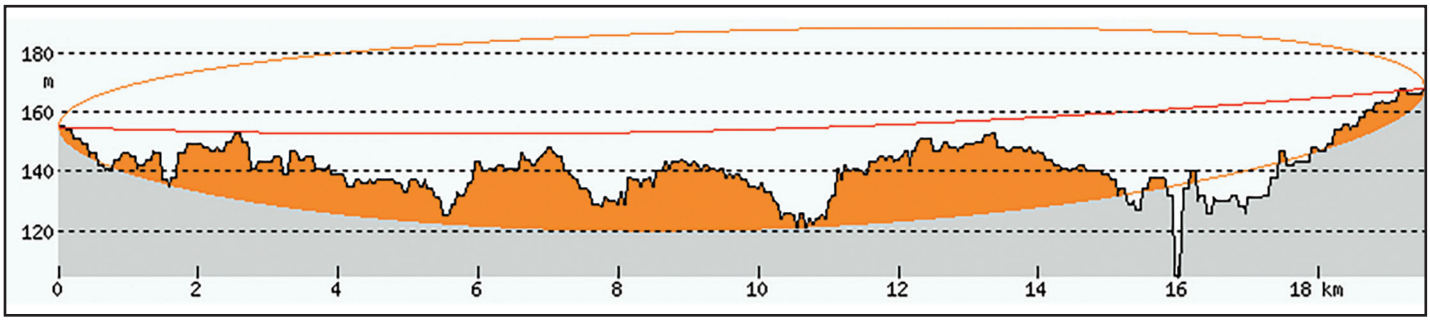
### HACKRF SDR DX

#### VE3DS: 23 kilometres on 1296 MHz

I had missed the first offering of the HackRF SDR (Software Defined Radio) transceiver in late 2014 and was waiting for them to come back in stock in 2015, lamenting this to Stu, VE2XX. He then told me he had ordered one and a quick check showed stock! So naturally I jumped. It showed up a few days later and I can tell you it is small.

To see if it actually does work from 10 MHz to 6 GHz, with the help of some tutorials and support from Stu, VE2XX and Jarred, KF2MR, I set about creating a "9 band" beacon transmitter.

After a few fumbles I got it going, and enlisted Peter, VA3ELE, to listen for the beacon at his QTH in Mississauga, over a 23 kilometre path.

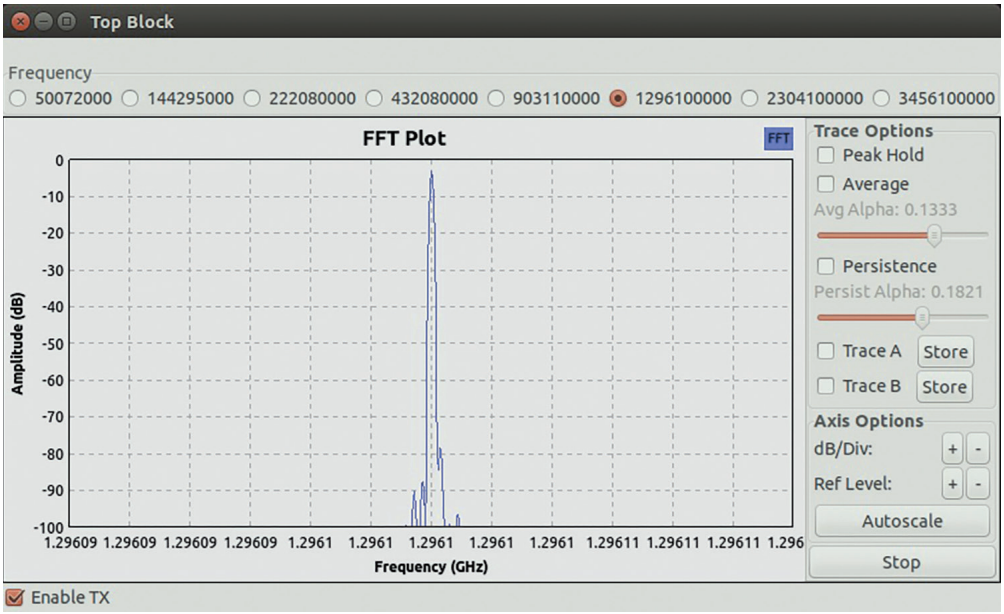



**Path Profile from VE3DS (left) to VA3ELE (right). Thanks to www.heywhatsthat.com for the path profile.**

Loading the mighty 20 microwatts into a 43-element loop yagi gave "S5" signals between VE3DS and VA3ELE! The beacon call sign was our club contest call VE3ONT/b of course.

More testing will be done as Peter could not hear the 2304 beacon, but of course I was loading into the 1296 loop yagi at this writing.

Here is a screenshot of the output of the HackRF on 1296.1 MHz running in CW beacon mode.




This is quite an interesting technology and I do thing eventually we will see that the traditional transverter will not necessarily be needed for VHF/UHF and SHF. This would be a boon to the rover community. However, there are still a few issues: bandpass filtering to keep crud out and signals clean; a decent interface like Power SDR; and power amplifiers for our specific ham bands – Mitsubishi modules work well so there is some existing technology around to boost the performance of SDR radios for the Amateur community above 50 MHz. Not left out of course would be FM, Digital of all kinds including video and much more. On HF hams are running WSPR with this gear. Got your interest?

Well that's it for now, we will have more to report on the Summer DX if we ever get summer this year. – *73, Dana, VE3DS*

## VHF/UHF CONTEST CALENDAR

June 13-15: June VHF QSO Party
July 18-19: CQ WW VHF
August 1-2: UHF Contest
August 15-16: 10 GHz & Up (Round 1)
September 5-6: EME – 2.3 GHz & Up
September 12-14: September VHF QSO Party
September 19-20: 10 GHz & Up (Round 2)
October 31/November 1: EME (50-1296 MHz) Round 1
November 28-29: EME Contest (50-1296 MHz) Round 2

## VHF/UHF CONFERENCES

### Central States VHF Society

This year the CSVHF Society is holding it's annual meeting from July 23 to 26 at the Denver Marriott Westminster in Westminster, Colorado which is a northern suburb of Denver and is less than a half-hour away from the airport. For more information visit http://2015.csvhfs.org/

This is one of the best conferences for VHF/UHF and SHF in the Midwest.

### Mid-Atlantic States VHF Conference

This year the Mid-Atlantic States VHF Conference and Mini-Fest is being held from October 2 to 4 in Bensalem, Pennsylvania, which borders the northeast section of Philadelphia.

It is hosted by the Mt. Airy VHF Radio Club AKA Pack Rats.

For more information visit: http://www.packratvhf.com/Conference/vhf%20conf%202015.html

### Microwave Update

This year, Microwave Update moves west to Southern California with the meeting scheduled from October 15 to 18 at the Crowne Plaza San Diego.

The event is sponsored by the San Bernardino Microwave Society and the Microwave Group of San Diego.

For more information check out: www.ham-radio.com/sbms/mud2015/

TCA

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# ANNUAL GENERAL MEETING

## RADIO AMATEURS OF CANADA INC.

The Radio Amateurs of Canada is pleased to hold its Annual General Meeting (AGM) in Martensville, Saskatchewan. The AGM event will be hosted by the Meewasin Amateur Radio Society and will be held in conjunction with the 2015 Saskatchewan Hamfest which is being held at the same location. All RAC members are encouraged to attend the Annual General Meeting.

**Date:** Saturday, July 4, 2015

**Time:** 10:30 am (Central Standard Time)

**Place:** The Annual General Meeting will be held at the Northridge Community Centre, 901 3rd Street North, Martensville, Saskatchewan (see below for more information).

Agenda items will include:

- Report of the President
- Review of the 2014 finances
- Appointment of auditors for 2015

A Question and Answer period will follow the AGM proceedings.

This is your opportunity to hear what your representatives have been doing over the past year, to raise questions, and to make suggestions about how RAC is managed and where it is going in the future.

The meeting will be attended by some of the members of the RAC Board of Directors and Executive and is open to all RAC members. In addition there will be a planned Webinar which RAC members can attend remotely.

For more information about the 2015 Saskatchewan Hamfest please see the article below or visit:
http://www.meewasin-ars.ca/

# ASSEMBLÉE GÉNÉRALE ANNUELLE

## RADIO AMATEURS DU CANADA INC.

Radio Amateurs du Canada est heureux de tenir son Assemblée générale annuelle (AGM) à Martensville, Saskatchewan. L'hôte de l'AGM est la Meewasin Amateur Radio Society qui organisera l'événement en collaboration avec le Hamfest 2015 de la Saskatchewan lequel se tiendra au même endroit. Tous les membres de RAC sont invités à participer à l'Assemblée générale annuelle.

**Date :** samedi, le 4 juillet 2015

**Heure :** 10h30 (heure normale centrale)

**Lieu :** l'Assemblée générale annuelle se tiendra au Northridge Community Centre, 901, 3ième rue nord, Martensville, Saskatchewan (voir ci-dessous pour plus d'informations).

L'ordre du jour inclura :

- le rapport du président;
- la revue des états financiers de 2014
- la nomination du vérificateur pour 2015

Une période de questions et réponses suivra les activités de l'AGM.

Voici votre chance d'entendre vos représentants vous dire ce qu'ils ont accompli au cours de l'année dernière, poser des questions, faire des suggestions sur la gestion de RAC et connaître ses intentions futures.

Plusieurs membres du Conseil d'administration et de l'Exécutif de RAC participeront à l'Assemblée, à laquelle tous les membres de RAC sont bienvenus. De plus, des membres de RAC pourront participer à l'assemblée à distance au moyen d'un Webinar prévu à cet effet.

Pour plus d'informations sur le Hamfest 2015 de la Saskatchewan, s'il vous plaît voir l'article ci-dessous ou visiter:
http://www.meewasin-ars.ca/

# 2015 SASKATCHEWAN HAMFEST

The Meewasin Amateur Radio Society is pleased to host the Annual General Meeting of Radio Amateurs of Canada in conjunction with the annual Saskatchewan Hamfest. The Saskatchewan Hamfest will be held as a three-day event from July 3 to 5.

**Place:** Northridge Community Centre, 901 3rd Street North, Martensville, Saskatchewan (9 kilometres north of Saskatoon on Highway 12)

The schedule for the Hamfest is as follows:

**Friday:** The registration and a Meet & Greet will be held at 6 pm.

**Saturday:** The fleamarket opens to the public at 9 am. Vendors can set up at 8 am. All tables must be reserved ahead of time.

**Sunday:** The doors to the event will open at 8 am.

**Cost:** The admission to the fleamarket is $25 per person (in advance) for all three days. Tables cost $10 each. There is there is a limited amount of tables and they are on a first come, first served basis.

**Talkin:** VE5CC Repeater 146.970 (-600) 100.0 Hz Tone or the VA5DR Repeater 448.125 (-5M) D-STAR.

Please visit the club's website for updated information at:
http://www.meewasin-ars.ca/

# LE HAMFEST 2015 DE LA SASKATCHEWAN

La Meewasin Amateur Radio Society est heureuse d'accueillir l'Assemblée générale annuelle de Radio Amateurs du Canada en collaboration avec le Hamfest annuel de la Saskatchewan.
Le hamfest durera trois jours, du 3 au 5 juillet.

**Lieu :** Northridge Community Centre, 901 3ième rue nord, Martensville, Saskatchewan (9 kilomètres au nord de Saskatoon en bordure de l'autoroute 12)

L'agenda du hamfest est comme suit :

**Vendredi :** enregistrement, accueil et rencontre à 18h00.

**Samedi :** le marché aux puces ouvre ses portes au public à 9h00. Les vendeurs peuvent entrer et s'installer à partir de 8h00. Toutes les tables doivent être réservées à l'avance.

**Dimanche :** les portes ouvrent à 8h00.

**Coût :** L'admission au marché aux puces est de 25 $ par personne (payable d'avance) pour les trois jours. Les tables sont au coût de 10 $ chacune. Le nombre de tables est limité et la règle du premier arrivé, premier servi prévaudra.

**Contacts radio :** répéteur VE5CC à 146.970 (-600) tonalité 100.0 Hz ou répéteur VA5DR à 448.125 (-5M) D-STAR.

Veuillez, s.v.p. visitez le site web du club pour les dernières informations : http://www.meewasin-ars.ca/

– Traduction par Claude Lalande, VE2LCF –

# AMATEUR RADIO SATELLITES

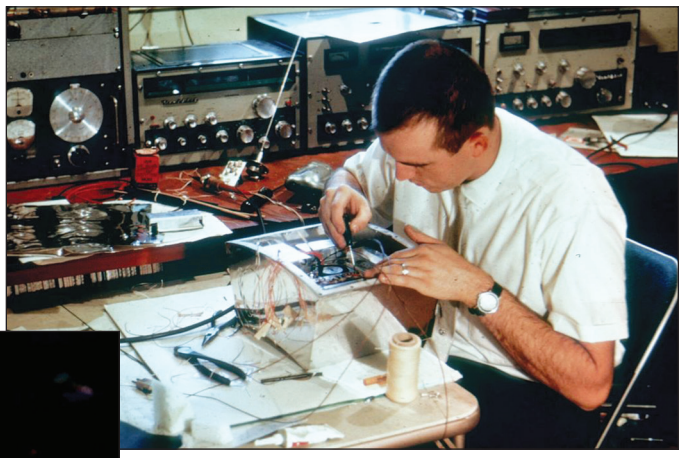
**Keith Baker, VA3KSF/KB1SF**
**PO Box 33**
**Corunna, ON N0N 1G0**
**E: va3ksf@rac.ca**

**In my last column in the** January-February 2015 issue of TCA, I turned the spotlight on one of our oldest satellites (AMSAT-OSCAR 7) that has now been in orbit (and at least semi-operational) for *over 40 years*. However, in my conversations with many of my ham radio friends, I all too often find a rather disappointing lack of understanding (let alone an appreciation!) of just what a significant accomplishment this milestone represents.

As some of you may know, I've also been honoured to be a past-President and long-time member of the Board of Directors of the North American-based organization responsible for the building and launching of a number of our Amateur Radio satellite projects over the years (AMSAT-North America). That work has also given me a unique opportunity to "rub elbows" with some of the absolutely brilliant people who not only build and control our space hardware, but also those who spend an inordinate amount of their spare time making sure that their handiwork actually makes it to orbit and then successfully operates for the benefit of Amateurs worldwide.

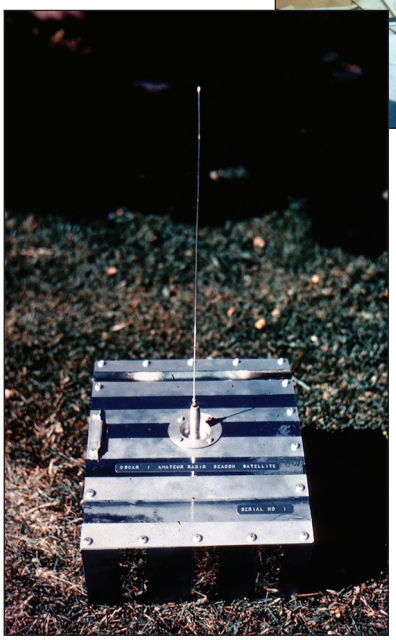
*Portions of this article previously appeared as "AMSATs: From Oscar-1 to Fox-1A in the March 2015 edition of The Spectrum Monitor Magazine. Thank You TSM!*

In my travels, I'm also frequently asked to share the "inside story" of past satellite projects and how they came to be. What's more, many Amateurs now interested in satellite work have only just recently received their Amateur Radio licences (or have just begun their Amateur Radio satellite "journey") and have no idea how the Amateur Radio satellite program even came to be.



Lance Ginner, K6GSJ, performs the final wiring of the flight model OSCAR-1 satellite on a card table set up in the ham shack of his California home. The Plastic Dymo Label Tape on the top of the flight model OSCAR-1 satellite (in photo at left) reads: "OSCAR 1 AMATEUR RADIO BEACON SATELITE". (Courtesy: Project OSCAR)

So, in this second instalment of 2015, I'd like to pause a bit from my strict "status update" approach to previous columns to also share a bit of early Amateur satellite history with my readers. In later columns, I'll be sharing some insight into what it takes to get an Amateur Radio satellite conceived, built and then launched.



## BEGINNINGS

The story of Amateur Radio satellites begins very near the beginning of America's other satellite programs. Barely four months after the successful launch of Russia's Sputnik I, the United States launched Explorer I on January 31, 1958. At about that same time, a West Coast group of hams began toying with the idea of launching an Amateur Radio satellite into orbit. Far from being simply a "pipe dream", this group later organized a group called Project OSCAR (Orbital Satellite Carrying Amateur Radio), with the expressed aim of building and launching Amateur Radio satellites. After a series of high level exchanges among Project OSCAR members, the American Radio Relay League and the United States Air Force, a launch opportunity on Discoverer XXXVI from Vandenberg Air Force Base in California was secured for the very first Amateur Radio satellite called OSCAR I. It was successfully launched into a Low Earth Orbit (LEO) on the morning of December 12, 1961 – barely four years after the launch of Sputnik I.

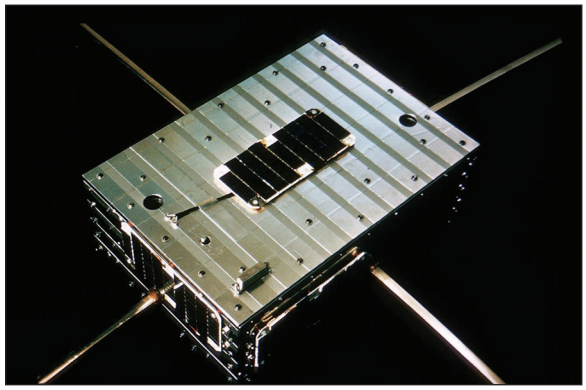
OSCAR I weighed in at 10 pounds. It was built, quite literally, in the basements and garages of the Project OSCAR team. It carried a small 2m-beacon transmitter that allowed ground stations to measure radio propagation through the ionosphere, as well as the internal temperature of the satellite. It was also the very first satellite to be ejected as a secondary payload from a primary launch vehicle and then enter a separate orbit. This was accomplished using a very high technology and thermally balanced ejection system – a $1.15 spring from Sears Roebuck!

OSCAR I was an overwhelming success. More than 570 Amateurs in 28 countries forwarded observations to the Project OSCAR data reduction centre. Unfortunately, OSCAR I lasted only 22 days in orbit before burning up as it re-entered the atmosphere. But Amateur Radio's "low tech" entry into the "high tech" world of space had been firmly secured. When scientific and other groups asked the Air Force for advice on secondary payloads, the Air Force suggested

| FREQUENCY AND MODE DATA | | | | |
|---|---|---|---|---|
| **Satellite** | **Mode** | **Uplink (MHz)** | **Downlink (MHz)** | **Beacons (MHz)** |
| Fox-1A | U/V (Mode B) | 435.180 | 145.980 | FM Voice |
| Fox-1C | U/V (Mode B) | TBD | TBD | FM Voice |

they study the OSCAR design. What's more, OSCAR I's "bargain basement" procurement approach and management philosophy would become the hallmark of all the OSCAR satellite projects that followed, even to this day.

OSCAR II was built by the same team and, although it was similar both structurally and electrically to OSCAR I, there were a number of improvements to OSCAR II.



**The OSCAR-3 satellite was the first Amateur satellite to carry a transponder and a rechargeable battery. (Courtesy: Project OSCAR)**

One such upgrade modified the internal temperature sensing mechanism for improved accuracy. Another improvement modified the external coating of the satellite to achieve a cooler internal environment. Yet another modification lowered the beacon transmitter output to extend the battery life of the satellite. Thus, the "continuous improvement" strategy that has also become a central part of the Amateur satellite approach was set into place very early in the program.

The launch of OSCAR III quickly followed that of OSCAR II. OSCAR III would later become the very first Amateur Radio satellite to carry a transponder. It was designed to receive a 50 kHz wide band of uplink signals near 146 MHz and then retransmit them (with a power of 1 watt!) near 144 MHz. This would allow Amateurs with relatively modest Earth stations to communicate over much longer distances at these frequencies.

In fact, it could be argued that the lure of talking over larger and larger distances at these frequencies remains the single most important reason members of the Radio Amateur community have continued to support the construction, launch and use of these satellites over the years. Put another way, the lure of a "repeater in space" that virtually anyone with an entry-level Amateur Radio licence can use is a very powerful motivator for a group of people who like to communicate with each other as a hobby!

Unfortunately, the thought of a "repeater in space" developed and launched by a group of "know-nothing hams" working in their basements and garages wasn't always looked upon with favour. While details of the incident are sketchy, it's reported that the builders of Telstar I, the very first *commercial* telecommunications satellite, were quite upset to learn that a "rag-tag" group of hams were also working on a telecommunications satellite called OSCAR III as their Telstar satellite was nearing completion.

For a while, it appeared that OSCAR III might possibly upstage their multimillion dollar Telstar effort by beating them to orbit! In fact, it was also reported that Telstar's builders did eventually change their public relations approach to include the word "commercial" in subsequent references to Telstar I as the "world's first telecommunications satellite".

OSCAR III's transponder operated for 18 days and about 1,000 Amateurs in 22 countries were heard operating through it. The satellite was the first to clearly demonstrate that multiple stations could successfully use a satellite simultaneously – a technology that is largely taken for granted in satellite telecommunications today.

The fourth Amateur Radio satellite, OSCAR IV, was targeted for a geostationary circular orbit 22,000 miles above the Earth. OSCAR IV would ride to space aboard a Titan III-C rocket. Unfortunately, despite a valiant effort on the part of the hams and others involved (most of whom were members of the TRW Radio Club of Redondo Beach, California), the top stage of the launch vehicle failed and OSCAR IV never reached its intended orbit. However, despite this apparently fatal blow, OSCAR IV operated long enough for Amateurs to successfully develop innovative work-around procedures to salvage as much use out of the satellite as possible.

## THE BIRTH OF AMSAT

The story of AMSAT actually begins in Australia. There, a group of students at the University of Melbourne had pieced together an Amateur satellite that would evaluate the suitability of the 10-metre Amateur Radio band as a downlink frequency for future satellite transponders. It would also test a passive magnetic attitude stabilization scheme (another AMSAT first) and demonstrate the feasibility of controlling a spacecraft via uplink commands.

Unfortunately, the completed satellite languished as launch delay followed launch delay. At about that same time, a group of Radio Amateurs with space-related experience in the Washington DC area met to form what initially became known as the East Coast version of the West Coast Project OSCAR Association.

As a result of this meeting, the Radio Amateur Satellite Corporation, as AMSAT is officially known, was born. AMSAT was later chartered as a 501(c)(3) educational corporation in the District of Columbia on March 3, 1969. Its aim was (and is) to embrace and expand on the work started by Project OSCAR. The new AMSAT organization selected, as its first task, to arrange for the launch of OSCAR 5.

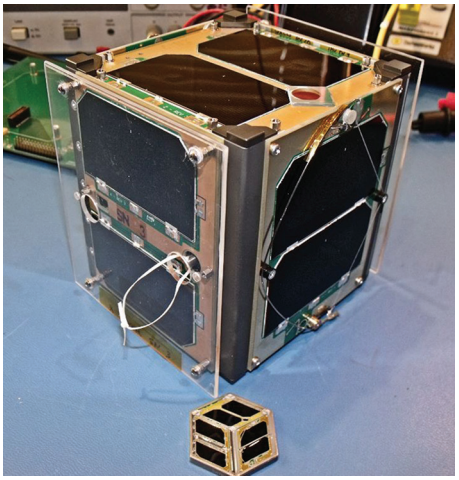
After some modifications by AMSAT members (again working mostly in their basements and garages), OSCAR 5 (later to be called Australis-OSCAR 5 or simply AO-5) was successfully launched on a National Aeronautics and Space Administration (NASA) vehicle. Previous OSCARs had all been launched using US Air Force rockets. The OSCAR 5 satellite performed nearly flawlessly.

## AMSAT-OSCAR SATELLITE PROGRAM PHASES

The many spacecraft designed and constructed by Radio Amateurs since 1961 can be roughly classified by their intended function into three Phases. Phase I designs comprised the Low Earth Orbit (LEO), short lifetime, predominantly beacon-oriented satellites such as OSCARs I, II, III, and the Russian Iskra 1 and 2 series of spacecraft.

Phase II series OSCARs are also LEO "birds", but are launched into somewhat higher orbits, and are designed for much longer lifetimes. These AMSAT satellites included OSCARs 6, 7 and 8, as well as UoSAT OSCARs 9 and 11, both of which were built by a team of AMSAT members and students at the University of Surrey in England.

These satellites have since been followed by a series of both analog and packet radio satellites, which were launched by a variety of AMSAT groups from several countries into similar orbits. Throughout the 1990s (and to this day), Phase II satellites made up the bulk of the Amateur satellites then (and now) in orbit.



**This photo shows the actual flight model of Fox-1A "buttoned up" and ready to ship to NASA for eventual launch. The protective plexiglass covering the satellite's solar panels will be removed prior to launch. The photo also shows one of the small replica "challenge coins" that are being offered by AMSAT for donations of $100 or more to the FOX project. (Courtesy: AMSAT)**

One large subset of Phase II satellites were called MICROSATs, as they consisted of (at that time) small cubes, only nine inches square, designed to carry one or more so-called "store-and-forward" digital transponders.

These satellites were high-flying digital "bulletin boards" where one or more hams could upload messages to the satellite as it passed overhead. Then, when the satellite passed over (or near) the recipient, they could download the message from the satellite for immediate reading or for further dissemination over the (quite extensive) terrestrial "packet radio" networks of the day.

AMSAT's experimenters also pioneered the use of a unique way for transmitting and receiving partial messages. Given that these satellites would only be available for a very short time over any particular place on the planet, AMSAT came up with a unique digital protocol whereby users could upload or download just bits and pieces of a message and then complete the upload or download on the next (or subsequent) pass(es).

Particularly popular messages (for example AMSAT's weekly bulletins) would be handled using a "broadcast protocol", whereby a number of ground stations would send up a request for that particular bulletin and the satellite would then "broadcast" it to multiple stations simultaneously rather than to each station individually. This feature greatly improved the "throughput" of the satellite.

The Phase III satellites were each designed to be launched into a highly elliptical Molnya-type orbit first pioneered by the Soviet Union.

These satellites (which included OSCARs 10, 13 and 40) offered their users much longer access times along with higher-powered (and more diverse) communication transponders.

In addition, these so called "high altitude" satellites (HEOs) also offered their users far larger communications footprints than the LEO satellites. In some cases Phase III satellites could "see" nearly an entire *hemisphere* of the Earth at the same time, allowing users the luxury of simultaneous contacts on one or more continents.

## AMSAT-OSCAR SATELLITE NOMENCLATURE

While worldwide AMSAT organizations are now largely responsible for the design and construction of the modern day Amateur Radio satellites, the term "OSCAR" is still being applied to almost all satellites carrying Amateur Radio. However, most Amateur Radio satellites are not usually assigned their sequential OSCAR numbers until *after* they successfully achieve orbit and become operational. Even then, an OSCAR number is only assigned after its sponsor formally requests one. If the satellite subsequently fails in orbit, or it re-enters the Earth's atmosphere, its OSCAR number is usually retired, never to be issued again.

## FOX SATELLITE STATUS UPDATE

As this edition was going to press, AMSAT's experimenters had put the final touches on the AMSAT-NA's FOX-1A satellite in preparation for launch.

In January 2015, the satellite underwent thermal and vibration testing, both of which were passed with "flying colours". These tests are required by the launch agency to make sure that our little satellite doesn't damage the main "paying customer" satellite on launch.

A more selfish reason is to also ensure that our satellite is up to the task of surviving and then operating in the harsh environment of space.

Now that those tests have been successfully accomplished, the flight model of the satellite was to have been "buttoned up" and shipped to NASA who were to forward it on to the launch agency for eventual launch. That launch is (hopefully) slated for sometime in the latter half of this year (2015).

In addition, as I reported to you in my previous column, in late July 2014 at the ARRL Centennial gathering in Hartford, Connecticut AMSAT-North America's (AMSAT-NA) President (Barry Baines, WD4ASW) announced a launch opportunity for AMSAT-NA's Fox-1C Cubesat. AMSAT has teamed with Spaceflight Incorporated for integration and launch of the satellite using Spaceflight's SHERPA system into sun-synchronous orbit (again, hopefully) sometime in the third quarter of 2015.

Needless to say, this new launch opportunity also generated an immediate need to raise funds to cover both the launch contract and additional materials for construction and testing for Fox-1C. AMSAT has since set an *additional* fundraising goal of $125,000 to cover these expenses.

At press time, this $125,000 fundraising campaign – spearheaded by AMSAT-NA's Vice-President for Operations, Drew Glassbrenner, KO4MA) was still being conducted on the Fundrazr website (https://fundrazr.com/campaigns/6pz92) as well as by AMSAT's other traditional fundraising mechanisms. As always, more information about the entire AMSAT Fox satellite project can be found on the AMSAT-NA website at: http://www.amsat.org/?page_id=1113.

Fingers crossed that, if all goes as planned, AMSAT may have not one, but two new FM satellites in orbit by this year's end.

## SELECTED REFERENCES


Keith Baker and Richard Jannson, "Space Satellites from the World's Garage – The Story of AMSAT", Dayton, Ohio: Proceedings of the National Aerospace and Electronics Conference, 1994.

Martin Davidoff, *The Satellite Experimenter's Handbook,* Newington, Connecticut: The American Radio Relay League, 1984.

Richard Jansson, "Spacecraft Technology Trends in the Amateur Satellite Service", Ogden, Utah: Proceedings of the First Annual USU Conference on Small Satellites, 1987.


TCA

# DON DASHNEY, VE3RM, APPOINTED TO THE HALL OF FAME

*Prepared by*
*Ed Frazer, VE7EF*
*Chair of Trustees for*
*Canadian Amateur Radio*
*Hall of Fame*


The Trustees of the Canadian Amateur Radio Hall of Fame made two appointments to the Canadian Amateur Radio Hall of Fame for the year 2014: George Spencer, VE3AGS (SK) and Don Dashney, VE3RM (SK).

George Spencer was inducted to the Hall on January 25, 2015, as reported in the March/April issue of TCA.

Donald Raymond Dashney was inducted to the Hall on February 17 and his achievements are described below.

The Constitution for the Hall of Fame specifies that appointments be made *"for outstanding achievement and excellence of the highest degree, for serious and sustained service to Amateur Radio in Canada, or to Amateur Radio at large".* Don Dashney qualifies on all counts. This appointment recognizes his six decades of outstanding service to Amateur Radio in Canada.

Donald Dashney was born in Ottawa in 1929 and showed an early interest in Amateur Radio, obtaining his first licence and call sign VE3BDY in 1945 at the age of 16. In 1954, he graduated from McGill University in Electrical Engineering. He entered the Canadian Officers Training Corps and was commissioned as Lieutenant in the Royal Canadian Corps of Signals (Reserve).

Upon graduating from McGill, Don joined the Engineering Department of RCA Victor Company Limited in Montreal, and worked in the design and installation of AM, FM and television transmitters and studio equipment across Canada and the USA.

In 1976, he moved to the Canadian Broadcasting Corporation, Headquarters Engineering in Montreal, and became Chief Broadcast Engineer, responsible for all CBC transmitters across Canada.

He was a Professional Engineer and a member of the Institute of Electrical and Electronic Engineers (IEEE).

In 1966, Don was awarded the Certificate of Appreciation from IEEE for services rendered in furthering the objectives of the organization.

In 1994, he retired and moved to the Hawkesbury, Ontario area (Vankleek Hill), where he purchased acreage and built his dream DX/contest station.

Don was a member of the Ottawa Amateur Radio Transmitting Association, forerunner of the Ottawa Amateur Radio Club (OARC). He was one of the earliest users of the OARC's 2m FM Repeater, VE2CRA, for trips back and forth to Montreal.

While living in Montreal, his call sign was VE2SH. Don was member of the Montreal Amateur Radio Club (MARC) where he held the positions of President and Membership Chair as well as long-time teacher of the club's Amateur Radio courses. He taught theory and code courses for over 30 years and is credited with more than 1,000 graduate Amateurs in Montreal and Eastern Ontario. This was in a time when the exams were tough, not like today's multiple-choice questions!

In 1991, in recognition of his distinguished services and personal contributions of time and effort to the Montreal Amateur Radio Club, Don was made a Life Member and Director Emeritus.


Don helped maintain MARC's VHF repeaters, VE2RED and VE2BG, until 2008, and he also maintained repeaters for the Hawkesbury area Amateur Radio clubs.

Don was active in contesting and DXing and an avid experimenter in HF, VHF/UHF and microwave. A lifelong ham, he is remembered by many for his volunteer teaching of the requirements to pass the Amateur Radio licence exam.

Don was an early Life Member of the Quarter Century Wireless Association (QCWA) and a Life Member of QCWA Capital City Ottawa Chapter 70. He was presented with the first "Chapter 70 Life Member" certificate at the Chapter 70 September 2010 dinner meeting.

For decades, Don took part in the American Radio Relay League's (ARRL) Field Day in Montreal and later in Vankleek Hill. He was the Assistant Emergency Coordinator for the Counties of Prescott-Russell in Eastern Ontario.

The Prescott-Russell ARES group presented him with a plaque in recognition of his significant support and his achievement in the field of Amateur Radio.

Don hosted over 100 multi-operator and single-operator contest operations from his contest station in Vankleek Hill.

Several dozen awards and plaques were won in domestic and international contests. In 1951, he achieved the DX Century Club award for working more than 100 countries.

The ARRL awarded Don several Public Service Awards, one of them for assisting in a multi-car accident in 1967.

In May 2010, at Deerfield, New Hamphshire, Don was presented with the New England Amateur Radio Festival (NEAR-Fest) Lifetime Pass, the only Canadian to have been presented with that prestigious award.

Through the decades Don was an active technical mentor to hundreds of Radio Amateurs. His kindness and willingness to always help will not be forgotten.

Don became a Silent Key on February 12, 2014 at the age of 85. He is survived by his sister Edna Dashney and brother Jim Dashney of Ottawa.

As shown in the photo on the left (taken by Vlad Milutinovic, VE3JM), the Hall of Fame Plaque was presented by former RAC Vice-President Glenn MacDonell, VE3XRA (on the left), to Edna and Jim at the quarterly lunch meeting of the QCWA Capital City Chapter 70, in Ottawa on Monday, February 16.

# SECOND NOTICE TO RAC MEMBERS RESIDING IN THE ONTARIO SOUTH REGION

## Call for Nominations of Candidates for Regional Director to serve on the Board of Directors of Radio Amateurs of Canada Inc.

The Secretary of Radio Amateurs of Canada Inc. hereby solicits nominations for the position of Director for the Ontario South (postal codes L and M). This is the Second Notice for the Ontario South Region.

If required, an election for this position will be held in August 2015. The Director will take office immediately to complete the two-year term ending December 31, 2015.

1. The Candidate:
   - ✓ must be a Full Voting Member of RAC
   - ✓ must have reached the legal age of majority
   - ✓ must reside in the Region for which he or she is nominated
2. A candidate may not nominate himself/herself.
3. The nomination form will:
   - ✓ be printed or typed
   - ✓ clearly indicate the candidate's name, call sign and RAC membership number
   - ✓ clearly indicate the names, call signs, RAC membership numbers and original signatures of ten (10) or more full voting members of RAC
4. The nominators must have reached the legal age of majority and must reside in the same Region as the candidate whom they are nominating.
5. Each candidate must:
   - ✓ sign the nomination form, indicating a willingness to be nominated
   - ✓ include with the nomination a brief biographical sketch/CV limited to 500 words succinctly setting out his/her background and qualifications. A candidate choosing to submit a biographical sketch in both English and French languages will be allowed 500 words in each language. The biographical sketch will not include any campaign platform material.
6. All **original nominations and supporting documentation, including the biographical sketch,** must be **received** by the Secretary of RAC at the address indicated on page 17 by 3 pm on Friday, July 17, 2015.

It is suggested (but not required) that the nomination forms be sent by registered mail.

**Faxed or emailed documents will not be accepted.**

- ✓ Clearly indicate on the mailing envelope that Nomination Documents are enclosed.
- ✓ The envelope will be held unopened until after the closing deadline of July 17, 2015. After this date, the Election Committee, under the supervision of the RAC Secretary, will open all submissions, review the documentation for accuracy, completeness and validity, and then announce the results of the Call for Nominations. The decision of the Election Committee is final.

# DEUXIÈME AVIS AUX MEMBRES DE RAC RÉSIDANT DANS LA RÉGION DE L'ONTARIO SUD

## Appel de mises en candidature pour le poste de directeur de région siégeant au conseil de direction de Radio Amateurs du Canada inc.

Le secrétaire de Radio Amateurs du Canada inc. sollicite des candidatures pour le poste de directeur pour la région de l'Ontario Sud (codes postaux L et M). C'est le deuxième avis pour la région de l'Ontario Sud.

S'il y a lieu, une élection à ce poste sera tenue en août 2015. Le directeur entrera en fonction immédiatement pour compléter le mandat de deux ans se terminant le 31 décembre 2015.

1. Le candidat :
   - ✓ doit être membre en règle de RAC
   - ✓ doit avoir atteint l'âge légal de la majorité
   - ✓ doit résider dans la région pour laquelle il est mis en nomination
2. Un candidat ne peut se nominer lui-même.
3. Le formulaire de mise en nomination devra :
   - ✓ être dactylographiée ou imprimée
   - ✓ reproduire clairement le nom du candidat, son indicatif d'appel et son numéro de membre chez RAC
   - ✓ reproduire clairement le nom, l'indicatif d'appel, le numéro de membre RAC et les signatures originales d'au moins dix (10) membres en règle de RAC
4. Les présentateurs doivent avoir atteint l'âge légal de la majorité et demeurer dans la région du nominé.
5. Chaque candidat doit :
   - ✓ signer le formulaire de mise en nomination, indiquant son accord d'être mis en nomination
   - ✓ inclure avec la mise en nomination une courte note biographique/CV, limitée à 500 mots, décrivant succinctement ses antécédents et ses qualifications. Un candidat qui désire soumettre sa biographie en anglais et en français se verra alloué 500 mots dans chacune de ces langues. Les notes biographiques ne devront inclure aucun élément de la plate-forme électorale.
6. **Tous les documents originaux de mise en candidature et les documents reliés**, incluant la note biographique, devront être reçus par le secrétaire de RAC à l'adresse indiquée sur la page 17 avant 15h00 le vendredi 17 juillet 2015.

Il est suggéré (mais pas obligatoire) que les documents de mise en candidature soient expédiés par courrier recommandé.

**Les documents expédiés par courriel ou par télécopieur ne seront pas acceptés.**

- ✓ Indiquez clairement sur l'enveloppe qu'elle contient des formulaires de mise en candidature.
- ✓ L'enveloppe restera scellée, jusqu'après la fermeture des mises en candidature le 17 juillet 2015. Après cette date, le comité électoral, sous la gouverne du secrétaire, ouvrira toutes les candidatures soumises, et vérifiera la documentation quant à sa validité, son exactitude et sa complétude, et annoncera ensuite le résultat de cet appel de mises en candidature. La décision du comité électoral sera finale.

# Feedback: Our Readers Write

### Defence of Amateur Radio Fund

I read with interest Geoff Bawden's column in the March-April 2015 edition of TCA where reference was made to the Defence of Amateur Radio Fund Trust ("DARF") being wound-up and the assets being administered by RAC on a go-forward basis.

As the individual who incorporated DARF in 1992, I would like, if I may, to acknowledge the contributions of some other individuals. DARF was founded by two noted Canadian Amateurs, Tom Atkins, VE3CDM (SK) and Bill Loucks, VE3AR (SK) who saw a need to make available funds to ensure that a Canadian Amateur would be part of the Canadian delegation to what was then World Administrative Radio Conferences and appropriate Preparatory Meetings. Noel Eaton, VE3CJ (SK) was also a significant contributor to DARF in its early days as, being a former International Amateur Radio Union (IARU) President, he was well aware of the importance of individual Amateurs attending International Telecommunication Union (ITU) meetings as part of their country delegations. Indeed, DARF allowed Tom Atkins to attend a number of ITU meetings as part of the Canadian delegation and after his retirement, as Geoff has noted, Jim Dean, VE3IQ (SK) and Ken Pulfer, VE3PU (SK) continued that role. Bryan Rawlings, VE3QN, has continued to represent Canadian Amateurs at ITU. All were able to do this due, in no small part, to funding by DARF.

Since 1992, these individuals have had much success in working with IARU toward a number of major developments for the Amateur services. Some examples are the elimination of the Morse Code requirement in the International Radio Regulations for the Amateur Service, the adoption of certain international minimum standards for Amateur qualifications and new Amateur allocations in the low frequency part of the spectrum.

Canadian Amateurs who have contributed to DARF should be justifiably proud of the work your international representatives have done, both for RAC and for the IARU. Several of the developments in the Amateur Service noted above would not have been possible without the hard work of individuals like Tom, Jim, Ken and now Bryan.

Indeed, I can personally attest to the excellent support we receive from Bryan as he plays a valuable role both within the Canadian delegation and with the IARU at various ITU Preparatory Meetings and, of course, past WRCs. We look forward to having Bryan work with us at WRC-15 in November.

Finally, but by no means least, Gerry Hohn, VE6LB, Dave Snydal, VE4XN and George Gorsline, VE3YV, should be recognized for the years of service as trustees to DARF. Under their term as trustees, DARF was managed very effectively, which allowed the trust to more than perform its intended purpose. Gerry, Dave and George are perfect examples of gentlemen who work hard behind the scenes to support the Amateur Service and should truly enjoy our recognition.

I am pleased to see RAC is now administering the funds and we look forward to continuing to work with those individuals who represent Canadian Amateur Radio at ITU.

*Tim Ellam, VE6SH*
*President – International Amateur Radio Union*

### Antennas and Transmission Lines

My column "Antennas and Transmission Lines" was featured in *The Canadian Amateur* from 2003 to 2014. It covered a large variety of antenna topics that included theoretical and hands on topics. The column was mainly tutorial in nature aimed at building a solid base so Amateurs could gain the necessary skills to work with antenna systems and evaluate a large variety of well known antennas.

Since many readers find it difficult to locate topics in the old issues, I have now written a chronological index to aid in this process. The list includes the titles and a short description of each article. It is now posted on the RAC website and also on my own website (http://ve3kl.com/) for your use.

*Dave Conn, VE3KL – Nepean, Ontario*

### VE3JW Station: A Correction

Thank you for publishing my article regarding the closure of the VE3JW station in the March/April 2015 (page 43) issue of TCA. I would like to correct an error in the third paragraph. It should read: "... and they only have enough space to exhibit 15% of the inventory of artefacts at any one time" rather than the 85% as previously published.

We have no decision yet from the Canada Aviation and Space Museum (CASM) as to whether they will give us room for an exhibit. Through TCA, we will keep the Amateur Radio community informed about this new project, and when we will be able to welcome visitors at the CASM pending the re-opening of the VE3JW station.

*Maurice-André Vigneault, VE3VIG – Ottawa, Ontario*

✓ Should a balloted election be required, ballots will be mailed from RAC Headquarters on or before July 31, 2015.

Nominations must be sent to the following address:

Secretary, Radio Amateurs of Canada
720 Belfast Road, Suite 217
Ottawa, ON K1G 0Z5

Clearly indicate on the envelope:

"Nomination Documents".

✓ Si une élection était requise dans l'une des régions, les bulletins de vote seraient postés du quartier général de RAC le 31 juillet 2015 ou avant.

Les mises en candidatures doivent être envoyées à l'adresse suivante :

Le secrétaire, Radio Amateurs du Canada
720 Chemin Belfast, Suite 217
Ottawa, ON, K1G 0Z5

Indiquer clairement sur l'enveloppe :

« Documents de mise en candidature ».


# Improving the Marine HF Antenna

**Erik Skovgaard, VE7MDL**

This article is dedicated to the many friends my wife and I have made thanks to Amateur Radio. Many boaters here on the west coast participate in HF boat nets during the summer. In British Columbia we have two popular nets on 80m; one in the morning and one in the evening. Partly because of the chosen times (0800 and 1800 PDT) where propagation is poor, and partly because many of the boat antennas in use are horribly inefficient, signals are often very weak. This led me to experiment with a number of different antenna configurations on my own boat. More on that later. However, what I am about to describe may also be useful for land-based stations.

Operating HF on a boat represents a challenge but it can also be highly rewarding. On the one hand boats can be awful QRM generators. Switching battery chargers and inverters are the main culprits here, so operating from a marina or at a crowded anchorage may be nearly impossible. On the other hand secluded anchorages or remote marinas may have a much lower noise level than one can hope to experience in the city. An added challenge for many boaters is that, in addition to operating on Amateur bands, it may be desirable to operate in the marine bands from 2 to 16 MHz. Of course, most boats tend to have limited space so a single HF antenna is often used.

HF antennas for pleasure craft tend to fall into two categories:

1) Sailboats usually have tall masts and a common antenna is an insulated back stay or another wire sloping at a fairly steep angle from the back of the boat to the top of the mast. The length is usually greater than 30 feet.

2) Powerboats rarely have tall masts so the normal choice here is a vertical antenna, typically 18 to 27 feet tall, made of aluminum or fibreglass.

Both types of antennas are usually attached to an automatic antenna tuner. Purists will point out that this is actually an incorrect term since we are not actually tuning the antenna. The term “antenna coupler” is sometimes used instead. Still, I will use the term antenna tuner here. Common to most antenna tuners/couplers is that they work over a limited range of impedances and reactances. In practice, this means that the tuner cannot get a good match on all the desired frequencies. Keep in mind that most HF transceivers need to “see” an antenna system of about 25 to 100 ohms, but preferably close to 50 ohms.

## GROUND, GROUND, GROUND

Both of the aforementioned antennas are monopoles. This means that they work against ground or a counterpoise. Sea water – as long as it is salt water – is actually a pretty good ground so in that regard the salt water boater should, in theory, have an advantage over land stations that may be stuck with a medium to poor ground. The problem on boats is that the antenna system is often not connected well to the sea. Boats hulls made out of steel or aluminum will have a near perfect connection to the sea, but few pleasure craft are made with these materials.

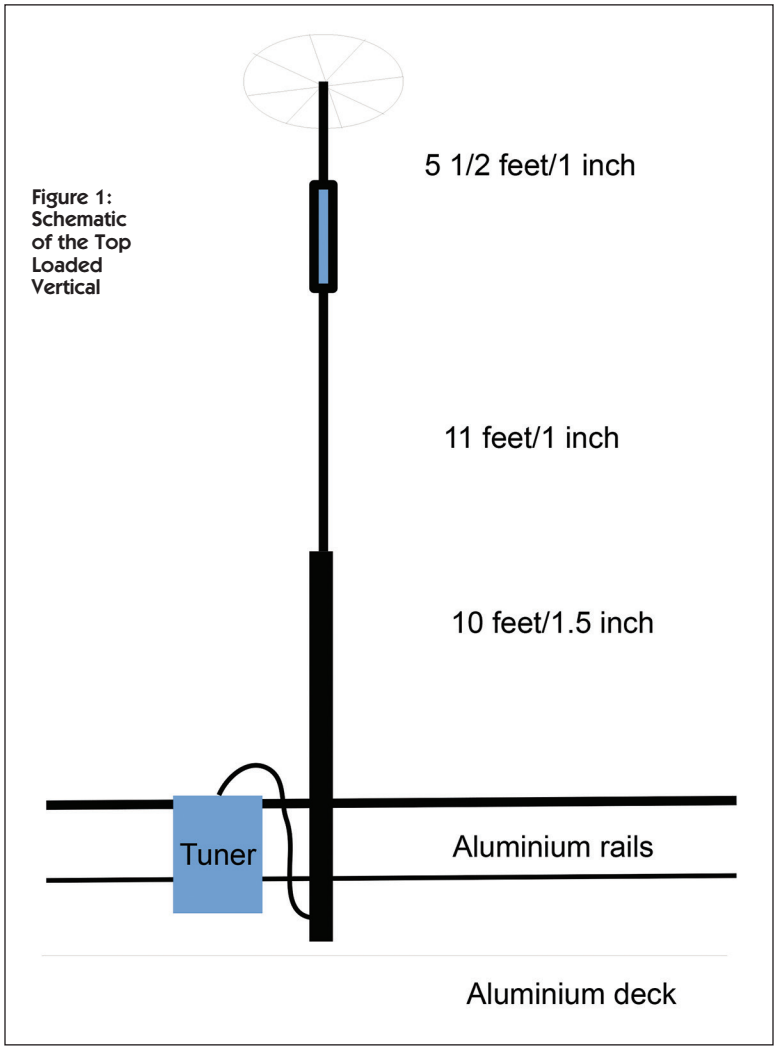



Figure 1: Schematic of the Top Loaded Vertical

The most common boat hulls are fibreglass which unfortunately happens to be a very good insulator.

Why is a good ground even necessary? The answer is best given by the following simple formula:

$Eff_{Ant} = 100*R_{rad}/(R_{rad}+R_g+R_A)$; where

- $Eff_{Ant}$ is the antenna efficiency in %,
- $R_{rad}$ is the radiation resistance
- $R_g$ is the ground resistance
- $R_A$ is the DC resistance in the antenna and loading coil or antenna tuner and losses in connections

In other words, the higher the ground resistance is relative to the radiation resistance, the worse the performance.

Full-size (quarter-wavelength) radials will work fine, of course, and the more, the better, but few boats are able to find room for radials that will work on 80 metres. In addition, many different lengths would probably be required to ensure full frequency coverage. Keep in mind that we are talking HF (well, perhaps MF for some marine frequencies) so the connection to the sea need not be a pure DC connection. A good capacitive connection will do.

We can even calculate a rough desired value for this capacitor. Using an Xc of 5 ohms as an example (chosen to make the ground resistance small compared to the radiation resistance), let's quickly review:

$Xc=1/(2Pi*f* C)$ or by rearranging the formula a little: $C=1/(2Pi*f*Xc)$

For a frequency of 3.5 MHz, we get a desired capacity value of about 10 nF. Higher is better, of course, since this would lower the ground resistance.

So how can this be achieved in practice? Well, let's start with the things that work poorly. One of these is a commercially-available product that is a small (relative to the wavelength at most HF frequencies) porous metal plate. The idea is that it has a large interface surface to sea water, which should provide a good ground. This may work in the beginning, provided the connection to the antenna tuner is of sufficient gauge – such as #6 or greater – or wide copper strapping, but as time goes by its pores will fill with growth and slime from the sea and become less effective. Some people have used a piece of chicken fence that can be thrown overboard while at anchor. I am not convinced that this approach is very effective based purely on experience with, granted, a limited number of stations.

The stations that seem to generate the best signal use copper strips run along the inside of (or sometimes embedded in) the hull at the water line. Connecting metal fuel and water tanks, engine and copper plumbing to the antenna tuner helps too. Keeping the copper strips at the water line is important, by the way.

HF does not penetrate deeply into salt water, so just connecting a deep keel that is common on sailboats, may not work well.

Just for fun, let's calculate approximately how big a plate you need to get a good ground. The formula for capacitance for a pair of plates is:

$C=8.85*10^{-12}$ KA/d; where

- C is the capacitance in Farads,
- A is the area in metres$^2$
- K is the dielectric constant, which I'll assume is about 4 for fibreglass
- d is the plate spacing in metres

Rearranging the formula a little we get:

$A=C*d/(8.85*K*\ 10^{-12})$

Assuming that the fibreglass hull is about 4 centimetres thick and that salt water is as good as copper, we get 11 m$^2$ or two 0.5 metre strips each 11 metres long – unlikely, but not impossible for most boats. On the other hand, if we move the plate outside – in direct contact with salt water or perhaps just covered with a thin layer of gel coat – we immediately reduce the plate size by a factor of 10 or better.

Note also that the plate must be connected to the ground side of the antenna tuner with thick braid in order to minimize the inductive losses. As you can see, getting a perfect ground is not simple, but I would still recommend aiming for the best ground you can get. Hopefully, the numbers here provide some food for thought. You can take solace in the fact that even an imperfect ground may work albeit with loss (see Reference 5 on page 22).

## TUNING RANGE

Given that the boat antenna is quite short for some bands, we must accept the inherent losses and even a much smaller tuning range and resort to an antenna tuner. Most automatic antenna tuners have a limited tuning range and will have a hard time achieving a match if the SWR is much above 10:1.

A short antenna relative to the wavelength will exhibit a very low radiation resistance (see References 1 and 6). For instance, an 18-foot whip will have a radiation resistance of about 1.6 ohms on 80 metres. This is the reason screwdriver antennas have become popular for mobile use: they bring the radiation resistance much closer to the desired value. I did try such an antenna on my boat and had reasonably good results, but nowhere near the efficiency I wanted on 80 metres – even with a much longer whip than is normally used on cars. As far as I can tell, the reason for the poor performance was that the matching coil (the screwdriver coil) was low on the antenna, which reduced the length of the part of the antenna that carries the greatest current

Figure 2: The Top Hat in the Air

and, therefore, contributes more to the efficacy. Ground and ohmic losses should remain constant even if the loading coil is moved up.

We must also consider operating on higher frequencies. The same 18-foot whip could end up being a half-wavelength on 12 metres and the feedpoint impedance would be very high. This is where Reference 3 comes in. It turns out that the thicker the antenna, the lower the impedance will be at a half-wavelength and any multiple of a half-wavelength. For instance, a 0.5 mm wire will have an impedance of 5,000 ohms at a half-wavelength. If we increase the thickness to 45 millimetres, the half-wave impedance drops to a maximum of 1,000 ohms. This is a substantial drop that will allow the antenna tuner to operate over a larger frequency range.

It may not be possible for a small boat to use a 45 millimetre pipe as an antenna, but the general principle still holds: use as thick an antenna as possible.

This brings up a point. Some of the commercial HF antennas for boats are made of fibreglass with an embedded wire. However, the wire is very thin so it would be better to use the antennas made of aluminum pipe (typically about one inch thick).

Another option is to make an antenna that tapers by using a fairly thick pipe on the bottom and inserting one or more smaller pipes on top.

Telescoping aluminum tubing is available at a reasonable price from several vendors. If you happen to have one of the fibreglass antennas, you can add a couple of wires in parallel – effectively making it wider. So we have a fairly simple way to mitigate the high impedance part of the antenna.

Now let's see what we can do about the low end. The traditional approach in mobile antennas is to use a loading coil. The loading coil can be at the bottom or in the middle. The popular screwdriver antennas are a bit of a compromise in that they typically have a short lower part (which, incidentally, is made of a thick pipe) and a longer whip on top of the coil. This gives a surprising efficiency for the size as witnessed by the many mobile HF operators.

Hi-Q antennas, a supplier of one of the more popular screwdriver antennas, suggests that an efficiency of 8% on 80 metres can be achieved with the Hi-Q-4/80 and a 102-inch whip mounted on a car. That is 9 dB down from a full quarter-wave on 80 metres, which is not bad. The *QEX* article (see Reference 4) backs up the number although the configuration is somewhat different.

But we can do better. By moving the coil up on the mast and adding a top hat, we can achieve a higher efficiency. In addition, since we are not restricted by height as much as the mobile operator, we can add additional efficiency by making the antenna below the coil as long as possible. A top hat mounted above the coil will serve to electrically lengthen the antenna.

## GETTING PRACTICAL

My own tests were really done in order to design an antenna that some of my friends could use. I happen to have both a tall mast, a 62-foot boat and an aluminum deck to work with so my normal antenna is about a quarter-wave long running up and down the mast with an apex about 20 feet over the deck. This makes a great NVIS antenna that gets good reports on 80 metres within a 400 kilometre range.

The test antenna was made of a 1.5-inch pipe at the base tapering to a one-inch for a total of 21 feet. On top of that I added a coil wound on a one-inch (1.5-inch OD) PVC pipe. The coil had 44 turns with 14 gauge insulated wire. On top of the coil was a 5 1/2 foot one-inch aluminum pipe with a top hat.

The top hat was made of eight spokes of 16-inch stainless steel whips (the type used in some inexpensive marine VHF antennas) with aluminum wire connecting the ends of the spokes (see Figure 1 on page 19). The aluminum deck and rails were used as ground.

It may be prudent at this point to discuss top hats (see Figure 2). I have never seen them used in the marine environment, however they are used by many Top Band operators who need a vertical antenna but lack the tower height.

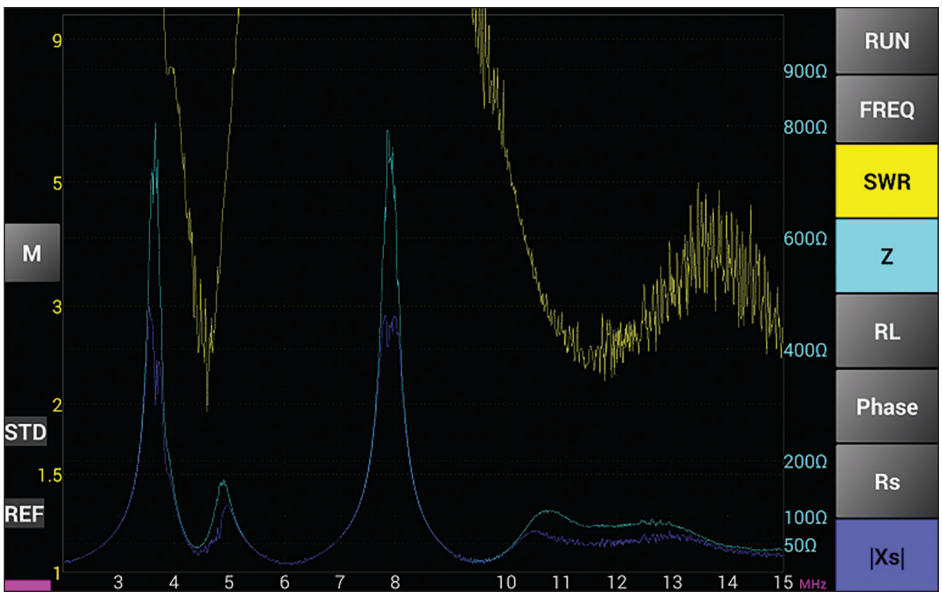



Figure 3: MiniVNA Scan from 2-15 MHz
Note: Figures 3, 4 and 6 are colour-coded and are best viewed in the eTCA on the RAC website.

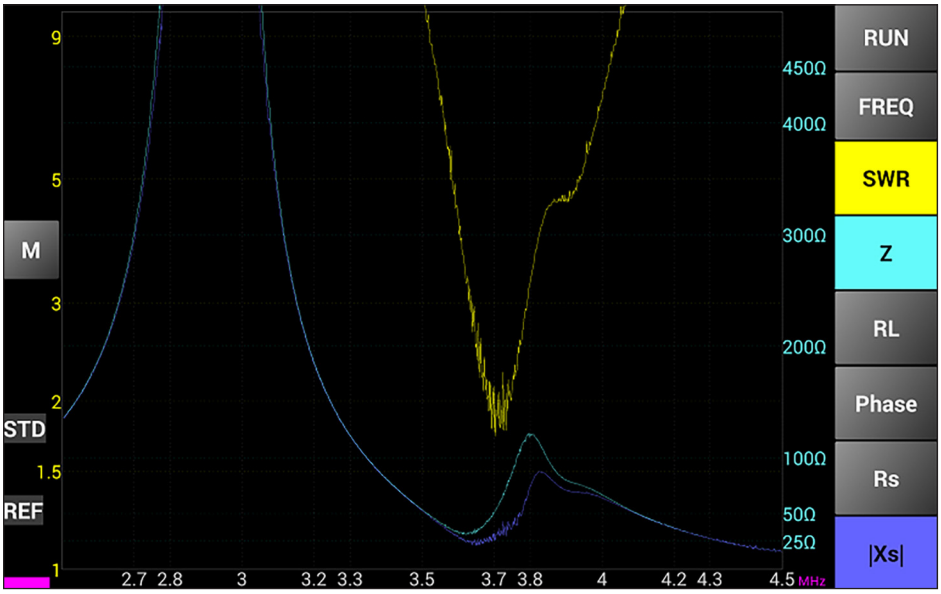



**Figure 4: Tuned on 3729 kHz**

Reference 5 briefly discusses the top hats and suggests that they may extend the electrical length of the antenna by about twice the diameter of the top hat. In addition, top hat loading increases the radiation resistance and increases the bandwidth.

The following data was measured directly at the base of the antenna using an MFJ-259B Analyzer: Best SWR at 4.607 MHz, Z=40 ohm and X=50 ohm (sign unknown). Since the antenna was a little awkward to handle, I decided to leave it at that first attempt and not tune the coil.

The other consideration was that such an antenna should be able to tune to marine frequencies as well as 80 metres, and the measured data will allow the antenna tuner to provide a match across a wide frequency range without too much loss.

I did not have a spare antenna tuner at the initial test so instead I added a loading coil consisting of 20 turns of 12 gauge wire on a one-inch PVC pipe.

A shunt coil ensures a good match.

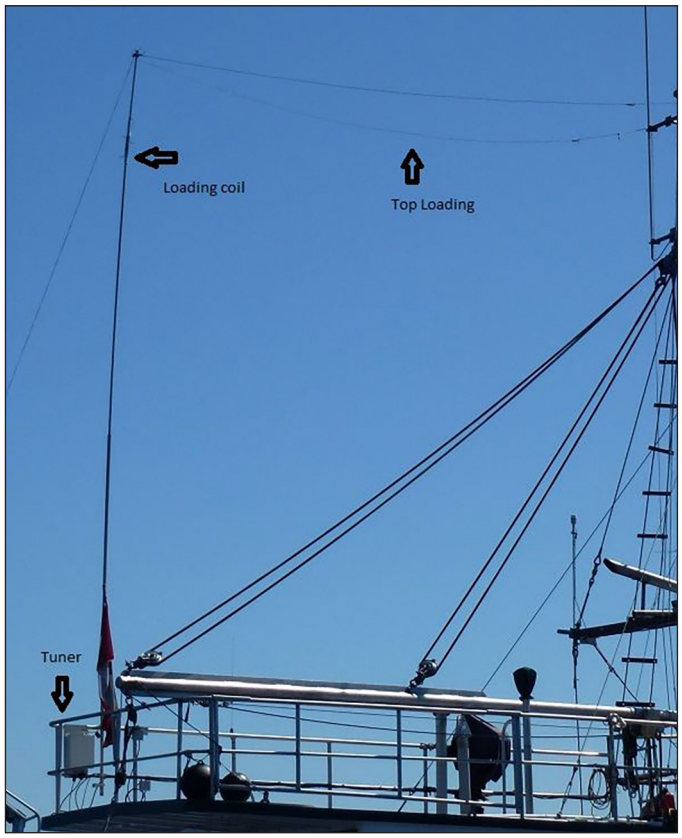



**Figure 5: Looking at the new antenna from the starboard side.**

Since the results were encouraging, an antenna tuner was later added. A monoband antenna using a similar design can be found in Reference 8.

A MiniVNA was subsequently used to scan the antenna from 2 to 15 MHz through about 30 feet of RG-213. The result is shown in Figure 3 on page 20. Note that the high impedance (Z) does not exceed 810 ohm.

So how does it work in practice? Well, other than the measurements provided above I have only made subjective signal measurements on 80 metres using the S-meter on my Elecraft K3, which is at least honest (6 dB per S-unit), but it has a resolution of only about an S-unit. An A/B switch was inserted between the antennas and the K3. Keep in mind also that the two antennas are very close to each other so some mutual influence cannot be ruled out. The BC Public Service Net is a great tool for the antenna experimenter since stations check in every evening from all over BC and Alberta.

An LDG AT-1000 antenna tuner was mounted at the base of the antenna and connected with a 30-inch 8 gauge cable. It was tuned to 3729 kHz. The MiniVNA scan shown in Figure 4 was made on 80 metres after tuning. The K3 reports SWR 1.0:1 incidentally. The K3 only looks at the impedance, apparently.

It was a big surprise that the antenna was generally at least an S-unit better on reception of most stations within British Columbia and Alberta. Sometimes the short vertical was much better (by two to three S-units) than the horizontal and sometimes the level was the same. This is likely because the horizontal reference antenna is somewhat directional. Unsurprisingly, the difference seems to depend on propagation.

It should also be noted that the initial tests were performed at a marina with aluminum boat houses and other boats in the immediate vicinity. It was no great revelation that the vertical antenna picked up significantly more noise than the horizontal by about one S-unit, but my local noise level is always fairly high so it did not really matter. I looked forward to testing further in low noise areas this summer, besides I normally use a separate magnetic loop antenna for reception.

The tuner handles all Amateur bands from 3.5 to 14.3 MHz and the marine frequencies in the 4, 6, 8 and 12 MHz bands, but it does not tune on the MF calling frequency of 2182 kHz. It is possible that a proper marine antenna tuner may be able to do a better job. A few tests on 40 metres showed that the antenna is slightly better than my horizontal while there was little difference on 20 metres.

According to Reference 4, it may not be necessary to have the pipe on top of the coil; instead the top hat can be placed directly on top of the coil. That makes the antenna less than 22 feet long with a good efficiency on 80 metres – a size that should be achievable for most boaters. A top hat of the described size can be made mechanically stable while still providing a low wind resistance.

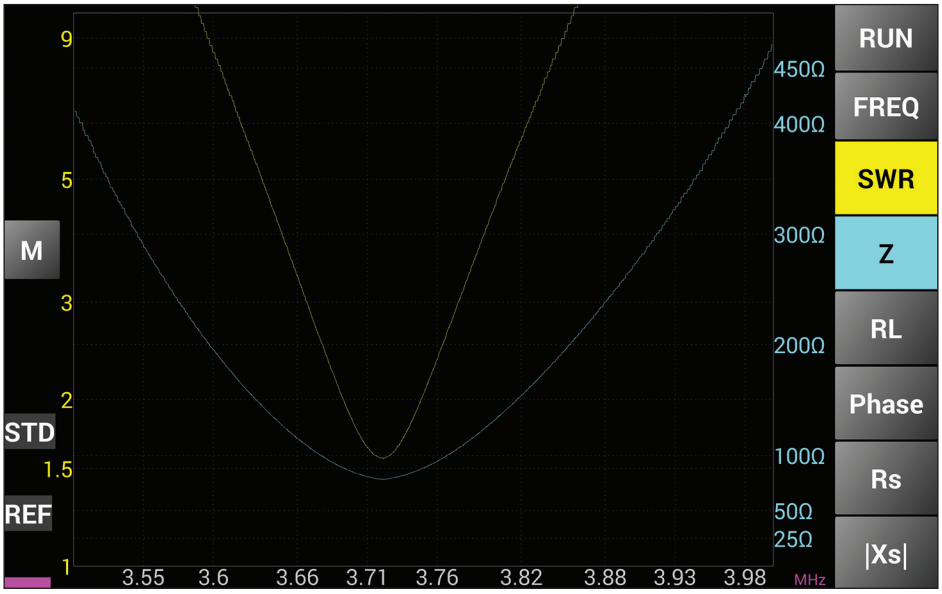



Figure 6: VNA scan of antenna with loading wires and toroid transformer

## ANOTHER IMPROVEMENT

Fast forward to July and some time on the water away from noisy marinas. It was no surprise that the vertical antenna picked up a lot of noise even in low-noise locations so another configuration was tried.

The original top hat was removed and two horizontal wires, each 16 feet long, were strung between the top of the coil and the boat's mast. The angle between the wires is approximately 20 degrees.

The noise level immediately seemed to drop about an S-unit. Note that this was done over salt water far away from cities, but with a couple of boats about 200 metres away. In addition, it was noted that the resonance point has been moved much lower to 3720 kHz.

The antenna elicits excellent reports, but is slightly directional, generating some QSB when the boat swings for anchor. On a good day the noise level on 80 metres can be as low as S1-2 without a preamp as measured on an Elecraft K3.

The antenna can be used on 40 and 20 metres as well, but will still not tune to 2182 kHz. Fortunately, the Canadian Coast Guard maintains watch on 4125 kHz so it is still possible to use the antenna for marine communications. The antenna is a keeper!

One more configuration was tried using an impedance transformer built on a 2.4-inch ferrite toroid from an old Cushcraft antenna (mix unknown). Eight turns of silver-plated coax with Teflon insulation was used to convert the roughly 12-ohm impedance closer to 50-ohm (see Reference 7 for details).

The SWR at 3720 kHz is now about 1.6:1 without the antenna tuner (1.4:1 at the K3), but the tuner is required at frequencies more than 30 kHz from this resonance point.

The downside of using the toroid transformer is that the antenna now is pretty much only usable on 75 metres plus the marine 4 MHz band. Still, the antenna gets excellent reports. Figure 6 shows a VNA scan of the antenna with loading wires and a toroid transformer.

It is interesting to note that the scan seems to be much more clearly defined, probably due to a lower noise pickup and away from powerful AM stations.

A system of relays could be used to bypass the impedance transformer or shunt coils could be added to allow the antenna to work on several bands. See Reference 8 for shunt coil examples.

## SUMMARY

Boat antenna design as well as antenna design for limited space will benefit from heeding the essence of the referenced papers:

- Using thicker antenna material (within reason) results in decreasing impedance range and widens the bandwidth.
- A loading coil must be located as high as possible on the antenna and the coil itself seems to radiate. But watch out for high voltages if using high power (see Reference 9).
- Adding a top hat to an antenna results in a longer electrical length and widens the bandwidth.

While this was intended to be just a small test of "yet another antenna", the surprisingly good results means that the antenna will be the preferred antenna on the boat for 80 metres.

The same principles can of course be applied to land stations that are faced with limited space and height restrictions. Just remember to add a good ground or counterpoise!

## REFERENCES

1) *The ARRL Antenna Handbook*, 18th Edition, page 16-2.

2) Charles J. Michaels, W7XC: "Evolution of the Short Top-Loaded Vertical", *Vertical Antenna Classics*, 1st Edition, ARRL.

3) Marting Ehrenfried, G8JNJ: "A New Design of Broadband HF Vertical Antenna", *RadCom,* May 2014.

4) Barry A Boothe, W9UCW: "Actual Measured Performance of Short, Loaded Antennas, Part 2", *QEX* March/April 2014.

5) Jerry Sevick, W2FMI: "Short Ground-Radial Systems for Short Verticals", *Vertical Antenna Classics*, 1st Edition, ARRL.

6) Capt. Paul H. Lee, N6PL: *The Amateur Radio Vertical Antenna Handbook*, Chapter 3: Base Impedances and Methods of Feeding and Matching.

7) Jerry Sevick, W2FMI: *Transmission Line Transformers*, Chapter 6 (1:4 Unbalanced-to-Unbalanced Transformer Desgins), ARRL 1990.

8) *The ARRL Handbook for Radio Communications*, 2011: Top-Loaded Low-Band Antenna, page 21.29.

9) *The ARRL Handbook for Radio Communications*, 2014, section 21.8.

*Erik Skovgaard, VE7MDL, has been licensed since 1963, which officially makes him an OT. During this time he has been active on just about every available mode although today he prefers some of the digital modes.*

*He has also been an active boater since 1986, a boating safety, navigation and radio instructor for the Canadian Power and Sail Squadrons and an active member of the Royal Canadian Marine Search and Rescue.*

*Erik is an author of books on marine communications and navigation.*

*He currently lives aboard a 62-foot converted fishing vessel "BC Girl" on the Fraser River, in British Columbia. He can be contacted at ve7mdl@gmail.com.*

# QUA – A TOPICAL DIGEST

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### The RAC Canada Day

Contest and Winter Contest are amongst my favourite radio events of the year and I enjoy participating in them in the all band, single operator QRP category.

I find these contests offer a great opportunity to improve my operating skills in a relatively low-key contest situation.

As a QRP operator using a wire antenna from near the west coast, I get excited by contacts with stations all across Canada.

Most significantly, I like the contacts these contests provide with other operators, some of whom I know, perhaps only through brief contest exchanges, but others from previous QSOs or from a meeting in person.

It always give me special pleasure to have an exchange with one of these recognizable stations.

The 2014 RAC Winter Contest was an especially memorable one for me. During Christmas my wife and I were visiting our daughter in Whitehorse and, during the time of the contest, she had arranged that we spend a few days at a cabin accessible only by ski or snowshoe.

Consequently, my participation in the Winter Contest depended on my willingness to bring along some radio equipment. Since we planned to pull our supplies behind us on sleds I knew the extra weight and space requirements of my Yaesu FT-817, small lead-acid battery and Spiderpole antenna support would not be a problem. I left behind the small netbook computer that I usually use for logging. I don't get so many contacts in my style of contest operation that the lack of a computer is too big a detriment, and I had found from previous experience that providing power for the netbook can be a problem.

As has always been the case, I was again really impressed with the skill and courtesy of other operators. The band conditions during the contest seemed to be very good. In my case they were greatly assisted by a really low noise level. Without any nearby power lines or neighbouring homes or businesses, the noise level was unmeasurable on the S-meter. Wouldn't it be nice if we all had such conditions! It really made me think about what a precious resource an unpolluted RF spectrum is and – as for so many of our precious resources – how careless we are of it.

### DIRECT DIGITAL SYNTHESIS AND SURFACE MOUNT PARTS

In an ongoing quest to make a wide ranging VFO, I ordered two DDS circuit boards from eBay. These were quite an amazing value: the two circuit boards cost $20 delivered and they included a 125 MHz crystal oscillator, a mounted AD9850 DDS chip and other associated parts. A single AD9850 is priced at more than $30; and I can tell you from experience that it is not easy to connect this 28-pin SSOP surface mount part in a circuit using the usual homebrew techniques.

When I went to use one of these circuit boards, however, I was disappointed to find no output from it. After some experimentation I determined that the problem was an intermittent operation of the board's 125 MHz oscillator. Since 125 MHz crystal oscillators are inexpensive (about $3), I included one in my next parts order. With the new part in hand there remained the problem of removing the existing oscillator. I tried removing all the solder I could with a solder sucker and desoldering braid and then, while heat was applied, prying underneath the oscillator with the tip of an Xacto knife. This did not work.

Because I had some previous success soldering surface mount components using a hot air gun, I thought this tool might provide a method by which the oscillator could be removed. I was concerned about using a hot air gun, however, because of the oscillator's proximity to a whole string of capacitors that might also be removed

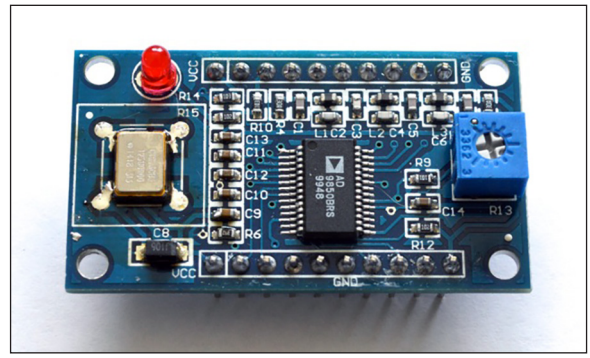



**Figure 1: The DDS circuit board. The crystal oscillator is the shiny rectangular part on the left, just below the red LED. Its position on the board near the left-hand edge facilitated its removal.**

**Figure 2: A hot air gun with a very make shift air director.**

as well as an LED that could be melted, but I thought there might be a chance of success if the hot air could be directed to just the one area of the board. To do this I made a funnel shaped arrangement from aluminum foil and fastened it to the end of a hot air gun. With this rather strange looking contraption I could direct the hot air directly onto the oscillator and, to my delight, after a few seconds of heating, the oscillator (and nothing else) blew off the board from the force of air. I was very pleased too that, with the new part installed, the DDS board works as it should.

Figure 1 above shows the DDS board with its new crystal oscillator. Figure 2 shows the modified hot air gun.

### RSGB BOOKS: A CAUTIONARY TALE

I was very pleased to notice in the January-February 2015 TCA (see Inside Front Cover) that RAC members can now order Radio Society of Great Britain (RSGB) books at a discount price. There are some really excellent books amongst their offerings.

Two that I like really well are *Homebrew Cookbook* and *Building a Transceiver*, both written by Eamon Skelton, EI9GQ. Eamon writes the "Homebrew" column in the RSGB journal *RadCom* and these books are compiled from the columns.

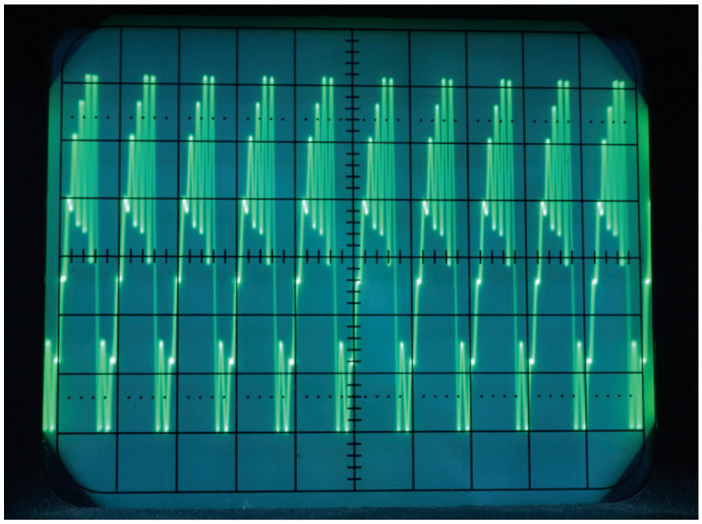


**Figure 3: An 8.2 MHz signal superimposed on a lower frequency oscillation. Vertical scale 2 volts per division.**

As such they have the excellent ideas, circuits and explanations of the columns with some editing to put several years of material into a mostly logical order.

I've been using *Building a Transceiver* a lot lately, because it has inspired me to try doing just that. I don't know if I'll ever finish but I'm certainly learning a great deal along the way. While building the oscillator/exciter module of my transceiver, for example, I followed Eamon's circuit, testing each section as I completed it. Everything looked good up to the final stage.

Eamon's transceiver circuit uses a 10.7 MHz intermediate frequency, whereas mine operates at 8.2 MHz so I calculated new values for the components needed to match the output impedance to 50 ohms and, with the circuit completed, I connected my oscilloscope to the output.

To my dismay, instead of the nice sine wave I had seen up to this point, the oscilloscope showed an 8.2 MHz signal superimposed on a very large amplitude (about 12 volts peak to peak) lower frequency one. You can see this result in Figure 3 above.

I'm sure that many of you have already recognized my mistake, but it took me an hour or so of measuring and testing before I thought to put a 50 ohm load on the output so as to provide a proper load to the pi matching network for which I had calculated the values. Anyway, the results were now much better as you can see in Figure 4.

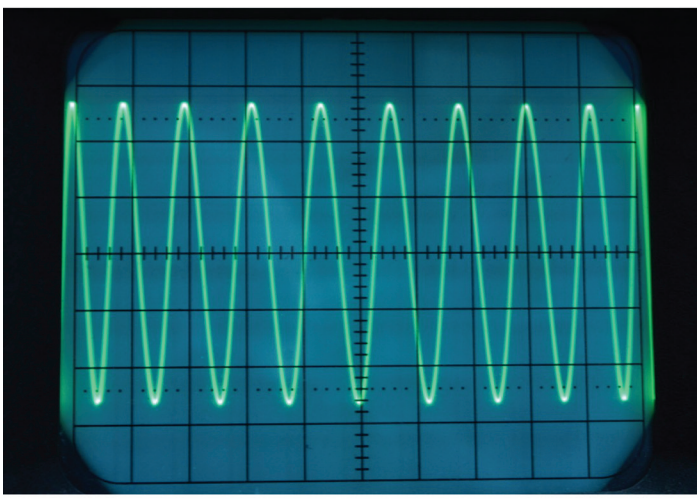


**Figure 4: The 8.2 MHz intermediate frequency output matched to 50 ohms. The amplitude is about 2.7 volts peak to peak (vertical scale 0.5 volts per division).**

The transistor in this amplifier is an inexpensive BC548. Damaging it by operating into an open circuit would be annoying but easily fixed. You can certainly see why it's not a good idea to operate your 100-watt transmitter and its expensive high power transistors without a proper load!

As we move into better spring and summer weather, I plan to do some experimenting with portable antennas and in the next column I will present my results to you. In the meantime I hope all of you enjoy good propagation on the Amateur bands.

## BRIT FADER SCHOLARSHIP TRUST ANNOUNCES 2015 CALL FOR APPLICATIONS

The Brit Fader Scholarship was established in 1993 by the Halifax Amateur Radio Club and endowed through the generosity of Club members and Radio Amateurs throughout the Maritime Provinces of Canada. This scholarship is intended exclusively for post-secondary educational use, including graduate studies, to provide assistance with the cost of tuition, room, board, books and/or other fees essential to the advanced education of the recipient. The amount of the 2015 award will be $1000.

Applicant must be a citizen of Canada, but without regard to gender, race, national origin, handicap status or any other factor and must be performing at a high academic level.

Applicant must hold an active Basic Class or higher grade of Canadian Amateur Radio licence.

This Scholarship will be provided for attendance at an accredited Canadian post-secondary technical school, college or university, with preference given to applicants who have been accepted into a program in the field of electronics or electrical engineering.

Application submissions must be postmarked no later than July 11, 2015.

A zipped application package (Criteria; Application Form; Reference Form) is available for downloading from the Halifax ARC website at:
http://halifax-arc.org/britfaderscholarship

*D. Howard Dickson, VE1DHD*
*for the Brit Fader Scholarship Committee*
*Halifax Amateur Radio Club*


# THE FIRST VO PROVINCIAL HAMFEST: "THE HAM-E-NANNY" 1964

*Submitted by Frank Davis, VO1HP*

Nathan Goff Penney, VO1NP, became a Silent Key at age 92 in 2012.

Nathan was a Past President of the Society of Newfoundland Radio Amateurs (SONRA) and back in the day was quite active in the Canadian Amateur Radio Federation (CARF) as a Director from Newfoundland. I had been friends with "Nate" and his wife Grace, VO1NB, for many years and served on the SONRA Executive when he was President before I assumed the President's position myself in the late 1980s.

Nate was a colourful character and always cut a wide swath through Amateur Radio circles in Newfoundland. He remained active on the air and in several clubs for many years into his retirement. He left an endowment in the name of SONRA to establish a scholarship, which is now in place at the Memorial University of Newfoundland (MUN) for Engineering students.

When Nate passed away his family (daughter Mavis, VO2MP and son Frank, VO1FP) gave me his old radio photo albums. I didn't go through the albums right away but when I did, I discovered this photo of a ham gathering. I recognized two hams in the shot and wondered where and when it was taken and who they all were. In the fall of 2014 I circulated the photo to a few hams that I knew who are still here and who were active in 1965.

The result of my research is presented here and maybe you may know some of the people in this photo. The photo is of 28 of the attendees at the very first Newfoundland Provincial Hamfest – locally dubbed The "Ham-e-nanny" – that was held in Terra Nova National Park in Newfoundland in July 1964. According to Fred Lawrence, VE1FW, there were many more at the event who never got into the photo for some reason. Subsequent hamfests were held over the years in central Newfoundland but eventually fell by the wayside until 2014, when a well attended event was held in Gander. The 2014 VO Hamfest was covered in a previous issue of TCA.

At this writing in early March 2015 only one face in the photo is unidentified. He may be a VE2 (back row, 5th from right).

People who helped to identify the faces are: Fred Lawrence, VE1FW (ex-VO1CX; Fred was able to name all but a few of the faces); Mac Moss Jr., VO1AT; Bill Coffen, VO1KM; Don Blackmore, VO1GE; John Hiscock, VO1BE; Rolly Peddle, VE6RL (ex-VO1BD); and Frank Davis, VO1HP. The names and location information, where possible, were extracted from the 1965 SONRA VO Callbook and the VO Silent Key info from a list maintained by Joe Craig, VO1NA, available online at: http://www.ucs.mun.ca/~jcraig/skvo.txt

Here is a listing of the hams in the photo and their known current status. If you know the status of any of these people please advise Frank, VO1HP, so that the data can be corrected.

**Back:** Ralph Shaw, VO1BR (St. John's; now VE1ZT in Nova Scotia); John Tessier, VO1FX (St. John's; now SK); John Dyke, VO1DC (Gander; now VE1YQX?); Fred Biggs, VO1DZ (Gander; now SK); Doug Hoddinott, VO1GV (St. John's; now SK); Bill Walsh, VO1HI (Torbay; now SK); Gord Scorgie, VO1EM (RCMP St.John's; now VE5GS? Sask); Fred Lawrence, VO1CX (Pouch Cove; now VE1FW NS); Clyde Barrett, VO1AQ (Mount Pearl; now SK); Mac Moss Sr., VO1CE (Eastport; now SK); William "Scotty" Scott, VO1DJ (now SK); Bill Parsons, VO1FQ (St. John's; now SK); VE2? (possible RCA Engineer@ CJON-TV?); Hector Chaulk, VO1HN (Charlottetown NL); Gord Humpherys, VO1CA (RCMP St. John's; now ?); Lloyd Arnold, VO1GI (Grand Falls; now SK); Gerry LeDrew, VO1ET (Grand Falls; now SK).

**Front:** Jim Jackson, VO1EX (Grand Falls); Bob Carter, VO1BQ (Port Aux Basques; now SK); Kevin Ryan, VO1EZ (St. John's; now?); Neville Squire, VO1GA (Eastport; now VO1SQ Portugal Cove); Maurice Hillier, VO1BM (Deer Lake; now ?); Howard Ivany, VO1GH (Windsor; now?); Wilson Day, VO1FP (St. John's; now SK); Dave George, VO1DS (St. John's; now ?); John Verbree, VO1DU (St. John's; now SK); Bob Lewis (Clarence Engelbrecht), VO1BL (St. John's; now SK); John Christie, VE0MN (also VO1FC; now? possibly in VE7)

# A TALE OF TWO MARCONI PAIRS: R1155/T1154

**Jerry Spring, VE6TL**

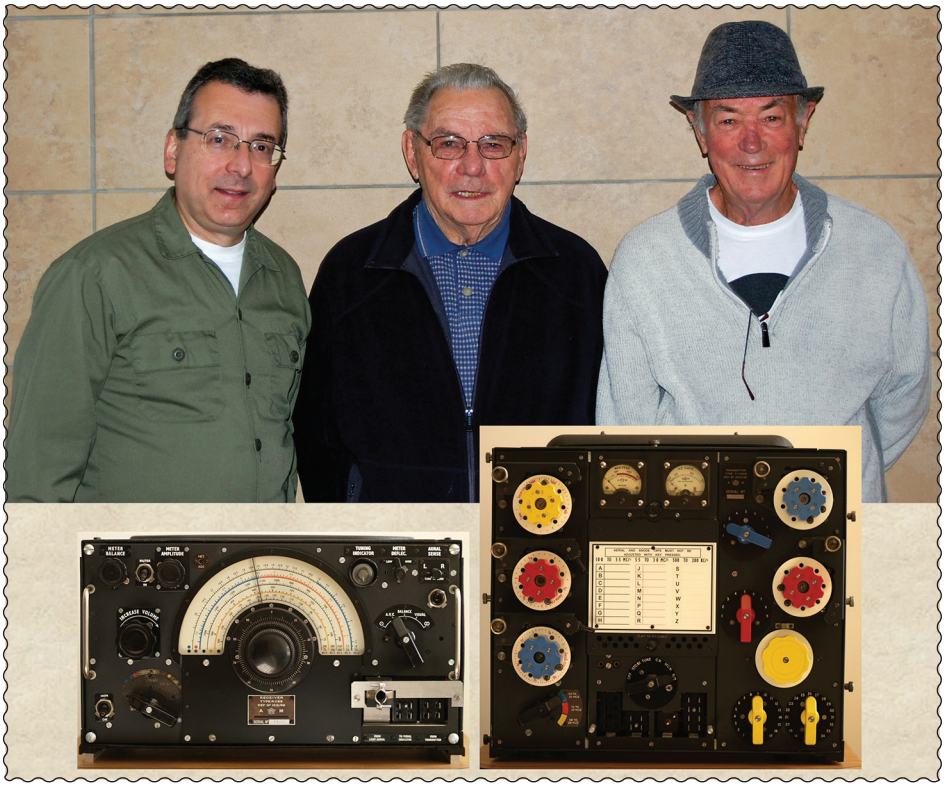
The story behind the Marconi R1155/T1154 receiver-transmitter pair is a fascinating one. Traditional lore has it that they were designed on a napkin over lunch and the first units came off the assembly line in record time. The radios provided the primary means of communication for British bombers in WWII, being installed in a variety of aircraft.

After the war, they were stripped from planes and either sent to the trash heap or recycled among the Amateur Radio community for a few dollars each. Some estimate that as many as 80,000 R1155 receivers were built, as each plane was outfitted with two of them. Far fewer T1154 transmitters were built and they are considered quite rare today. The serial numbers engraved on the front plate are not indicative of the order built or the model number, as the British did not wish to give anything away in terms of production rates or modifications.

My first experience with the R1155 receiver came in 1972, when I was 15 years old and growing up in Windsor, Ontario. I had just met someone at school who was a year older and who had just received his Amateur Radio licence. In those days, you needed to pass the Morse Code test to get your ticket and I was keen on learning. After developing some speed with my friend's LP records, someone in the local Amateur Radio club suggested his R1155 could help me improve further. I remember paying $25 for the radio and fell in love with the way it looked and handled – especially with that green magic eye tube to help zero in on the signals.

The other cool thing was that the R1155 covered *two bands* below the AM broadcast band! I had always wondered what was down there and now I could find out. It didn't take long to tune in various non-directional beacons (NDBs) as these repeated their call sign at very slow Morse Code speeds. Knowing Morse was already coming in handy, but NDB listening wasn't going to help me pass the CW test.

One day, when tuning below the NDB band, I started to pick up CW that was quite fast and in groups of five characters separated by a space. After a few minutes, the station would identify itself with a three-letter call sign. It would then start up at a different speed and send another set of cypher groups. I checked with several ham buddies in town and discovered that these were American submarines in the Great Lakes sending practice CW sessions to each other.



From left: Jerry, VE6TL, Russ, VE6VK, and Phil, VE6ABW, with Phil's restored gear.

I spent many hours copying their transmissions and managed to get my code up to quite decent speeds and had no trouble passing my code tests. Before leaving home for university, I remember selling my R1155 for $30 and thinking that I had made a 20% profit.

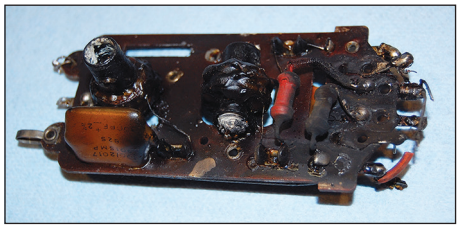
Fast-forward 35 years. After graduating from university, doing the family thing, and settling in Calgary, Alberta, I found myself once more getting involved in Amateur Radio. The hobby had changed dramatically, yet I was still attracted to the old, vintage gear from the past and soon acquired a nice collection. Then one day, I noticed that someone was selling a Marconi R1155 locally and I couldn't resist.

When I got the R1155 home, I plugged it in to the mains, hooked up an antenna and tuned it to the AM broadcast band. This radio had no speaker so I plugged in my headphones and heard a good quality audio signal coming from one of the local stations. I tuned around for five minutes and then it suddenly stopped working. Unplugging everything and opening up the radio, I immediately discovered that it was a miracle it had worked at all. The insulation on the wires was disintegrating and something appeared to be oozing out of the capacitors. There were also spiderwebs and a thick layer of dirt all over everything. In short, this radio needed work.

An online search showed quite a lot of material on the R1155 receiver. There were numerous articles that dated back to the 1950s and 60s on how to convert them to run off the mains and how to add an audio amplifier and speaker. Sure enough, the radio I had just bought had been through many of these modifications: removal of the two direction finding tubes and sockets, and mounting a transformer in their place. I also found online a scanned original operating manual, connection diagrams and several articles on restoration.

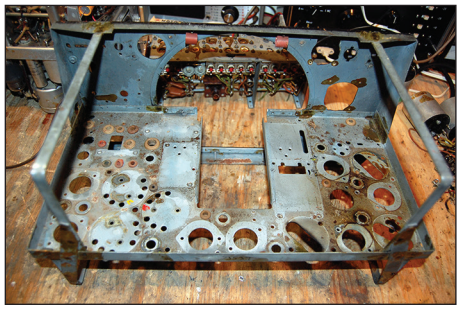
While searching for information, I eventually came across other units for sale at very reasonable prices. These would come in handy for spare parts as I decided my goal was to do a complete original restoration.

The first one to arrive was pretty well butchered. Someone had not only done the power transformer mod, but they had added an internal speaker and drilled about 100 small holes in the cabinet. The second one was pretty much original and even had the direction finding circuitry intact. Yet the insulation was crumbling and there was much rust on everything. A third unit appeared to have suffered a fire as one of the circuit boards was quite heavily charred. Could this have been caused by an enemy bullet during a dogfight?



**The charred coil circuit board R1155**

Over a period of about a year, I managed to pick up a total of five R1155s as word had gotten out that I was collecting. None of them was in working condition. It was also during this time that I discovered Peter Holtham's complete restoration guide from Australia. It was like having your prayers answered as Peter had gone to the trouble to tell you step by step how to strip everything down to bare metal and rebuild it. After receiving Peter's guide, I then set about doing the complete restoration. It took me most of my evenings over the next two winters.



**The original chassis with all components removed**

This meant stripping *everything* off the chassis, sanding and polishing the chassis, and rebuilding everything one step at a time. For example, the small cylindrical triple 0.01uF capacitors had to be stripped of their original contents and then new capacitors inserted in the cylinders and remounted on the chassis. The coil box had to be completely rebuilt, which is something that resembles a spiderweb full of random objects. The master switch had to be completely rebuilt, which took a month all on its own.

It all gave me cause to wonder how the radio ever worked in the first place. More importantly, would it ever work again?!

*At the end of the second winter, it was completed as you can see in the photo on the right.*


It was now time to plug in an external power supply, hook up an antenna and see if the radio would work. I had never before attempted a restoration of such magnitude and had little confidence. Sure enough, silence!

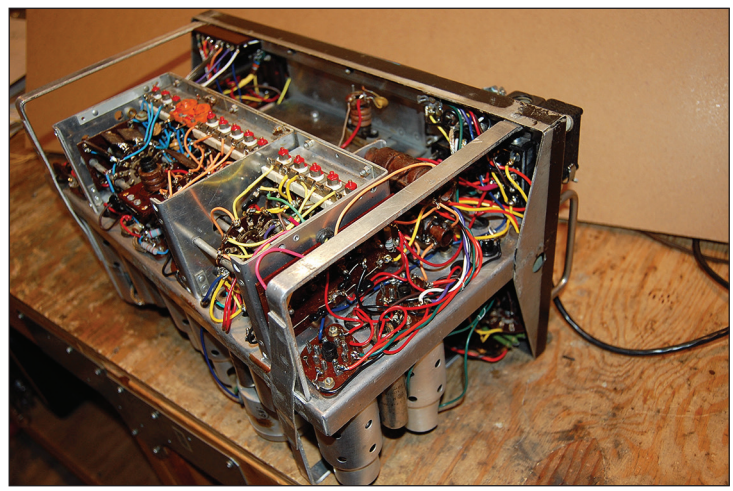
After several hours of detective work, I found two mistakes and finally got it working! I then did an alignment and found all bands to be working – more or less. Over a period of about a year, I found several intermittent faults with the radio and slowly worked out all the bugs.

During that time, I also built an external power supply and audio amplifier with built-in speaker and headphone jack. Of course, I used vacuum tubes and put handles on the cabinet to match the radio. My friend Phil, VE6ABW, helped with the construction of the cabinet and also with much troubleshooting of the radio and power supply. I really couldn't have done it without his guidance and expertise. More on Phil later.

Following the completion of the R1155, I noticed one day that someone was selling the companion T1154 transmitter on eBay. He was asking $500, which I thought was a bit much. But after some research, I discovered that this was pretty much the going price for a decent one. His ad didn't sell but after seeing that he was from Edmonton, I asked around and found out who he was. It turned out that he had inherited about 20 of the units from his dad, who had bought them surplus from the Royal Canadian Air Force (RCAF), complete in their original crates. They sat in a garage for years, with some exposed to water and who knows what.

A few summers ago, my buddy Mike, VE6FX, and I visited him in Edmonton. I found a unit that looked to be in excellent condition and which still had the inspection tag from the RCAF on it. Upon closer inspection, I discovered broken tubes inside. We then searched a number of units and came up with tubes that at least weren't physically broken. Before paying my $500, he offered another unit that was in much poorer condition for a fraction of the price. He convinced me that it would be good to have it for spare parts, if for nothing else. I agreed. So Mike and I dragged two transmitters and their crates back to Calgary. The crates were in fairly poor shape and would also need restoring.

On the drive back to Calgary, I began to formulate a plan. Since the transmitters were quite heavy and hard to carry up and down stairs, I decided to give Phil a call. I offered him the second transmitter in exchange for helping me restore the first one – or at least to get it going. Phil lives in a town about an hour away from my house so the next day I took both units to Phil's house, never having unloaded them from the car. We placed them on the workbench in Phil's garage and eagerly began to inspect them. Mine seemed to be in much better shape and had virtually no rust on it.



**Above: Top view from rear; At right: Bottom view with exposed coil box**

Phil's, by contrast, seemed to have sat in water or in a very damp place as most of the solder joints appeared somewhat corroded. The other difference was that Phil's chassis was aluminum, while mine was steel. His would have been used in aircraft and mine would have stayed on land or perhaps gone to sea.

It wasn't long after Phil started working on my T1154 that he put power to it and saw that it worked straight away. Here was a unit that had sat in a box in a cold, Edmonton garage for nearly 70 years and only needed a slight cleaning with a cloth! I then told Phil that he could hang onto my unit to use as a guide for reassembling his as he had decided to completely rebuild his transmitter. He also used a local shop to ultrasonically clean some of the components. It seems like it was only a few weeks before Phil had finished rebuilding his transmitter.

After being hooked on the T1154, I offered Phil my remaining R1155 receiver units so that he could scavenge enough parts to build a complete working one of his own.

*My new goal was to have two complete pairs of working units and eventually have them talk to each other in what would probably be the first QSO between such pairs since the war.*

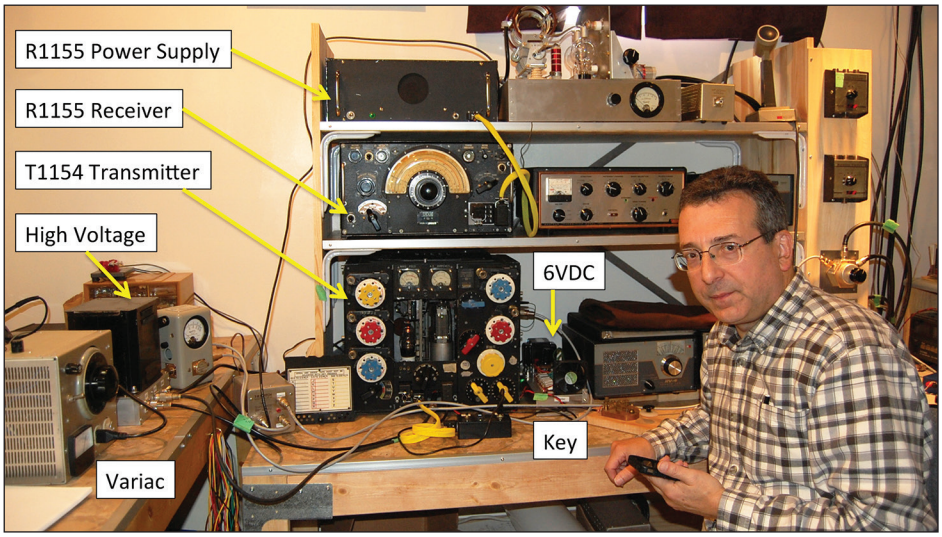
Phil agreed to the proposal and on New Year's Eve 2013, Mike and I brought over my remaining collection of receivers over to his house. As for Phil, I've never met anyone who has such a keen eye for detail and such high standards when it comes to restoring equipment. His knowledge of electronics would rival most handbooks – and most things he completes are better than new.

So when Phil took on these projects, he found a source for the British Association (BA) screws and spent quite a bit of money getting things to look perfect. I also loaned Phil my restoration guide and made him a copy of the original schematic that I had scanned and printed at a much bigger scale on the 42-inch plotter at the office.

The next day, we learned that Phil was in the hospital having heart bypass surgery.

Remarkably, Phil worked on the R1155 restoration over the next six months, after which time both the restorer and "restoree" appeared much improved.

While Phil was restoring his receiver, I decided to restore the wooden crate that my transmitter had come in. The bottom of the crate had pretty much disintegrated due to water damage and Phil cut a couple pieces of plywood to fit.




**The setup as I (VE6TL) worked Russ, VE6VK, for the first time.**

The corners of the crate were made of metal but were rusting away and needed repair. I sanded them down, and repainted them with enamel black paint to look original.

I then took the top of the crate to the local paint store and got a perfect Royal Air Force (RAF) grey match. Based on a suggestion from Mike, VE6FX, before painting the crate I bought some masking paint (much like rubber cement) and went over all the stenciled lettering on the outside. After painting with the grey paint, I used an Exacto knife to pull away the paint and expose the original lettering. Phil eventually restored his crate too, using the remaining paint I had bought.

After completing our crates, Phil mentioned to me that I would need a 6VDC regulated power supply capable of handling a minimum of 7A, just for the T1154 transmitter. The 6VDC was needed to drive the filaments of the four tubes, as well as the heavy duty relays. Following a design from Phil (he had built his own), I completed the 6VDC supply in a few weeks.

In June 2014, Phil and I assembled both receivers and transmitters in his shack and tested everything out. We had also built controller boxes to interface with the transmitter so that you can plug in a straight key to do CW, or a carbon microphone for amplitude (suppressor grid) modulation. It turned out that I was having a problem with the high voltage and couldn't get my transmitter to work. Phil had built the high voltage supply but I had modified it as the HT, on the transmitter, is not grounded.

Phil and I were having all sorts of problems trying to figure out what was wrong, when I suggested something about the ground not seeming right.

Phil then went to hook up an external ground and got an 800-volt poke, which led to some quite colourful language and an accusation that I was trying to kill him! (We had plugged the transformer into a Variac and had it turned down from the full 1200 VDC output.) It turned out that I had missed lifting a ground connection in the rectifier circuit. Once Phil lifted the connection, everything worked fine. It did, however, leave me feeling quite nervous about turning on the 1200V supply when I got it home.

The final gadget to build to make the transmitter operational was a switch box for the key or microphone. Phil managed to find a mistake in the original schematic, which had two wires reversed, so after correcting for that everything seemed to work just fine.

On August 30, 2014, it was time to put everything to the test. Phil invited Russ, VE6VK, to his shack to operate CW. Russ served in the Royal Australian Air Force (RAAF) during WWII, where he enlisted in the army a week after turning 18 years old. He then joined the RAAF two years later and was known as a WAG or Wireless Airgunner, where he became intimately familiar with these radios.


**The restored crate**

Russ, VE6VK, making the historic QSO.

Russ turned 90 in April 2014 and is still chasing DX even though he is #3 in the world in Islands on the Air (IOTA) confirmations.

In my shack, I invited Mike, VE6FX, to witness the moment. Mike was a crew chief in the RCAF in Winnipeg and contributed to the project in many ways. He offered help and advice in restoring the crate and cabinets and he supplied moral support.

It was a Saturday morning, about 11 am local time, and we agreed to meet on 7.060 MHz. I turned everything on so that the equipment could stabilize for at least half an hour. Phil was using a dipole on 40m and his QTH is located about 40 miles from mine. I use an inverted vee on 40m, which is supported by my 40-foot tower.

I started by sending a series of "vees" with Russ listening on the R1155. Nothing. My wattmeter indicated I was putting out about 45 watts. By telephone, Phil reported that he could just barely hear me on his modern transceiver. I then asked Russ to transmit on his T1154, but I also heard nothing on my R1155. His power meter indicated he was putting out about 20 watts. I could barely make him out on my modern receiver. I gave Russ a 559 report and he gave me 569, out of generosity. Officially, it was a QSO but not one that used only the Marconi gear.

The problem, I believed, was that Phil's QTH was just a bit too far away for ground wave propagation with such low power. After determining that Russ only lived about 10 miles from me, I asked Phil if he wouldn't mind moving his Marconi gear to Russ' place so we could try from there. He agreed, provided that we could do some testing to make sure it would work. The following morning, Russ and I managed to work each other, using our modern rigs on 7.060 MHz and running 20 watts. We then informed Phil that everything was good to go and he agreed to set up at Russ's house the following Saturday morning.

Saturday, September 6, 2014 was a beautiful, clear morning. We were all anxious to make the historic QSO – this time for sure – so we cut short our weekly coffee klatch at a Calgary mall. Phil and Russ rushed over to Russ' place, while I went home and warmed up the old gear. Before five minutes had passed, I received a call from Phil asking if I was ready to go. I said I could give it a try if he didn't mind me drifting all over the place. After sending a series of "vees" on my T1154, Russ reported that he could hear me just fine on his R1155, although the audio level in his headphones was a bit low.



The QSO went as follows:

VE6VK VE6VK DE VE6TL VE6TL

VE6TL DE VE6VK UR 579 579 579 HW? VE6TL DE VE6VK

VE6VK DE VE6TL QSL QSL UR ALSO 579 579 YOU OLD WAG – HW COPY? BK

BK – GOT IT OK JERRY 579 579 – TNX FOR HISTORY MAKING QSO – TALK ON PHONE – VE6TL DE VE6VK SK

We recorded the QSO at 1600Z on September 6, 2014 on 7.060 MHz. So as far as we know, this was most likely the first time in decades, and quite possibly since WWII that a pair of R1155s and T1154s have communicated with each other. And we were both using straight keys. Russ was using his original "bathtub" key that was standard issue for the T1154.

So, if you listen to 40m and hear a strange signal now and then, perhaps it is the old T1154 seeking out new contacts. There is no reason that these rigs shouldn't keep working for another 70 years. As for the operators, that is another story.

*Jerry Spring, VE6TL, became a licensed Amateur Radio operator in 1973 at the age of 15, in Windsor, Ontario with the call sign VE3HCN. The hobby was then put on hold in 1976 as he attended York University (Physics) and then took a job in Calgary in 1980 as an Exploration Geophysicist. His career took him exploring for oil and gas all over the world, but he returned to Calgary in 1999. A family visit to the Ontario Science Centre in 2004 got him hooked on ham radio again, and now he spends most of his time chasing DX, contesting, restoring antique radios and experimenting with Arduino microcontrollers. He also penned, "Hogwash for Hamsters" in 2009, which contains original ham radio humor and continues to sell quite well.*

**Phillip Boucher, VE3BOC**
**E: phillipjboucher@gmail.com**
**www.phillipjboucher.com**

# FRESH ON THE AIR

## – ADVENTURES FOR THE NEW AND BEGINNING HAM

## All About 146.520 MHz...

**I've recently had many** questions from new Amateurs about 146.520 MHz that I had mentioned in some previous columns when I was discussing other topics. In researching for this column, I was quite surprised by the lack of information available about the history of this frequency, such as how and why it was chosen as the North American Simplex Calling Frequency.

I'm sure it had to do with the fact that the only radio equipment available to hams in the olden days of Amateur Radio – other than HF – was the new VHF band.

Whether or not 146.520 MHz was simply chosen by one Amateur as a do-all general frequency which snowballed into a specific use, or whether it was a united and coordinated effort by many in the hobby, I do not know. If you know the real history of this frequency I would greatly appreciate it if you would let me know where you found it.

Two things are definitely true about the old "52". It was the calling and emergency frequency in use before the proliferation of repeaters. Afterwards, it seems to have reduced in use to the point that some new Amateurs aren't even sure what the frequency really is about anymore.

146.520 MHz is referred to as the North American National Simplex Calling frequency. This means that, theoretically, anywhere in North America, you can call on this frequency to a local Amateur who, if they are monitoring the frequency, will reply. At least that is its intended use. Once you establish communications with your party, you are then required to move off to another simplex frequency or repeater to carry on your conversation. You are not to use this frequency for chit chat or any other purpose. However, since this frequency was monitored a lot, way back when, it was also used as a North American Simplex emergency frequency. Amateurs who needed emergency help would first call on this frequency, instead of any other, since there was a very good chance they would be heard by a local ham who could contact emergency services or otherwise provide help to the caller.

Over the decades, with extreme progress in radio technology making Amateur Radios and repeater stations almost an exclusive dual-use necessity, simplex operations in general and operations on 146.520 MHz in particular, have declined to alarmingly low levels. Now mind you, ARES organizations and local clubs still use "52" and other Amateur simplex frequencies as backup or emergency communications frequencies, but repeaters are used as the first communications option.

In this modern age, doing so makes perfect sense. But just as Amateur digital communications have not sent CW to the bowels of hell to be forgotten about for all time, neither should repeaters be the only option over this one particular simplex frequency.

For example, the Wilderness Protocol is an excellent demonstration of how 146.520 MHz is currently used. Amateurs who are in remote locations – or who are far enough from a repeater not to be able to access it – or really any ham anywhere, monitor 146.520 MHz (and can also monitor 52.525, 223.500, 446.00, 1294.500 MHz if equipped on a secondary basis) every three hours for five minutes from 07:00 to 07:05, 10:00 to 10:05, 13:00 to 13:05, 16:00 to 16:05, and so on. Amateurs who are able to, are requested to monitor more often, and some hams can continuously monitor while doing other things. Regular use of the frequency can begin at four minutes after the hour.

This monitoring protocol ensures that there may be a possibility that Amateurs who have emergencies in these areas are able to contact a station for help.

I have started to monitor 146.520 MHz as much as possible. At home while I'm writing, my radio continuously monitors 146.520 MHz on a priority basis while checking my local repeater on a secondary basis. While out walking or using my HT as a mobile unit, unless I'm actively engaged in conversation on a repeater frequency, I have my radio set to monitor "52" exclusively. This way, I'm contributing to the continued use of this important frequency for both calling and emergency purposes. And although I have not been involved in any emergency communications, I have made contact with some other hams and this is just as fun as doing so through a repeater.

Why not give monitoring and using 146.520 MHz a try? You never know who you might talk to, or what help you might provide to a fellow ham.

### WHAT IS LiTZ?

LiTZ, or Long Tone Zero, is a way of indicating to Amateurs on simplex or repeater frequencies that the transmitting station has emergency traffic to send. The station with the emergency keys up and presses the DTMF 0 (Zero) key for 10 seconds, then states their emergency. This lets users on the frequency know that an emergency communications is coming through.

There are also a few LiTZ devices – found on various sites on the Web – that you can build or buy that monitor for long-tone zero transmissions and automatically open it's own or your radio's squelch so you can hear the emergency transmission.

**Battery saving tip:** If your radio has a Transmit Battery Saving feature, use it. This feature – which automatically reduces the radio's output power when it receives a strong signal back from a repeater or simplex transmission – not only helps you to follow guidelines about using the lowest power possible for communications, but will also reduce the drain on your radio's batteries.

**Transmission Tidbit:**

There once was a Ham from Nantucket, who built an antenna from a large metal bucket. The SWR was too high, and he cried and did sigh, "Oh well, what can you do. I say chuck it!"

Write me via the magazine; email me at phillipjboucher@gmail.com or via my website at htttp://www.phillipjboucher.com.

TCA

# RAC MEMBERSHIP / ADHÉSION À RAC

Exclusive RAC membership

**Maple Leaf Operator Membership**

## RAC MAPLE LEAF OPERATOR MEMBERSHIP / ADHÉSION À "OPÉRATEURS MAPLE LEAF" DE RAC

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Vincent Amyotte, VA5NEE
Georges Ankenmann, VA3LZY
Keith Antonelli, VE7EXH
Adam Aultman, VA3AUL
Michael Aultman, VA3MPR
Gary Badcock, VO1GWC
Peter Baker, VE3OCN
Dennis Bancesco, VE6ATC
Doug Bannard, VE3SPF
Shawn Barnard, VE3KYQ
David Barnes, VO1YA
Bill Barrie, VE3AAS
Douglas Barry, VE7WLF
Geoff Bawden, VE4BAW
Michael Bell, VE3NOO
Michael Belliveau, VE6XMZ
Larry Berta, VE3LXV
Serge Bertuzzo, VA3SB
Brian Biggings, VE3XA
Christian Bisaillion, VE3CBK
Bill Boskwick, VE4BOZ
Allan Boyd, VE3AJB
Harold Braun, VE3CD
Michael Brickell, VE3TKI
Ronald Brook, VE4RON
Mike Brown, VA3GRL
O Ernest Brown, VA3OEB
Matthew Brown, VE3EB
Vern Brownell, VE7MCC
P J Buckway, VY1PJB
Ian Burgess, VA6EMS
Paul Burggraaf, VO1PRB
Rick Burke, VO1SA
William Bush, VE3BXI
Gary Butler, VE7OQ
David Caddell, VA7VVV
Fred Cain, VE3JMJ
John (Jack) Cain, VE7DBK
Sandy Cameron, VE3AAC
Ralph Cameron, VE3BBM
Mark Capewell, VA7MNV
Mary Card, VE3FEB
Jeffrey Cederwall, VE3JTD
Gilles Chevalier, VA2CG
John Christensen, VE3IAO
Geoff Clarke, VE3JBD
David Clarke, VE6LX
Ken Clarke, VE7BC
Edmondo Conetta, VA3ITA
John Connor, VE3TG
Guy Costanzo, VA7GAC
K James Couprie, VE6IG
Donald Courcy, VE1SS
David Coutts, VE3KLX
Robert Cove, VO1REC
Chris Cowx, VA7CWX
Paul Cragg, VE3AXT
William Cunliffe, VA3WRC
Francois Daigneault, VE2AAY
Renze Dam, VE6DC
Rick Danby, VE3BK
Brian Davies, VE6CKC
George Davis, VE3OGP
Frank Davis, VO1HP
Julio Diaz, VA3JCL
Richard Dion, VE3LAD
Grant Dixon, VE3CGV
Tom Dobson, VE3TWD
Michael Drake, VA3BKQ
Ian Drinkwater, VA3UM
George Duffield, VE3WKJ
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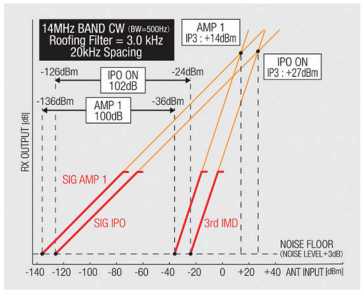


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# WHY YOU NEED A CURRENT BALUN

**John White, VA7JW**

## INTRODUCTION

It is common practice to use a balun when connecting a coaxial cable transmission line to an antenna. There are three electrical requirements to be met. Of these three, two are generally well known, but the third, maybe not so much. Addressing all three issues with the correct type of balun will lead to the successful integration of the antenna and feedline.

## REQUIREMENTS

1) Requirement #1: Preserving Balance. The word BALUN is derived from the fact that this device connects a **BAL**anced antenna feedpoint, such as a dipole, to an **UN**balanced feedline, commonly being coax. Coax is unbalanced because the braid is connected to "ground" at the rig. Balanced and unbalanced circuits should never be connected together as the electrical properties of both circuits will be seriously compromised. The balun is the intervening item that transforms the unbalanced to the balanced.

2) Requirement #2: Impedance Matching. The balun will commonly match a 50 ohm feedline impedance to feedpoint impedances of 50 ohms or 200 ohms, depending on the antenna design, thus achieving a low SWR.

3) Requirement #3: Suppressing RF on the feedline. This is the not so well understood issue that often results in RF problems in the shack. The use of the correct balun will alleviate many of the problems associated with RF on the line.

## ANTENNAS

The half-wave dipole model is used to demonstrate the properties of a balanced antenna and the ways and means to properly feed it. The dipole antenna operates without a connection to an Earth Ground, and so the feedpoint is a good example of a balanced circuit, which needs to be connected to a balanced feedline. Coax is not a balanced feedline and therein lies a problem.

Verticals on the other hand are operated against an Earth Ground, which is a good example of an unbalanced circuit. The vertical can be directly fed with an unbalanced coaxial feedline. This style of antenna may make use of impedance matching networks at the feedpoint, but they are impedance matching networks, not baluns.

Figure 1

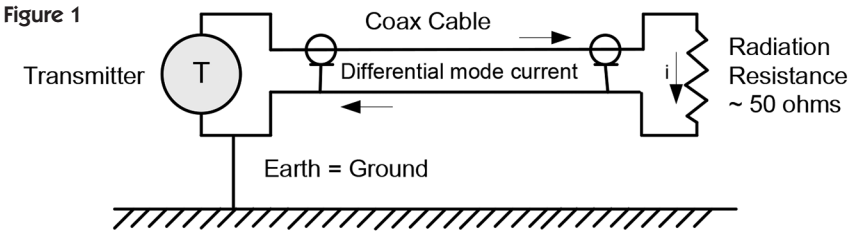
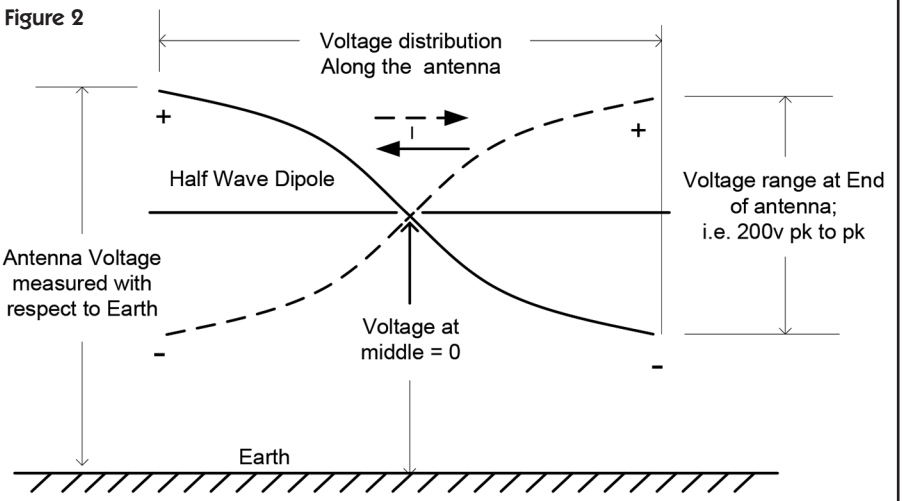



Figure 2




## GROUNDS

Antennas and grounds go hand in hand and it is important to understand the role of ground as will be seen later in this article (see Figure 4).

Earth Ground means an electrical connection made to the soil through the use of a grounding conductor such as a rod, plate or wire etc. Our stations are Earth grounded as soon as the AC line cord of the rig is plugged in to the AC wall socket. The AC line cord contains the green wire safety ground conductor as required by the Canadian Electrical Code. This is to prevent shock hazard occurring should there be an insulation failure in AC power connected equipment. The green wire connects the rig chassis to Earth Ground in the electrical service entrance panel in the residence. The consequence is that the station is mandatorily grounded to Earth.

Electrical Ground is taken to be the common voltage point in an electrical system. This would be the ground bar in the shack to which all equipment in the shack is connected with a ground wire. This is a safety ground to ensure that no hazardous voltage can exist between equipment. This ground bar is to be connected to the service entrance Earth Ground.

Note that these grounds are Safety Grounds. They are *not* Signal Grounds or RF Grounds.

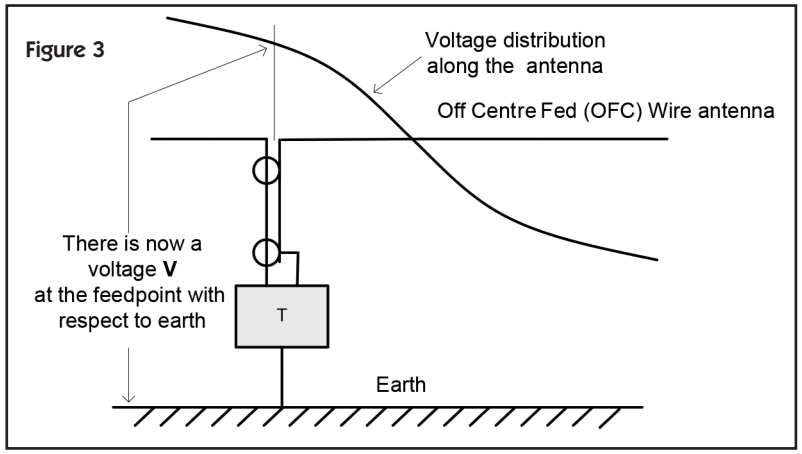
**Note:** RF Ground does not exist.

*"So the idea that the earth/ground electrodes provide a perfect zero-impedance sink that we can use to absorb, or otherwise make unwanted electrical power, signals or noises go away, can't possibly be true – it is a total myth, pure and simple, having no basis in reality in this universe." – see Note 1 on page 38.*

## FEEDLINES

The antenna is connected to the rig by the feedline. The feedline is not part of the radiating or receiving system. The antenna is the radiator/receiver. The purpose of the feedline is to transport Tx RF from the rig to the antenna without radiating and, conversely, to transport Rx signals to the receiver without picking up extraneous signals.

Coax is an unbalanced feedline with a centre conductor insulated from a surrounding, conducting braid which is the "return" circuit. The coax connector on just about every rig is an SO-239 bolted to the chassis and so the coax braid is always grounded in this connector system. Tx and Rx signals are propagated up and down inside the coax, like water in a pipe, and that means they are totally contained within and totally isolated from the "outside" world, neither radiating nor picking up signal.




Thus coax is a shielded line. Also worthy of note is that the signal current on the centre conductor is equal and opposite to the signal current on the braid. Since the two opposing currents are very close together in the coax – and the fields surrounding each conductor are opposing – they would cancel at a distance and no radiation takes place. These equal, opposite, close together signal currents are referred to as Differential Mode currents. One more thing, while the construction of coax lends itself to an intuitive understanding of shielding, there is one other very important property that clinches coaxial cable shielding effectiveness, and that is the Skin Effect on the braid.

**Note:** If you are unfamiliar with skin effect, please read the Sidebar on page 37.

Balanced feeders consist of two wires placed side by side, commonly known as Ladder Line. There is no shield. However, the line does not radiate because the signal currents in each of the two wires are also equal and opposite and close to each other. These are Differential Mode currents as well and, as such, the electromagnetic fields developed around each wire will be opposing and cancelling; this also means no radiation of signal takes place at a distance from ladder line.

Since the line is not shielded, the two conductors are vulnerable to extraneous signal induction. However, the induced currents will be equal in each wire as both wires "pick up" equally well, being close together. Since they flow in the *same* direction in both wires, this is called a Common Mode current, quite different from the Differential Mode current flow. Common mode fields do not cancel and any unwanted signal will be transported to the rig or antenna.

Circuits that terminate either end of the balanced line need to be balanced in themselves so as to reject Common Mode currents. Retaining line balance is essential for balanced line operation as the grounding of one side will allow unwanted Common Mode signal current to flow in to the receiver. The SO-239 unbalanced, grounded, coax connection for the antenna feedline is unusable for balanced line connection.

## PRESERVING BALANCE

Use of a proper balun can provide RF isolation between the grounded rig and unbalanced coax to the balanced requirement of the antenna. In other words, an unbalanced coaxial feedline can be coupled to a balanced antenna as long as there is an intervening balun. The balun can be placed anywhere in the coax feeder if ladder line is connected to the balanced side of the balun leading to an antennas' balanced feedpoint. Requirement #1 has been addressed.

## ANTENNA IMPEDANCE MATCHING

Coaxial cables typically have a 50 ohm characteristic impedance, which turns out to be close to the radiation resistance at the feedpoint of a dipole antenna. Using a balun that offers a one to one (1:1) transformation ratio means that the 50 ohm unbalanced impedance of the coax on the primary side of the balun will match the 50 ohm balanced impedance of the dipole on the secondary side, while preserving the balance of the dipole.

Different styles of dipole-like antennas can have differing impedances with which the balun must be matched. Most commonly, baluns are offered with the ratio of 1:1 intended for basic dipole configurations as well as 4:1 for other dipole-like antennas such as Off Centre Fed or Folded dipoles where the feedpoint Z is higher, such as 200 ohms.

Note that a balun is *not* an antenna tuner device; it can only match certain fixed impedance ratios. Requirement #2 has been addressed.

## RF ON THE FEEDLINE

The "RF-in-the-Shack" experience is mostly due to RF flowing on the Outside of the coax feedline entering the radio room. This commonly manifests itself as RF voltage causing "tingles and bites" on conductive surfaces such as the key or mic when transmitting, or Tx audio distortion due to RF feeding back in to the audio circuits, or unexplained computer behaviour and other RFI effects. Use of baluns that solve problems #1 and #2 will not solve problem #3 if the wrong type of balun is used. Requirement #3 remains to be resolved.

## RIG – COAX – ANTENNA SCHEMATIC

Figure 1 represents the electrical circuit for a transmitter connected to a feedline and then to an antenna where the antenna is represented by a 50 ohm feedpoint Impedance. The Tx and Rx signals flow inside the coax as Differential Mode currents.

Note that while the transmitter chassis is connected to Earth Ground, no current flows in that connection because there is no complete circuit from ground to anywhere else. The RF currents are wholly contained within the loop.

## VOLTAGE DISTRBUTION ON A DIPOLE ANTENNA

Figure 2 is the classic view of the voltage distribution along a half-wave dipole. The solid line waveform represents the standing wave voltage along the antenna at the peak of one-half cycle, where the electron flow in the wire is from right to left. On the second half cycle, as the current reverses, so does the voltage, as illustrated by the dotted line.

The voltages on the antenna are measured with respect to Earth. At all points along the antenna there is a voltage with respect to Earth. The highest voltages will be measured at the ends of the antenna because the antenna is "open circuit" there. The magnitude of the voltage at the ends will depend greatly on the transmit power and can easily reach hundreds of volts or more.

*Only at the centre feedpoint does the voltage remain at zero with respect to Earth.*

## THE OFF CENTRE FED DIPOLE ANTENNA

Figure 3 is an Off Centre Fed (OCF) antenna, perhaps better known as a Windom. This class of antenna is known for multiband capability. As with the dipole, the same standing wave voltage is developed along its length. The only difference is the location of the feedpoint with respect to Earth. Note that the voltage "**V**" on the antenna at the feedpoint is not zero (see Note 2 on page 38) as seen in Figure 2.

The feedpoint impedance is not 50 ohms as it rises as one moves away from the centre where higher voltages and lower currents prevail (Ohm's Law). Typically, the feedpoint distance from centre is

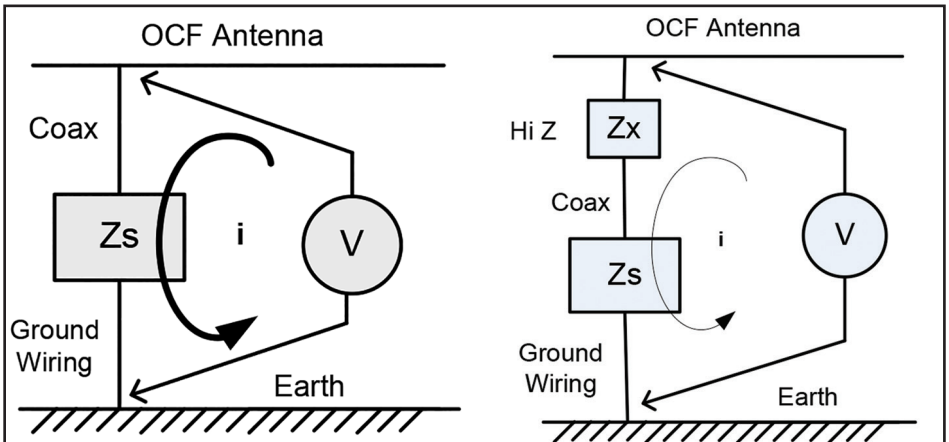



Figure 4




Figure 5

chosen to have an impedance of about 200 ohms where a 4:1 balun would be used.

Figure 4 shows Figure 3 redrawn as a "block" diagram.

The voltage source "**V**" is the antenna voltage at the feedpoint with respect to Earth Ground. The feedpoint is connected to the coax, the braid being a conductor, which in turn connects to the station labelled as "Zs". "Zs" represents the rig and all other connected equipment, and wiring, in the shack and it is an indeterminate series impedance in the circuit. In turn, "Zs" connects to Earth Ground through the green wire safety ground of the AC line cord at the very least.

This circuit forms a bonafide loop, that is, a voltage source at the feedpoint with respect to Earth drives a current down a conductive path consisting of the coax, station equipment and ground wiring returning the current to the Earth end of the voltage source.

RF current is driven by this voltage and flows on the Outside of the coax braid. This is by definition a Common Mode current because the current flows in a large loop and the opposing currents are *not* close to each other so radiating fields develop. Radiating feedlines will distort the radiation pattern of the antenna system.

Differential signal currents inside the coax are not affected due to the shielding effect of the coax braid. It is the Common Mode RF current reaching the station that flows *on the surface* of conductive equipment and wiring, and then to Earth. Since the impedance "Zs" of this circuit is indeterminate, the amount of current flow is not predictable. However, a clamp-on RF ammeter, such as an MFJ-854, will give an indication of the amount of current actually flowing.

The cure for Problem #3 is to insert a high value impedance "Zx" that should be much greater than "Zs" to reduce the unwanted (series) current to very low value, such as a few mA.

"Zx" of the Current Balun, by design, has an inherently high impedance and effectively chokes off Common Mode current on the coax.

Consequently, the Current Balun will meet the requirements of items #1, 2 and 3.

## TWO TYPES OF BALUNS

There are two types of baluns: the Voltage Balun and the Current Balun. Both types of baluns can look outwardly identical to each other but they are of quite different designs. The Voltage Balun has no Common Mode choking capability and is not the right product to use for suppressing RF on the feedline. Because it is impossible to visually differentiate between these two packaged products, ensure the product you buy is clearly labelled as a Current Balun for this application.

## AND TWO TYPES OF CURRENT BALUNS

The Current Balun is commonly implemented using two different techniques. One achieves a high Common Mode impedance, "Zx", using ferrite beads (Figure 6), and the other uses a transmission line transformer for the same purpose (Figure 7). Both of these implementations result in a high Common Mode impedance able to choke off RF currents on the feedline.

Ferrite beads (Figure 6A) are a lossy magnetic material useful for increasing the inductance of a wire, cable, AC line cord etc. to discourage RF currents flowing on such cables. They are often used to control RFI problems. As seen in Figure 6B, the beads are threaded on a piece of coax contained within a PVC pipe as shown in Figure 6C.

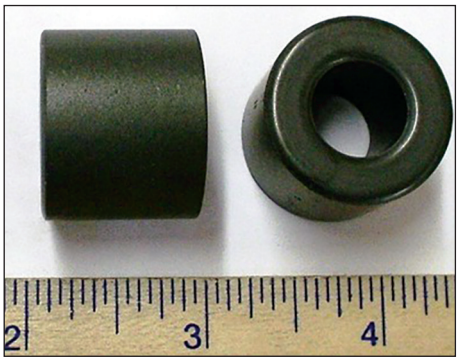


Figure 6A

Figure 6B

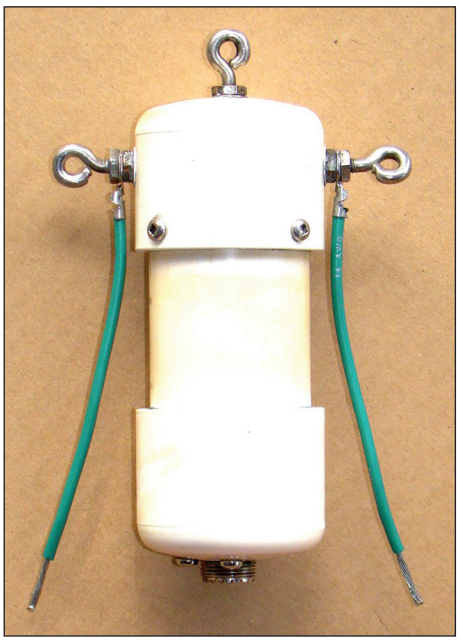


Figure 6C

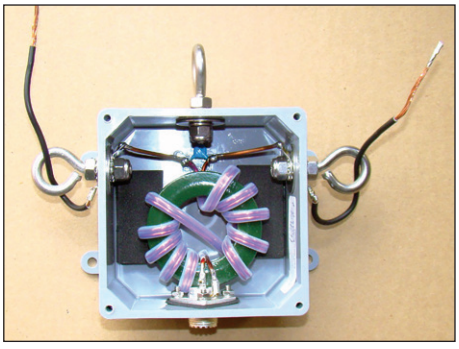


Figure 7

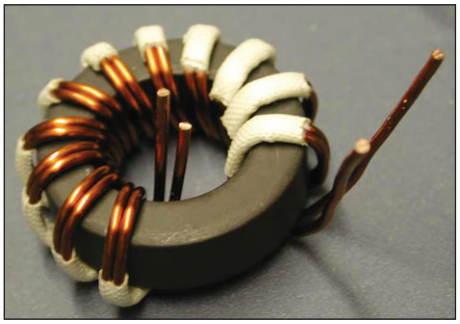


Figure 8

This construction can only provide a 1:1 impedance ratio as there is no mechanism available to transform impedance since the coax is connected “straight” through. This form of Current Balun is the simplest and least expensive of the two designs.

Figure 7 shows the implementation of the toroidal Current Balun designed by Jerry Sevick, W2FMI, as offered by DX Engineering (Model COM-BAL-11130ET) where a transmission line transformer is wound on a toroidal ferrite core and housed in an outdoor rated plastic enclosure.

Conventional transformers, such as those used for AC power and audio, have the primary winding wound on a magnetic core which generates a magnetic flux, which in turn couples energy to the secondary winding also wound on the core. Significant flux levels are developed in the core to transfer energy from the primary to the secondary and, in doing so, the core incurs magnetic losses which result in the overall heating of the transformer.

This type of operation is not suitable for RF applications where very low loss is required. To achieve these objectives, the construction, winding techniques and core materials for RF are very much different from the conventional transformer (see Note 3 on page 39).

Interestingly, the cores in transmission line transformers operate at zero flux and so losses are near zero. This is achieved by placing the primary and secondary (insulated) wires tightly together, side by side, as they are wound on the core. This technique is referred to as a bifilar winding, which essentially emulates a balanced line. Hence the transmission line transformer.

Careful inspection of the wires in Figure 7 show this but are more easily seen in Figure 8.

## SIDEBAR: SKIN EFFECT

At DC, current flow is distributed equally throughout the cross-section of the wire. With AC currents, the flow migrates outwards from the centre of the conductor and crowds towards the surface with increasing frequency. At radio frequencies, most of the current is flowing near the surface since the current density decreases exponentially towards the centre of the conductor.

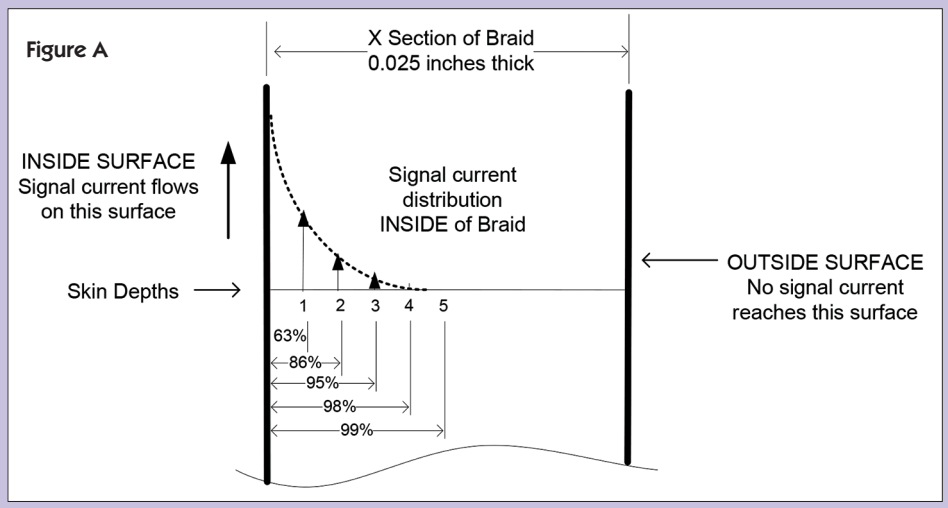
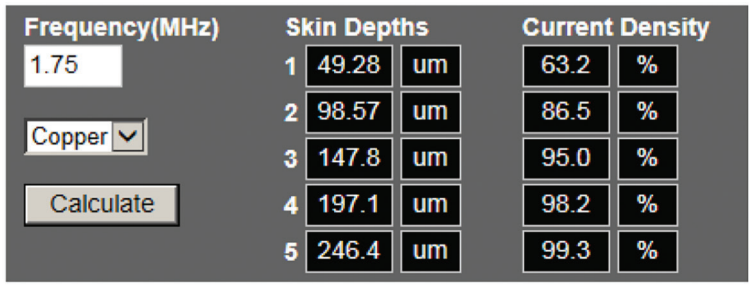



Figure B




Braid thickness on a piece of RG-8 was measured at about 0.025 inches.

One skin depth at 1.75 MHz is about 49 micrometres or approximately 0.002 inches; and 63% of the total current is flowing within that 0.002 inches.

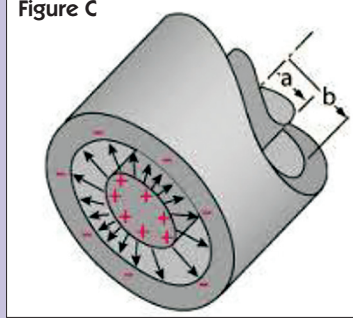
Adding the next 0.002 inches of skin depth, now 0.004 inches, accounts for 86% of all the current. When five skin depths are taken in to account, about 0.010 inches, 99.3% of the total current is flowing in this thickness, which is less than half the thickness of the braid.

If the frequency is increased to 30 MHz, the thickness of the 99% current “sheet” becomes thinner and is only about 0.060 micrometres or 0.0024 inches thick.

An online Skin Depth Calculator (Figure B) can be found at: http://www.siversima.com/rf-calculator/skin-depth-calculator/#

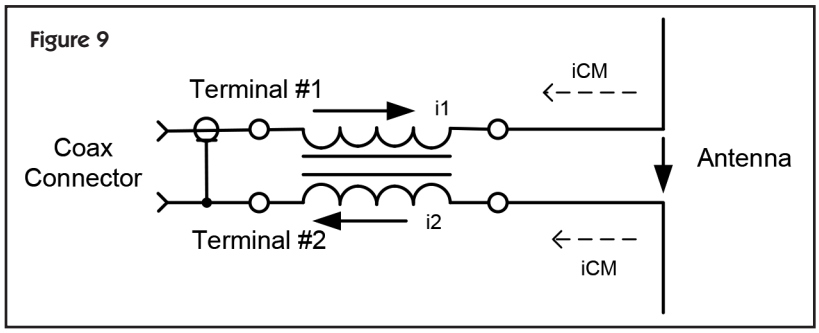
As a consequence of this phenomenom, we have transmit and receive signal currents flowing on the inside surface of the braid, which do not appear on the outside of the coax braid (no radiation); and at the same time, undesired currents flowing on the outside surface of the braid do not penetrate to the inside surface of the braid. Effective shielding is achieved.

Figure C




Referring to Figure C, current on the centre conductor flows over the entire circumference of the conductor. One might think that ought to be true with the braid with current flowing on both the inside and outside surfaces.

Examination of the cross-section of the coax shows that the electric fields associated with the current flow terminate on surfaces of the centre conductor and the inside surface of the braid. Since the skin effect governs the depth of current flow, the braid carries the current on its inside surface only and cannot penetrate to the outside surface.




the voltage at the feedpoint is practically zero so little Common Mode current is driven down the feedline in to the shack.

## BIFILAR WINDING TECHNIQUE

There is zero flux in the core because the Differential Mode signal currents – being closely coupled, equal, and opposite in direction – produce no net flux in the core. Should one current decide to differ from the other, a net flux does develop which forces the currents back to equality due to the 1:1 winding ratio. No flux, no loss, no heat and the signal is transferred unimpeded through the structure.

The antenna feedpoint voltage will drive a Common Mode current down both wires in the same direction. This looks like just one wire wound on a magnetic core and will result in core flux being developed, which is nothing more than an RF choke. Hence, the current choke aspect of the balun is realized.

The schematic of a Current Balun is shown in Figure 9, in circuit, between the coax and the antenna feedpoint.

## TRANSMISSION LINE TRANSFORMER BALUN

The bifilar transformer (Figure 9), having an equal number of turns on both windings, provides a 1:1 turn ratio. This would be a 50 ohm to 50 ohm application. For a 4:1 ration, the windings are more complex and not described here.

## BACK TO THE CENTRE FED DIPOLE

Many of us, myself included, have simply connected the coax directly to our dipole and operated happily ever after.

One now ought to understand how we could get away with little or no problems with "RF-in-the-Shack".

Quite simply, as shown in Figure 10,

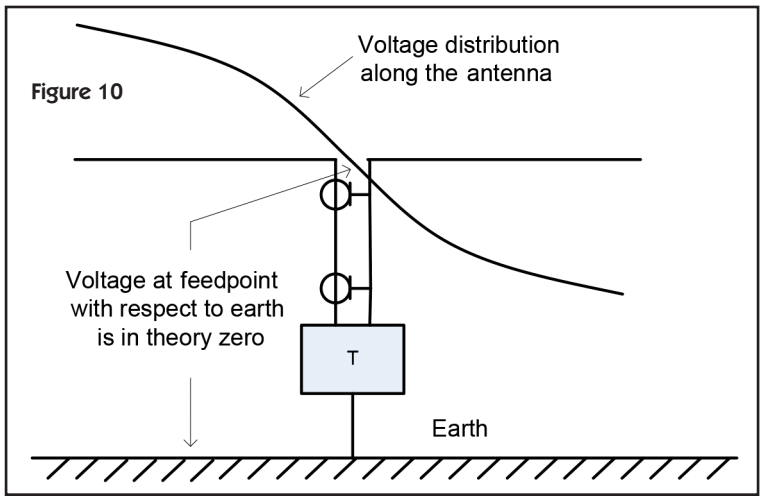
## COAX TO DIPOLE – DIRECT CONNECTION

While good luck and ignorance played a major role in this success, the reality is that dipole antennas are rarely balanced in practice (Figure 10). We are typically limited to where and how we can support the antenna. There are many and various non-symmetrical, environmental variations – such as houses, trees, soils, aluminum gutters, house wiring and so on – which tend to unbalance the antenna's electrical impedances on either side of the physical feedpoint centre. This will shift the antenna voltage off the zero point away from the physical centre thus causing a voltage to exist at the feedpoint and start driving a Common Mode current down the feedline.

Good practice says that a Current Balun at the feedpoint is always well advised.

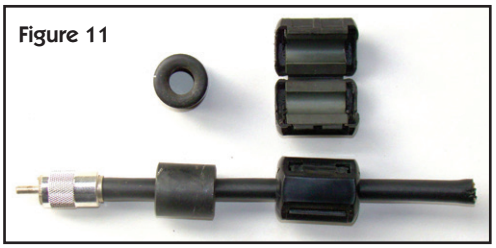
## RF STILL IN THE SHACK?

Even with a good Current Balun on the feedline, there can still be RF flowing on the outside of the coax due to direct radiation from the antenna. This cannot be helped. If there are remaining problems with RF, one can continue to raise the coax impedance further reducing Common Mode current flow by installing Snap-On ferrite chokes (Figure 11) on the feedline (see Note 4). These chokes will further reduce unwanted current. Typically one might put one or two ferrites in series on the coax at the bottom of the tower, another pair about middle of the coax run and another pair where the coax enters the shack, as needed. Note that non-opening beads need to be threaded on before connectors are installed!




## THREADED & BEADS AND SNAP ON FERRITES

Another remedy is to coil up a few turns of the coax feedline which will act as an inductor and can be quite effective in preventing RF conduction down the feedline. The coil can be installed at the feedpoint, but this places a weight burden at that point which can prove difficult if the dipole is suspended only at the ends.




The coil need not be there as an impedance can be inserted anywhere along the feedline. Note that the baluns and ferrites have greater broadband performance than the coils which tend to show a narrower range of suppression, perhaps effectively covering only two to three bands at a time.

For additional information please visit: http://www.nsarc.ca/hf/currentbalun.pdf

## REFERENCES

1) Southeast Texas Amateur Radio Club, Houston, Texas. http://setxac.com/wp-content/uploads/2013/12/Baluns.pdf

2) "RF Ground Myth". QST, January 2014. Ward Silver N0AX

3) Baluns. "What they do and How They Work". Roy Lewallen, W7EL. http://www.eznec.com/Amateur/Articles/Baluns.pdf

4) W8JI. Prolific source of all to do with Antennas, Lines and Baluns. Suggest search web under W8JI Baluns. Home page is http://www.w8ji.com/

## NOTES

1) Keith Armstrong (Cherry Clough Consultants), "Fundamentals of EMC Design: Our Products Are Trying To Help Us", Interference Technology: The International Journal of Electromagnetic Compatibility, http://www.interferencetechnology.com/fundamentals-of-emc-design-our-products-are-trying-to-help-us-3/

2) John Welsh, G0NVZ, "Moving On" in the November 2013 issue of *Radcom* magazine.

## THE DEFENCE OF AMATEUR RADIO FUND

The Defence of Amateur Radio Fund (DARF) is a Trust Fund that was established in the early 1990s by the Canadian Radio Relay League to provide financial support for research, and to defray travel expenses of a delegate to World Radio Conferences to defend the Amateur Radio bands.

It costs a lot to attend a WRC meeting such as the upcoming WRC-15 meeting this November. Travel and meeting expenses for a three- to four-week conference can top $10,000 or more in an international city like Geneva, Switzerland even for the most frugal. Without new donations, DARF funds on hand won't last indefinitely.

Donations may be made by cheque only. Cheques should be made out to "The Defence of Amateur Radio Fund" and may be sent by mail to:

"Defence of Amateur Radio Fund",
720 Belfast Road,
Suite 217, Ottawa K1G 0Z5

For more information please see Feedback on page 17 or visit darf.rac.ca.

3) Jerry Sevick, W2FMI (SK), "Transmission Line Transformers". The American Radio Relay League, First Edition, 1987.

4) An online search for "snap-on beads" will reveal many sources. Bead performance depends on bead materials called the Mix. Look for a Mix that has the highest impedance ratings for bands of interest HF, VHF etc.

### CREDITS

The following images were copied from the Web after permission was received from the following sources:

**Figure 6A:** Electronics Plus Inc which can be found online at http://www.electronicplus.com. Thanks Jay.

**Figure 6B:** Todd Mitchell, N0IP, whose Blog can be found at https://elmering.files.wordpress.com. Thanks Todd.

**Figure 8:** Alan Biocca, W6AKB/WB6ZQZ, from the Antenna Launchers website which can be found at: http://www.antennalaunchers.com/Thanks Alan.

*John White was first licenced in 1959 as VE7AAL. He obtained his Advanced certificate in 1960 during High School in Victoria, British Columbia where he enrolled in a two-year electronics program. He was the founding member of the Victoria High School Amateur Radio Club. All of this established the basis for a lifelong career and hobby. He graduated in Electrical Engineering from the University of British Columbia in 1965, and in 1968 he obtained his Professional Engineer qualification. From 1965 through 2002, he worked in the telecommunications manufacturing industry in Vancouver, notably Lenkurt Electric, MPR Tech, Glenayre and Norsat.*

*John specialized in the engineering and design of many products including the specialization of electronic power conversion, EMC technology, CSA approvals with many different technologies. Program management followed and he served as Director of Operations before retiring. He is a member of both RAC (Maple Leaf Member) and the ARRL; Past-President of the North Shore Amateur Radio Club (currently its Technical Director). He is also a founding member of the Orca DX and Contest Club (Technical Director),and he obtained his Worked all RAC certificate #2. He enjoys writing technical articles for TCA and other publications as well as operating HF.*

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# YL NEWS AND VIEWS

## A MEMORIAL TO JEANNE-MARIE GORDON, VA3WX (SK)

*I never did have the privilege of meeting Jeanne-Marie Gordon, VA3WX, but I wrote about her in my November-December 2011 TCA column. Sadly, Jeanne became a Silent Key in 2014.*

*The following memorial includes a portion of my earlier column and also anecdotes from other YLs who knew her well. I hope this article will remind all of the YLs out there how special they are.*

Jeanne was born in 1940 and she shared her father's love of Amateur Radio. Her father's call was VE1WX.

She was born in a small French-Acadian community in Nova Scotia just a few months after her dad, who was serving in the army with the Royal Corps of Signals, went to war.

When he returned and resettled from the war he took up Amateur Radio and no matter where they moved there was a ham station. Jeanne would often chat with the OMs with her dad at the switch. When her dad passed away in 1990 he held the call VE1WX. Jeanne's brother-in-law took that call and unfortunately he passed away four years later. Jeanne's cousin in New Brunswick ended up taking the call, which is VE9WX.

In 1962, Jeanne settled in Halifax, Nova Scotia and went to work. She took Amateur Radio classes in the evenings which were sponsored by Admiral of Canada and in 1963 she became VE1YX. It took her three years of only doing code on the weekends to get her Advanced licence. She joined the Canadian Ladies Amateur Radio Association (CLARA) a few years after she got her licence.

She married a wonderful man named Rick in 1967 and although he was not a ham, he took down and erected her antennas everywhere they moved. He also maintained her radios. Rick knew all about Amateur Radio as his grandfather was a ham VE1HM (SK) in Sussex, New Brunswick. Rick also gave Jeanne her first rig which was an HW100, that he built from a kit. Jeanne made her contacts using a mobile whip on the balcony on the fifth floor of their apartment building.

In 1972, Rick who worked for the Royal Bank of Canada, was transferred to Quebec, and Jeanne's call sign became VE2JZ. During this time, Jeanne was the VE2 rep for CLARA and did Guides on the Air (GOTA) for four years. She was also the VE rep for the Young Ladies Radio League (YLRL) for one year.

Jeanne has held many positions in CLARA. She was its President, Vice-President and Secretary. She even did a stint as the CLARA Supply Person. Jeanne was also very involved with the nets, and acted as net control for many of them.

In 1994, Rick was transferred to Burlington, Ontario and Jeanne's final call sign was VA3WX. Rick passed away after a lengthy illness in 2013.

**Ann, VE3HAI, wrote:** From the time that Jeanne was first licensed, she encouraged other YLs to get on the air and then she encouraged them to join CLARA.

Jeanne and I met at Beaconsfield, when I first went on the air in 1973 only to find out that we lived just minutes away from each other. You could often hear Jeanne and her dad during their nightly on-air chats. This was well before texting.

Jeanne taught me that hams have the advantage in many ways, not the least is keeping in touch with people who are important to you.

When Jeanne moved back to Ontario, she and I spent many hours discussing CLARA. Her advice was always right on the mark. During my second presidency, Jeanne was a wise counsel who remembered our history and knew instinctively what action was best for CLARA. Her encouragement and ham knowledge were amazing. We were still talking about CLARA right until the end. She was a true friend. One I will miss every day.

**Helen, VA1YL, wrote:** When I met Jeanne, she was VE2JZ. She had a VE2 call before that and became VE2JZ when Hank offered it to her when he got VE2HN. When she moved to Ontario she tried for VA3YL but it was taken by an OM.

Jeanne lived in St. John, New Brunswick for a time and knew many down east hams. People would often drop in to see her.

When I got my ticket in 1992, I got on the air for Guides on the Air (GOTA). I met an OM on 80m who told me about the CLARA nets. At that time, Jeanne was net control for the 40m net. When we met on the air, Jeanne realized I lived quite close to her.

Jeanne loved to invite folks over for lunch, tea, or whatever. She had Joan, VE2PLY and Joan's sister-in-law – who also had her licence – and Helen, VE2YAK, over several times.

In 1992, Jeanne was going to the ham radio fleamarket in Smiths Falls and Fred and I also went. Gerry, VE3MHP, was doing the talkin as she has every year since. Gerry invited all the YLs who were at the fleamarket to her house for lunch on her picnic table. There were quite a few YLs including Marg, VE3EQE, Jeanne, VE2JZ, Helen, VE2YAK and several YLs with no-code licences who later disappeared.

When Jeanne moved to VE3-land she asked me to take over the 40m net. Jeanne used to have Guides in her shack for GOTA when she was in Quebec and GOTA was better advertised. She also had Guides in when she had VA3WX.

**Guides on the Air 1995: Jeanne, VE2JZ, with a group of Guides from the 3rd Pincourt group.**


**CLARA Past Presidents (from left): Ann, VE3HAI, Cathy, VE3GJH (SK), Minnie, VE3DBQ (SK) and Jeanne, VA3WX (SK).**

I credit Jeanne with taking me from a ham, who just had her ticket in order to talk to her OM when he went on DXpeditions, to a regular ham with DXCC, several net control jobs and years of GOTA participation.

**Minnie, VE3DBQ, wrote:** Jeanne was a wonderful friend. I met her on the air in the early 80s. She held many positions in CLARA and she kept such good records of activities and events relating to CLARA and GOTA.

Jeanne loved fashion and was really an extremely fashionable woman. She had earrings and other jewellery for every outfit that she wore. Jeanne was the mover and shaker for the big 1977 CLARA Conference in Toronto.

Once Jeanne had met you, and you became her friend, she never forgot a birthday or an anniversary, St. Patrick's Day, Valentine, Easter or any other holiday. You always received a handwritten note and a card. Sometimes, if she had seen something in the TCA, she clipped it out and sent it along to someone she knew. She never ever forgot her friends, and this carried on right up until her death.

Jeanne also started the Doris Cody Memorial Award in memory of Doris Cody, VE3BBO, who became a Silent Key on January 12, 1999 (http://www.clarayl.ca/index.php/doriscodyawardwinners).

**Jeanne, VA3WX, presents Thelma, VE3CLT (SK), with the Doris Cody Award in 2000.**

**Celebrating Merle's 90th birthday. Seated in front: Merle, VE1VCI. Standing (from left): Linda, VE1QT, Helen, VA1YL and Jeanne, VA3WX.**

The biggest thrill for Jeanne was when she finally got to meet Merle, VE1VCI, with whom she talked to every week for years. Merle's 90th birthday was coming up and she invited Jeanne to the party. She flew to Nova Scotia and visited her sister. For the party Helen picked Jeanne up and they drove several hours to Lochaber to meet Merle. They had a great time together.

Near the end of Jeanne's life, what she wanted most was one of Merle's handmade quilts. Merle heard about this through the grapevine also known as Ham Radio, and sent Jeanne a quilt.

Almost right to the end, Jeanne's biggest comforts after the passing of her beloved Rick, was her daily contacts with friends on the radio.

*Thank you to all who sent me notes and stories about Jeanne. Jeanne will be missed by many and she enriched the lives of more YLs than we can count. Rest in Peace Jeanne and enjoy the propagation. We know it will be better up there than it is down here.*

*Some of the photos I have included with this column are from long-time YL columnist Cathy Hrischenko, VE3GJH (SK). I know she would have approved of me borrowing it.*

*That is it for this time folks. I hope everyone is enjoying the spring weather. 33, 73, 88 or whatever the case may be...*

*Val, VE5ACJ*

TCA

# All Things Digital

## Amateur Radio for the 21st Century

## 018

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# AN ARDUINO DCR-SDR PROJECT: PART 1

**Note:** Portions of this column appeared in the November-December 2013 issue of TCA in my column "The Weak Signal Propagation Reporter: Part 2". My January-February 2015 column was incorrectly listed as #16 but it should have been listed as #17.

## INTRODUCTION

This next series of columns is about building a simple direct conversion receiver (DCR) software defined radio (SDR) using an Arduino Uno, a direct digital synthesis (DDS) AD9850 module plus free digital signal processing (DSP) software to decode various digital/analog data modes.

This DCR (see Figure 1) is based on the George Steber, WB9LVI, single-frequency Weak Signal Propagation Reporter (WSPR) design from "The Radio Whisperer" (*Nuts and Volts*, January 2012) with changes/additions to make it frequency agile/all-mode capable.

My original prototype uses the "traditional" LM386 for the audio amplifier output stage. George uses the TLC272 dual operational amplifier (op-amp) and it is far superior in side-by-side comparisons but just as easy to use.

The DCR is rapidly replacing superheterodyne (analog) transceivers because they make it easy to build inexpensive, multi-frequency/mode DSP transceivers rivalling or exceeding them with far more expandability, flexibility and versatility. Want to add a new feature, mode or make a few improvements of your own? With an SDR, it's easily done by modifying program code then uploading ("flashing") the revised software to its microcontroller unit (MCU).

Most composite antenna/transceiver systems are a compromise favouring convenience over performance and, in most cases, optimized, separate systems will perform much better especially when combined with DSP. Most of today's "big rigs" have the capability to split in two, receiving from one antenna system (e.g., long wire) and transmitting on another (e.g., vertical).

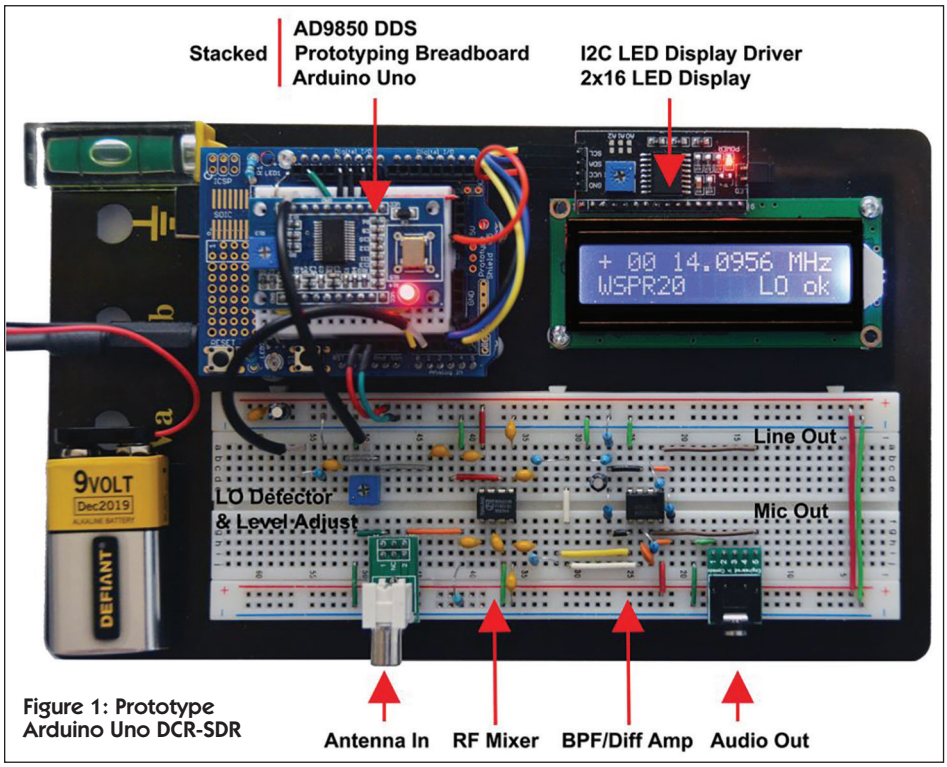



Figure 1: Prototype Arduino Uno DCR-SDR

## THE DETAILED DIRECT CONVERSION RECEIVER (DCR)

### 1) ANTENNA SYSTEM (ANTENNA + FEEDLINE)

Most of us think about antenna systems (see Figures 2 and 3) and how to connect/match them from the point of view of modern solid-state transmitters with their rather limited 50-ohm output impedance, and we rarely, if ever, think about it from the other point of view.

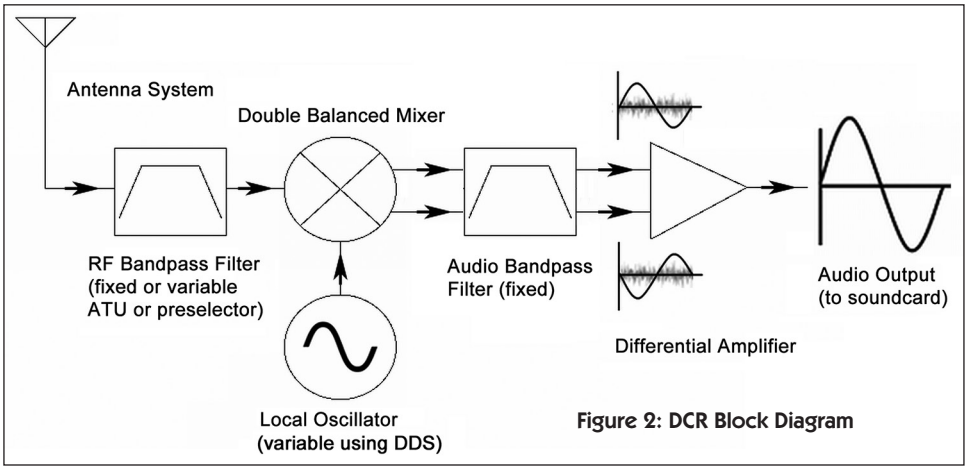



Figure 2: DCR Block Diagram

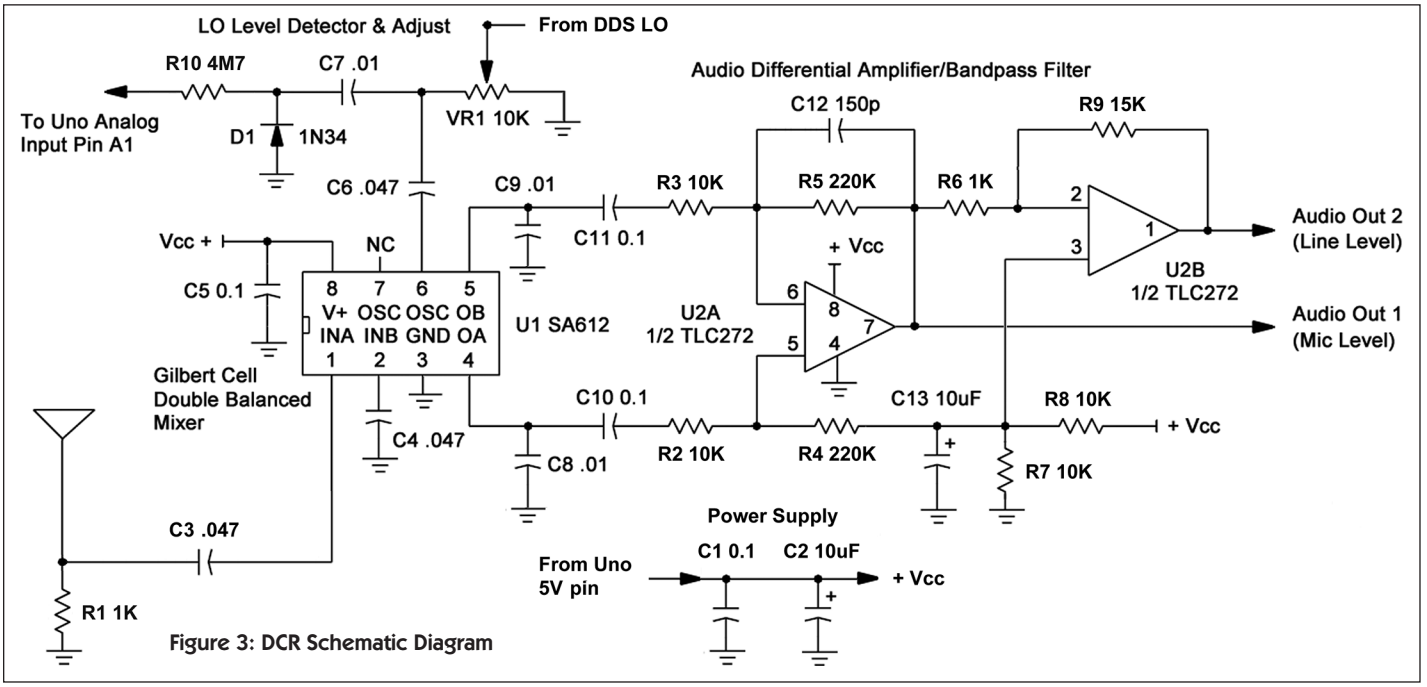



Figure 3: DCR Schematic Diagram

To a receiver, any connected antenna becomes a "transmitter" with the characteristic input impedance determined by the receiver (now the "load").

The voltage standing wave ratio (VSWR), impedance mismatch or antenna efficiency is unimportant for reception below 30 MHz because the determining/limiting factor is now the received signal-to-noise ratio (SNR).

A non-resonant antenna system has little impact on receive performance because any losses within the system equally affect both the intended radio signal and any noise/interference, leading to no reduction in the relative SNR!

Modern receivers have more than enough gain to make up for any antenna system losses (unless they are too extreme in the first place!) and this is why you can receive shortwave radio signals using a small whip antenna.

When combined with DSP software, it's possible to easily decode signals with extremely negative SNRs down to -28 decibels (dB) for WSPR (SNR of 1:1 is defined as 0 dB).

**Note:** I've overly simplified explanations and diagrams to avoid a lot of "techno-speak" and complex math. While not 100% by the textbook, I do hope most readers will get the gist without having their eyes glaze over and brains go numb!

## 2) BANDPASS FILTER

In receive mode, a bandpass filter (BPF) allows RF or audio frequency (AF) signals within a specific range (bandwidth) to pass through easily while attenuating/blocking signals outside of the "passband", improving the SNR, receiver sensitivity and reducing interference (see Figure 4 on the next page). The BPF is simply a combined high pass filter (HPF) and low pass filter (LPF).

You can build custom/fixed BPF's for each band of interest, but most designs are for 50, 75 or 300 ohm input/output impedances and you are limited to a specific frequency range so I prefer variable types like a receive "preselector" (see Figure 5 on page 45) or antenna "tuner" unit (ATU) and adjusting them for maximum receive signal strength. While not as narrow/sharp as a fixed BPF, they are far more flexible and useful over a wider range of frequencies especially when using non-resonant antennas.

Regardless of what you use, a BPF is essential for broadband receivers (like DCRs) having limited dynamic range and/or prone to overload and interference.

## 3) LOCAL OSCILLATOR

The local oscillator (LO) generates a second RF signal which is fed (along with the antenna's signal) into a "mixer".

In the past, most simple DCRs used a fixed or (slightly) variable crystal controlled oscillator (VXO), but the trend has shifted towards using DDS.

Most digital/analog data modes have been standardized and "channelized" using fixed dial frequencies and transceive using USB mode which greatly simplifies things.

For example, to receive 20 metre analog slow-scan television (SSTV) tune the LO to 14.230 MHz; for 20m WSPR tune to 14.0956 MHz. No hunt and seek required!

**Note:** Because the DDS module's RF output voltage varies a lot with frequency, a simple RF detector plus potentiometer was added to ensure that the LO level is at the right level for the mixer.

## 3) MIXER

The very popular and versatile SA612 (a Gilbert cell, double balanced mixer and oscillator) "beats" or mixes incoming radio signals with the LO to create the algebraic product/sum (an RF signal) and the difference (an audio signal), which is how the basic zero-IF (0-IF) or direct (single) conversion receiver operates. Unwanted RF is removed (shunted to ground) and we pass "balanced" audio signals to the next stage (two separate but identical outputs).

We "feed" the mixer radio signals direct from the antenna system to only one of its two inputs or "unbalanced" mode, which allows operation over a wider range of frequencies from one antenna system and variable BPF/preselector/ATU.

The RF front end (of any receiver) has the most dramatic effect on controlling and/or contributing to the overall SNR plus receiver "noise figure" (NF) or the

additional noise generated by the electronic circuitry. In other words, "garbage in, garbage out", so we must always ensure that the SA612 is neither over- or under-driven.

**Note:** Technical writer Joe Carr, K4IPV (SK), wrote a paper called "Filter, Attenuator, Preamplifier, Preselector or Barefoot" and goes into great detail explaining the pros/cons of each and how they affect receiver performance.

### 4) DIFFERENTIAL AMPLIFIER + AUDIO BANDPASS FILTER

The TLC272 is a low-voltage, single power supply, dual op-amp used to create a differential amplifier (diff-amp) with an audio BPF (first half) to remove as noise from within the audio signal itself, remove low-frequency rumble and high-frequency hiss, and amplify the signal to soundcard microphone level input (laptops/tablets). The op-amp's second section amplifies the signal to soundcard line level input (desktop computers).

Notice that the audio output is connected directly to the soundcard's input (no coupling capacitor) so there's no need for an (audio) isolation transformer because both the DCR/soundcard grounds are connected or "tied" together via an audio patch cord; but use one as short as possible with good copper shielding (double-shielded preferred) – no dollar store stuff!

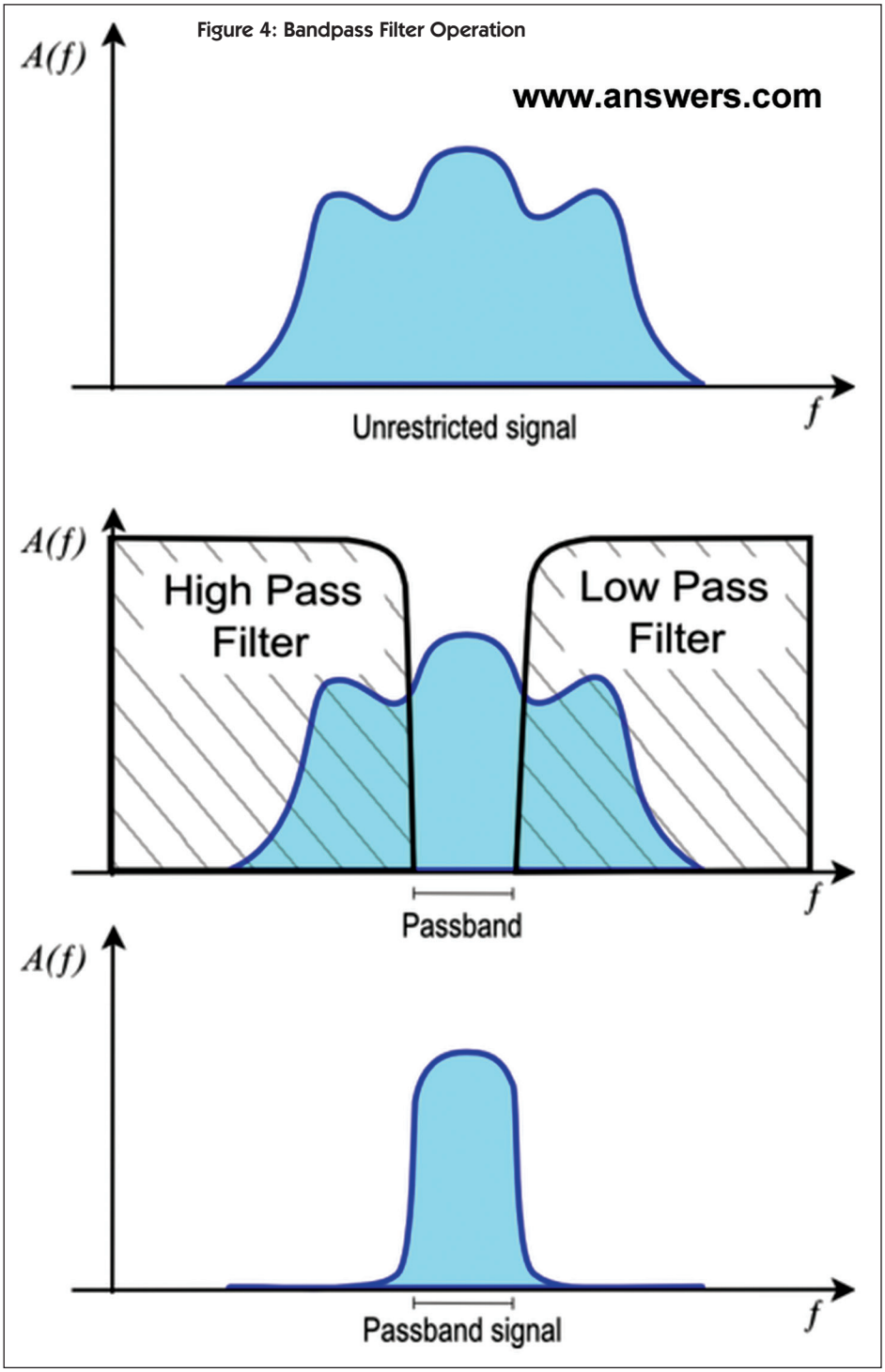
One audio signal enters the diff-amp's "non-inverting" input (+Signal + Noise) and a second (identical to the first) goes into the "inverting" input and is inverted or phase-shifted 180 degrees (made differential) from the first (-Signal + Noise). Atmospheric noise/static is very difficult to coherently phase shift, but data signals (even voice) with specific/predictable and repeating patterns are not so the noise is essentially identical (common) to both op-amp input channels and is called "common mode".

The diff-amp "subtracts" them (+Signal minus -Signal = +Signal + Signal) and amplifies this result, but because the noise is common and not "different", it's rejected (+Noise minus +Noise = 0). The typical common mode rejection ratio (CMRR) is around 80 dB for this diff-amp.

### BUILDING THE DCR

Figure 6 on the next page is a three-dimensional pictorial (created using Fritzing) to make it easier to layout/build the circuit on a solderless breadboard. High resolution diagrams, schematic, parts list plus additional material are available from my website.

Figure 4: Bandpass Filter Operation




**IARU EMERGENCY TELECOMMUNICATIONS GUIDE AVAILABLE ONLINE**
**http://www.iaru.org/emergency-telecommunications-guide.html**

At the 2014 International Amateur Radio Union (IARU) Administrative Council meeting, the Council approved the IARU Emergency Telecommunications Guide and the Guide is now available on the IARU website. This emergency telecommunications guide was developed to provide the IARU member-societies with materials suitable for training their members to participate in emergency events. It is also designed to provide guidance to the individual Amateur Radio operator who has little or no experience in handling emergency communications but desires to enhance their ability to participate in such events or to simply have a better understanding of the process. This guide can also be used in conjunction with other training materials by leaders within the emergency communication community to train radio operators in the basic theory and practice of handling emergency communications traffic. The IARU Emergency Telecommunications Guide can be found at: http://www.iaru.org/emergency-telecommunications-guide.htm

If you have an RF signal generator (the Elecraft XG3 works great), use it for the LO and test the DCR by "tuning" to WWV (5, 10 or 15 MHz). Any LO frequency error becomes painfully obvious to the ear (via the soundcard) because you'll hear carrier "leakage" (an annoying "tuner-upper" whine) – which happens when you aren't exactly at "zero-beat" to null out the carrier – plus you'll also hear off-frequency sounding voice (either too high or low in pitch).

My preference is to use CHU (3.330, 7.850 or 14.670 MHz) because it uses a USB with carrier reinserted signal, which is compatible with AM receivers, but only has the one sideband making it easier to spot/correct and save (in the MCU's memory) any DDS LO frequency error correction(s) by looking at the audio signal output using DSP programs such as Spectran, Argo or Spectrum Lab – more about that in my next column.

**Note:** Power the DCR from a 4.5 to 6 volt DC battery pack or you can use a 9 volt battery by replacing the SA612's power lead with a 100 ohm (one-quarter watt) resistor. To determine the LO's RF voltage output, measure the DC voltage from R10 to ground with a digital voltmeter and use VR1 to set it between 200 and 300 millivolts (mV).

## MY FINAL

In Part 2, we'll look at what DDS is, see how it works and examine any problems. We will then connect the Uno plus AD9850 DDS to the DCR and run various free DSP software to see what's "out there" and to where you can stream/share data with others in Cyberspace! – 73

TCA

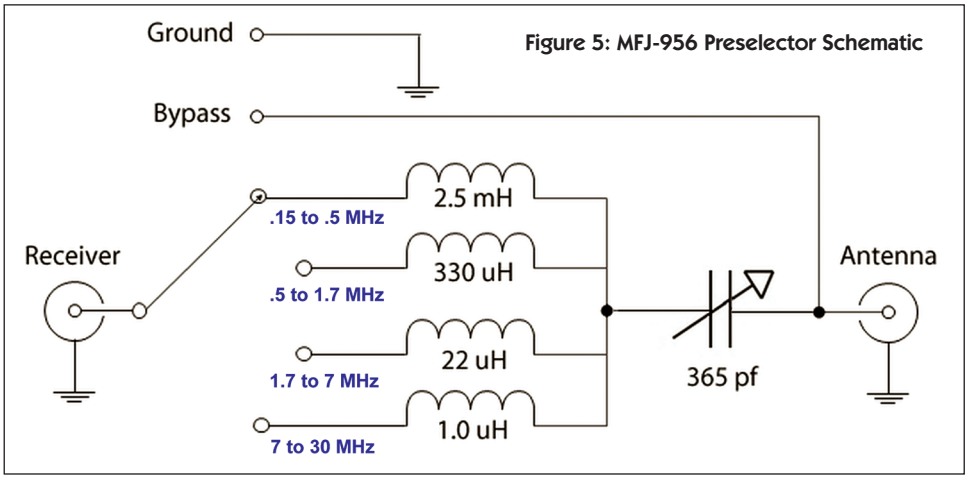



Figure 5: MFJ-956 Preselector Schematic

## REFERENCES AND RESOURCES

**Bandpass Filter**
http://www.answers.com/topic/passband

**Differential Amplifier**
http://en.wikipedia.org/wiki/Differential_amplifier

**Direct Conversion Receiver**
http://en.wikipedia.org/wiki/Direct-conversion_receiver

**Filter, Attenuator, Preamplifier, Preselector or Barefoot (PDF)**
http://www.dxing.com/tnotes.htm

**Frequency Mixer**
http://en.wikipedia.org/wiki/Frequency_mixer

**Fritzing**
http://fritzing.org/home

**Noise Figure**
http://en.wikipedia.org/wiki/Noise_figure

**Preselector**
http://en.wikipedia.org/wiki/Preselector

**The Radio Whisperer (PDF)**
www.kc4zvw.org/files/wspr-receiver.pdf

**VA3ROM: All Things Digital**
http://tinyurl.com/og2acxq

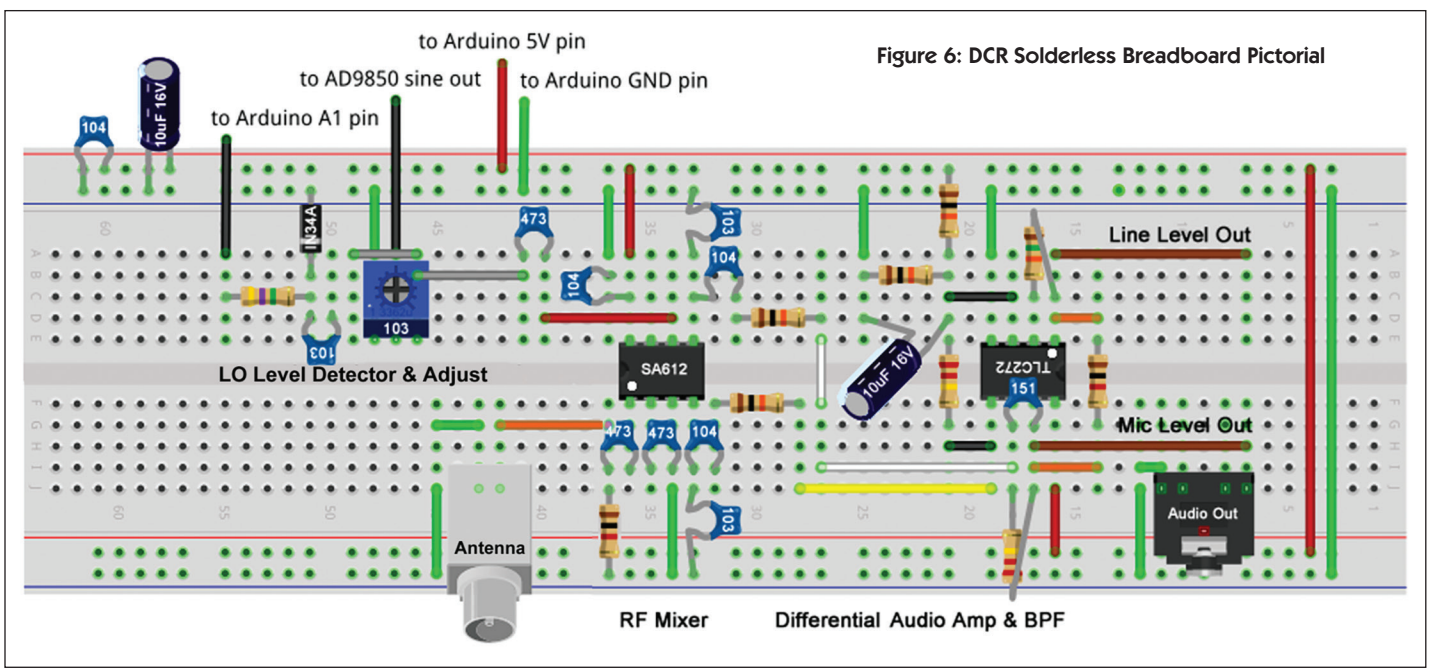



Figure 6: DCR Solderless Breadboard Pictorial

# RAC CANADA DAY CONTEST 2015 / CONCOURS DE LA FÊTE CANADA RAC 2015

Each year on July 1, the anniversary of Canada's Confederation, Radio Amateurs of Canada sponsors the Canada Day Contest. Amateurs all over the world are invited to Canada's Birthday Party on the air.

**Contest Period: 0000 UTC to 2359 UTC July 1, 2015**

**Bands and Modes:** 160, 80, 40, 20, 15, 10, 6 and 2 metres, CW and phone (SSB, FM, AM, etc.)

**Suggested frequencies:** CW – 25 kHz up from the band edge and for SSB – 1850, 3775, 7075, 7225, 14175, 21250, 28500 kHz. Check for CW activity on the half-hour.

**Exchange:** Stations in Canada send RS(T) and province or territory. VEØs and stations outside Canada send RS(T) and a serial number.

**QSOs:** Contacts with stations in Canada or VEØs are worth 10 points. Contacts with stations outside Canada are worth 2 points. Contacts with RAC official stations are worth 20 points. RAC official stations are: VA2RAC, VA3RAC, VE1RAC, VE4RAC, VE5RAC, VE6RAC, VE7RAC, VE8RAC, VE9RAC, VO1RAC, VO2RAC, VY0RAC, VY1RAC and VY2RAC. You may work any station once on each of the two modes, on each of the eight contest bands.

It is **prohibited** to make CW contacts in the conventional phone sub-bands and phone contacts in the conventional CW sub-bands. Contacts or soliciting QSOs through a repeater during the contest period is not allowed.

**Multipliers:** Thirteen in total, Canada's 10 provinces and three territories. Each multiplier may be counted once on each mode on each of the eight contest bands. The multipliers, with their postal abbreviations and prefixes are: Nova Scotia [NS] (VE1, VA1, CY9, CYØ); Quebec [QC] (VE2, VA2); Ontario [ON] (VE3, VA3); Manitoba [MB] (VE4, VA4); Saskatchewan [SK] (VE5, VA5); Alberta [AB] (VE6, VA6); British Columbia [BC] (VE7, VA7); Northwest Territories [NT] (VE8); New Brunswick [NB] (VE9); Newfoundland and Labrador [NL] (VO1, VO2); Nunavut [NU] (VYØ); Yukon [YT] (VY1); and Prince Edward Island [PE] (VY2). Certain special Canadian prefixes in use at the time of the contest may also apply; however there may be no more than 13 multipliers on each band/mode. Please use the multiplier abbreviations, in square brackets, noted above.

**Final Score:** The total QSO from all bands multiplied by the total number of multipliers from all bands.

**Categories:** The following 9 categories are eligible for plaque's or certificates as detailed in the Awards section of the rules.

- Single Operator All Bands High Power (>100 Watts) – **Radioworld**
- Single Operator All Bands Low Power (max. 100 Watts output) – **Contest Club Ontario**
- Single Operator QRP (max. 5 Watt output) All Bands & Single Band ** – **QRP Canada**
- Single Operator All Bands CW only, any authorized power – **Maritime Contest Club**
- Single Operator All Bands PH only, any authorized power – **Saskatchewan Contest Club**
- Single Operator Single Band, any authorized power *** – **Radioworld**
- Multi-Operator Single Transmitter High Power (>100 Watts) * – **Alfa Radio**
- Multi-Operator Single Transmitter Low Power (max. 100 Watts output) * – **Tony Allsop VE3FTA Memorial by the Mississauga ARC**
- Multi-Operator Multi-Transmitter, any authorized power – **Radioworld**

For the Canada Day Contest a special trophy is awarded for the highest Single Operator (no power classification) Foreign Entrant – **Larry Kayser VA3LK Memorial by Alan Goodacre, VE3HX**.

Special thanks to our sponsors for their support of the RAC contests.

Le premier juillet de chaque année, l'anniversaire de la confédération du Canada, Radio Amateurs du Canada parraine le concours de la fête du Canada. Les amateurs du monde entier sont invités à y participer.

**Durée du concours: 0000 UTC à 2359 UTC le 1er juillet 2015**

**Bandes et modes d'émission:** 160, 80, 40, 20, 15, 10, 6 et 2 mètres, en CW et/ou en phonie (BLU, FM, AM, etc.).

**Fréquences suggérées:** CW – 25 kHz au dessus de la limite inférieure de la bande. BLU – 1850, 3775, 7075, 7225, 14175, 21250 et 28500 kHz. Vérifiez aux demi-heures pour l'activité en CW.

**Échange:** Les stations au Canada envoient un rapport RS(T) ainsi que leur province ou territoire. Les stations VEØ et les stations à l'extérieur du Canada envoient un rapport RS(T) ainsi qu'un numéro séquentiel.

**Les QSO:** Les contacts avec des stations au Canada ou des stations VEØ valent 10 points. Les contacts avec des stations à l'extérieur du Canada valent 2 points. Les contacts avec des stations officielles de RAC valent 20 points. Les stations officielles de RAC sont: VA2RAC, VA3RAC, VE1RAC, VE4RAC, VE5RAC, VE6RAC, VE7RAC, VE8RAC, VE9RAC, VO1RAC, VO2RAC, VY0RAC, VY1RAC et VY2RAC. Vous pouvez contacter une station une fois dans chacun des modes, sur chacune des huit bandes du concours.

Il est défendu de faire des contacts en CW sur les parties des bandes normalement réservées à la phonie, et vice versa. Il est aussi défendu de faire ou de solliciter des contacts via un répéteur pendant le concours.

**Multiplicateurs:** Treize au total, les 10 provinces canadiennes et les 3 territoires. Chaque multiplicateur peut-être compté une fois pour chaque mode sur chacune des huit bandes du concours. Les multiplicateurs, avec leur abbréviation postale et leur(s) préfixe(s), sont: Nouvelle-Écosse [NS] (VE1, VA1, CY9, CYØ); Québec [QC] (VE2, VA2); Ontario [ON] (VE3, VA3); Manitoba [MB] (VE4, VA4); Saskatchewan [SK] (VE5, VA5); Alberta [AB] (VE6, VA6); Colombie-Britannique [BC] (VE7, VA7); Territoires du Nord-Ouest [NT] (VE8); Nouveau-Brunswick [NB] (VE9); Terre-Neuve et Labrador [NL] (VO1, VO2); Nunavut [NU] (VYØ); Yukon [YT] (VY1); Ile-du-Prince-Edouard [PE] (VY2). Certains préfixes canadiens spéciaux en usage pendant le concours peuvent aussi s'appliquer; cependant, il ne peut y avoir plus de 13 multiplicateurs pour chaque bande/mode. Veuillez s'il-vous-plaît utiliser l'abbréviation du multiplicateur, entre crochets, telle que notée ci-haut.

**Pointage final:** Le total des des QSO obtenus sur toutes les bandes, multiplié par le nombre total de multiplicateurs obtenus sur toutes les bandes.

**Catégories:** Les neuf catégories suivantes sont éligibles pour des plaques ou des certificats, tel que détaillé dans la section Prix des règlements du concours.

- Opérateur unique, toutes bandes, haute puissance (>100 Watts) – **Radioworld**
- Opérateur unique, toutes bandes, basse puissance (max. 100 Watts à la sortie) – **Contest Club Ontario**
- Opérateur unique QRP (max. 5 Watts à la sortie), toutes bandes et bande unique ** – **QRP Canada**
- Opérateur unique, toutes bandes, CW seulment, toute puissance autorisée – **Maritime Contest Club**
- Opérateur unique, toutes bandes, phonie seulement, toute puissance autorisée – **Saskatchewan Contest Club**
- Opérateur unique, bande unique, toute puissance autorisée *** – **Radioworld**
- Opérateurs multiples, émetteur unique, haute puissance (>100 Watts) * – **Alfa Radio**
- Opérateurs multiples, émetteur unique, basse puissance (max. 100 Watts à la sortie) – **Trophée mémorial Tony Allsop VE3FTA par le CRA Mississauga**
- Opérateurs multiples, émetteurs multiples, toute puissance autorisée – **Radioworld**

**Category notes:**

1) The contents of a log that is submitted for a specific category must reflect that category. In the event of a conflict between the actual content of the log and the stated category in the Cabrillo header or contained in other elements of the entry material, the actual contents of the log will be used to determine the category of entry where possible. In the event this cannot be determined or in the event where a log does not identify the entry category, the entry will be classified into the Multi-Operator, Multi-Transmitter, any authorized power category.

Any entrant who wants to enter a specific category (i.e. Single band entry) but who also worked additional contacts outside that category **may** submit those additional contacts in a **separate** check log file. Do not include them in the main entered category log file.

2) Where the categories have a power class and the submitted log does not clearly identify the power class entered, then the log will be treated as if the highest power class for that category was entered.

3) Single operators who receive assistance from a DX spotting system, including Skimmer and similar technologies or any type of Packet Cluster network during the contest must classify themselves as Multi-ops.

4) * In the Multi-Single category only one transmitter and one band are permitted during the same time period (defined as 10 minutes). Exception: One, and only one, other band may be used during any 10-minute period, if and only if the station worked is a new multiplier. In other words the Multi-Single Transmitter class allows a second station to "hunt" and work multipliers only on a single separate band during any 10-minute period.

5) Multi-Multi category stations may operate on several bands simultaneously.

6) ** Although there is only one QRP category, which qualifies for a plaque or certificate, it is intended that the published results would show All Bands or the Single Band of operation. To facilitate this break out of the listings, your entry should indicate the band(s) or mode(s) operated.

7) *** Although there is only one Single Operator Single Band category that qualifies for a certificate or award, it is intended that the published results would show High Power or Low Power. To facilitate this break out of the listings, your entry should indicate the power class you used.

8) Operators who have participated in any multi-operator category entries may not contact the station they have participated in if they were to operate as part of another entry in the same contest. In addition, guest operators at any station regardless of entry category may not claim contacts with the station host owner or host station mobile call for points or multipliers.

**Awards:** Plaques will be awarded to the top-scoring entrants in each category, as noted above in the category list. Special thanks to our sponsors for their ongoing support!

Certificates will be awarded to the top-scoring entrant in each category in each of:

- Canadian provinces or territories
- Continental US call districts, W0 through W9 as well as Alaska and Hawaii. US Commonwealths, Territories and Possessions such as Puerto Rico, US Virgin Islands, etc will be treated as equivalent to a DXCC country
- DXCC country, excluding Canada and the US.

To facilitate the proper allocation of certificates, all US stations should indicate their actual US call district based on their actual address, as provided in the Cabrillo header, if different than indicated by their call prefix. DX stations should indicate the actual country of operation if different than indicated by their call prefix by indicating the country as part of the portable call sign designator.

RAC stations will compete and be considered the same as any other entrant for eligibility to plaques and certificates.

**Results:** Will be published in *The Canadian Amateur* magazine published by the Radio Amateurs of Canada. The results will also be published on the RAC website at **http://www.rac.ca** in the contest section.

Pour le concours d'hiver du Canada, un trophée spécial est décerné au participant étranger (opérateur unique, sans classe de puissance) ayant obtenu le plus haut score – **le trophée mémorial Larry Kayser VA3LK par Alan Goodacre, VE3HX**.

Nous tenons à remercier nos commanditaires pour leur appui aux concours de RAC.

**Notes sur les catégories:**

1) Le contenu d'un journal de bord soummis dans une catégorie spécifique doit refléter cette catégorie. Dans le cas d'un conflit entre le contenu réel d'un journal de bord et la catégorie inscrite dans l'entête Cabrillo ou contenue dans d'autres éléments de la soummission, le contenu réel du journal sera utilisé pour déterminer la catégorie de l'inscription. Dans le cas où celle-ci ne peut être déterminée, ou si le journal de bord n'identifie pas la catégorie de l'inscription, celle-ci sera classée dans la catégorie opérateurs multiples, émetteurs multiples, toute puissance autorisée.

Tout participant désirant s'inscrire dans une catégorie spécifique (par exemple bande unique), mais ayant aussi établi des contacts additionels hors de cette catégorie **peut** soumettre ces contacts additionnels dans un journal de bord **séparé**. Ne les incluez pas dans le journal de la catégorie principale dans laquelle vous participez.

2) Dans le cas où les catégories ont des classes de puissance et que le journal soummis ne l'identifie pas clairement, celui-ci sera traité comme si la classe de puissance la plus élevée pour cette catégorie a été inscrite.

3) Des opérateurs uniques qui reçoivent de l'aide d'un système de repérage DX, comme Skimmer et des technologies similaires, ou n'importe quel type de réseau « Packet Cluster » pendant la période du concours, devront s'inscrire dans la catégorie opérateurs multiples.

4) * Dans la catégorie opérateurs multiples, émetteur unique, un seul émetteur et une seule bande sont permis durant la même période de temps (définie comme étant 10 minutes). Une exception est cependant tolérée: une seule autre bande peut-être utilisée pendant cette période de 10 minutes, seulement si la station contactée est un nouveau multiplicateur. En d'autres mots, la classe opérateurs multiples, émetteur unique permet à une seconde station de « chasser » et contacter des multiplicateurs sur une seule autre bande dans une période de 10 minutes.

5) Les stations participant dans la catégorie opérateurs multiples, émetteurs multiples peuvent opérer sur plusieurs bandes en même temps.

6) ** Même s'il n'y a qu'une seule catégorie QRP qui soit éligible pour une plaque ou un certificat, il est prévu que que les résultats publiés afficheront soit toutes bandes, soit la bande unique d'opération. Afin de faciliter la publication des résultats, votre entrée devrait indiquer le (les) bande(s) ou mode(s) opérés.

7) *** Même s'il n'y a qu'une seule catégorie opérateur unique, bande unique, qui soit éligible pour une plaque ou un certificat, il est prévu que les résultats publiés afficheront soit haute puissance, soit basse puissance. Afin de faciliter la publication des résultats, votre entrée devrait indiquer la classe de puissance utilisée.

8) Des opérateurs ayant participé à quelconque entrée dans la catégorie opérateurs multiples ne peuvent pas contacter la station à laquelle ils ont participé s'ils devaient opérer en tant que membre d'une autre entrée lors du même concours. De plus, des opérateurs invités d'une station, peu importe la catégorie, ne peuvent pas revendiquer de contacts avec le propriétaire de la station hôte ou avec l'indicatif d'appel mobile de la station hôte pour des points ou des multiplicateurs.

**Prix:** Des plaques seront remises aux participants ayant obtenu le plus haut score dans chaque catégorie, telle que notée ci-haut dans la liste des catégories. Nous tenons à remercier nos commanditaires pur leur support continu! Des certificats seront remis aux participants ayant obtenu le plus haut score dans chaque catégorie se situant dans chacun(e) des:

- Provinces et territoires canadiens
- Districts d'appels des États-Unis continentaux, W0 à W9, et aussi pour l'Alaska et Hawaii. Les Commonwealths américains, territoires et possessions tels que Porto Rico, les iles Vierges américaines, etc, seront considérés comme étant équivalent à un pays DXCC; et
- Pays DXCC, excluant le Canada et les État-Unis.

**Entries:** All entries (electronic or paper logs) must be postmarked or electronically submitted by **July 31, 2015**. Electronic entries will be confirmed by return email. Send email entries to: **canadaday@rac.ca**

Send paper entries to:

Radio Amateurs of Canada
720 Belfast Road, Suite 217
Ottawa, Ontario, Canada K1G 0Z5

We will be publishing a list of logs received and the categories entered on the RAC website during and/or after the submission period after the cut off date to assist in correcting any entry categorizations.

Paper mail entries must contain a summary sheet showing score calculation, a dupe sheet listing calls worked on each mode on each band, a multiplier check sheet and log sheets. Logsheets must show time, band, mode, call of station worked, exchanges sent and received and claimed for each QSO. New multipliers must be clearly marked in the log.

**Contest entry forms are also available on the RAC website at: http://www.rac.ca/en/rac/programmes/contests**

Any entry with 100 or more contacts should be submitted in digital format. The preferred electronic format is the RAC Cabrillo format. The files must be submitted in plain ASCII/Text format.

While the contest committee prefers Cabrillo formatted submissions, we will continue to accept electronic logs from older versions of contest software, but your file must be in ASCII/Text format and have all the required information. However ".adi" files are not acceptable.

Given there are several free programs that support the RAC contests and generate an acceptable Cabrillo entry, we encourage you to seek out one of these programs.

The RAC Cabrillo format is described and its detailed layout is shown on the RAC website at:

**http://www.rac.ca/en/rac/programmes/contests**

Electronic logs that do not have a complete Cabrillo header should provide a summary sheet with the same information as shown for the paper log entries. The standard summary sheet provided by the typical logging program is generally acceptable, but you should confirm that it contains the same information as shown for paper log entries.

A properly filled out Cabrillo header section will be a sufficient substitute for a summary sheet for logs submitted in that format. Please ensure that you review the header for accuracy and that it is completely fill out. Name your file with your Call Sign and the file extension. LOG (e.g., yourcall.LOG). If you email your log, please send the file(s) as **attachments**.

Do not paste the log file into the text of your message as there may be issues with the formatting making it difficult to properly extract the log. Large files may be zipped if necessary.

**If you need help with preparing or emailing your log or have any other questions, please contact Bart Ritchie: ve5cpu@rac.ca**

For the previous year's contest results, visit the RAC website (**http://www.rac.ca**) in the contesting section.

Afin de faciliter l'attribution des certificats, toutes les stations américaines participantes devraient indiquer leur réel district d'appel américain basé sur leur addresse réelle, telle que fournie dans l'entête Cabrillo, s'il diffère de celui indiqué par le préfixe de leur indicatif. Les stations DX devraient indiquer leur réel pays d'opération s'il diffère de celui indiqué par le préfixe de leur indicatif.

Les stations officielles RAC compétitionneront et seront considérées comme étant pareilles à tout autre participant en ce qui concerne l'éligibilité aux plaques et certificats.

**Résultats: I**ls seront publiés dans la revue *The Canadian Amateur*, publiée par Radio Amateurs du Canada. Il seront aussi publiés sur le site web de RAC au **http://www.rac.ca** dans la section "concours".

**Soummission des inscriptions:** Toute inscription (électronique ou papier) doit porter un cachet de la poste, ou être soummise par courriel, pour le **31 juillet 2015**. Les soummissions électroniques seront confirmées par courriel. Envoyez vos inscriptions par courriel à : **canadaday@rac.ca**

Envoyez vos inscriptions papier à:

Radio Amateurs du Canada
720 ch. Belfast, suite 217
Ottawa, Ontario, Canada K1G 0Z5

Nous publierons une liste de journaux de bord reçus avec leur catégorie sur le site web de RAC pendant et/ou après la période de soummission et après la date limite afin d'aider à corriger toute erreur de catégorisation des inscriptions.

Les inscriptions papier envoyées par courrier doivent contenir une feuille sommaire démontrant le calcul des , une feuille indiquant les indicatifs contactés dans chaque mode sur chacune des bandes (dupe sheet), une feuille indiquant les multiplicateurs utilisés et le journal de bord. Le journal doit montrer l'heure, la bande, le mode, l'indicatif de la station contactée, les rapports échangés et les revendiqués pour chaque QSO. Les nouveaux multiplicateurs doivent être clairement indiqués dans le journal.

**Des formulaires d'inscription sonts aussi disponibles sur le site web de RAC au: http://www.rac.ca/en/rac/programmes/contests**

Toute inscription contenant plus de 100 contacts devrait être soummise sous forme numérique. Le format électronique préféré est le format Cabrillo RAC. Les fichiers doivent êtres soummis en format text/ASCII.

Bien que le commité du concours préfère les soummissions en format Cabrillo, nous continuerons à accepter vos journaux de bord électroniques générés par des versions antérieurs de logiciels de concours, mais votre fichier doit être en format text/ASCII et contenir toutes les informations requises. Par contre, les fichiers ".adi" ne sont pas acceptables.

Comme il existe plusieurs logiciels gratuits supportant le concours RAC et pouvant générer un fichier Cabrillo acceptable, nous vous encourageons à en utiliser un.

Le format Cabrillo RAC est décrit et sa disposition est illustrée en détail sur le site web de RAC au : **http://www.rac.ca/en/rac/programmes/contests**

Les journaux de bord soummis sous forme numérique mais ne possédant pas d'entête Cabrillo complète devraient fournir une feuille sommaire avec les mêmes informations que pour les soummissions papier. La feuille sommaire standard fournie par les logiciels courants est généralement acceptable, mais vous devriez confirmer qu'elle contienne les mêmes informations que pour le les soummissions papier.

Une entête Cabrillo correctement remplie se substitueras à une feuille sommaire pour les journaux soummis dans ce format. Veuillez s'il-vous-plaît vous assurer que vous vérifiiez l'exactitude de l'entête et qu'elle soit complètement remplie.Nommez votre fichier avec votre indicatif et l'extension de fichier .LOG (par exemple votreindicatif. LOG). Si vous envoyez votre journal de bord par courriel, veuillez inclure le(s) fichier(s) **en pièce(s) jointe(s)**. Ne copiez pas le fichier dans le texte de votre message, étant donné qu'il pourrait y avoir des problèmes avec la mise en page, rendant la tâche d'extraire votre journal plus difficile. Les gros fichiers peuvent être compressés en format .ZIP si nécessaire.

**Si vous avez besoin d'aide avec la préparation ou l'envoi de votre journal par courriel ou avez d'autres questions, veuillez contacter Bart Ritchie: ve5cpu@rac.ca**

Pour les résultats des éditions précédentes du concours, visitez le site web de RAC (**http://www.rac.ca**), dans la section concours.

*Traduction par Ante Laurijssen, VA2BBW. Merci Ante!*

# PACTOR in the Service of Humanity

**Gordon Murray, VE3JSJ**

For most of my life, two of my interests have been backcountry canoeing and camping, and Amateur Radio.

I often combined these two activities, carrying QRP radios on canoe trips. Starting off with the Heathkit HW-8, then the Ten Tec Argonaut 509, followed by the SGC SG-2020, and now the Yaesu FT-817ND (or Elecraft KX3 if weight is not too important). In the last three years I have added PACTOR capabiity, without too much weight penalty, using a small 8-inch Windows 8.1 Tablet and an end-fed resonant antenna covering 40m, 20m and 10m. No need for an antenna tuner.

These forays into the backcountry, with lightweight radio gear, gave me valuable experience that has served me well in situations requiring emergency/portable communications. My first experience with overseas emergency work was in 1988, when I flew to Jamaica to set up radio communications after the devastation wrought by Hurricane Gilbert. This was written up in *The Canadian Amateur* in December 1988.

So it was with great interest that I saw a posting by John Kirkoff, KB0UUP, on a Yahoo Newsgroup, asking for volunteers with PACTOR capability to provide communications during a medical mission sponsored by the International Health Service (IHS; http://www.ihsmn.org) in February of this year. For over 30 years, IHS has been conducting missions and deploying eight to 12 teams of about 100 to 120 doctors, nurses, pharmacists, dentists, engineers, Amateurs and general helpers across Honduras.

IHS is well-organized and efficient. After many informative phone calls and emails with John, completion of the various required documents and payment of the fees, I booked my flights and set off for Honduras.

I was assigned to a Hospital team in Tocoa. My station was set up in a porch of the maternity wing, which had been taken over for two weeks by the IHS "Eye Team" who were assigning eyeglasses to local patients. Their prescriptions were measured by two IHS volunteers using two autorefractors connected to laptops, which printed a list of appropriate glasses from the 2,000 or so pairs we had catalogued in the clinic.


In addition to my communication duties, I maintained the autorefractors' computer system. A dead USB port did not help, but fortunately I had a spare mini-USB hub in my gear.

We planned regularly scheduled SSB nets between nine sites across Honduras, but local propagation was so poor we could not hear each other. Fortunately, Tom Whiteside, N5TW, in Texas had dedicated a beam antenna and special PACTOR frequencies for our use. Connecting to his Winlink gateway station was almost always on the first try. I routinely established contact using 5 watts or less.

While my location in Tocoa had spotty cellphone coverage, most other sites had no communications infrastructure at all. Winlink was it! I had a small inkjet printer to print the sometimes critical or complex medical information emailed from remote sites, asking if some of their patients could be treated by the IHS surgical team next door to me. Useful to doctors were photographs sometimes transmitted along with the PACTOR emails. Some of the remote sites in La Moskitia plains and jungles had no road access. Those teams traveled by dugout boat or by light airplane landing on the main street of the village – after first buzzing the street to clear off donkeys, pigs, hens, dogs and cows.

I was fortunate to have had access to 120-volt power. All my equipment used 12 volts including the inkjet printer and tablet. I used a Yaesu-857ND, an LDG Z-11ProII autotuner and a Windows 8.1 Tablet. My PACTOR modem was the SCS Dragon DR-7400.

My power supply was the extremely light Gamma-Hybrid miniature unit, backed up with a 10AH LiPO4 battery and charger (http://www.gammaresearch.net/).

I used a "One Banana Tree" antenna – an End-Fed Zepp from Chameleon (http://www.chameleonantenna.com). The feedpoint was about two metres off the ground and after 25 metres, the wire rose to four metres (Banana tree style!). No doubt this worked mainly in NVIS mode, but I did establish contacts with HF Gateways VE1YZ (Neil) in Halifax, Nova Scotia, and with VA3LKI (Michael) in Port McNicoll, Ontario on both 20m and 40m bands.

In case of failure I took along duplicates of all my radios and computer equipment. Fortunately, everything worked perfectly and I was able to set up a second PACTOR station at my overnight location.

After the mission, I spent a couple of days in Copan viewing the ancient Mayan ruins and admiring the magnificent macaws at the superb Macaw Mountain Bird Sanctuary. I had the delight of lunching with the Sanctuary Director, Mr. Lloyd, and enjoyed my after-service side trip immensely.

If you would like more information, here is a link to a presentation I gave recently to the Hamilton Amateur Radio Club:

https://mega.co.nz/#!0pREyJLY!kSdXmutr6znTKvYTaHa1kvQ16YBJMmOL2SowCDSZYSY

You can also find a short video online that I took while on the mission. I used my smartphone so the video is not "Super HD" quality: http://youtu.be/Yqvdl4Un1Qc

# RANDOM THOUGHTS...

## On How to QRM Properly...

**Dirk Moraal, VY1NM**
**Box 75**
**Tagish, YT Y0B 1T0**

**Last winter while** trying to work some choice Digital DX on QRP, an adjacent station from the West Coast started to call a JA station and in the process wiped out most of us on the waterfall.

Every time he transmitted it reminded me of the bad old days when certain stations got away with transmitting huge amounts of power with a kerchunk! and a blanketing of all the other stations in the dog pile.

These stations seem to have become silent much to the relief I am sure of other Ops.

In the process of his QSO the fellow bragged he had been a ham since 1965. Hmm. I am not sure if he meant it conferred special privileges upon his person. He did not affect me too much since I am not working towards any awards, but I am sure there are those who were who were hindered.

So, in the interest of those out there who have not yet figured out how to become a real pain in the butt to their fellow Ham, here are some tips on how to QRM thy neighbour.

- Tune up on top of somebody else's digital transmission, because you want to break in on his QSO, and then call him repeatedly.
- Park your signal directly on top of someone else's digital transmission, and transmit, particularly if you can see he is working some choice DX. Then call the DX yourself.
- Make sure you run as much power as possible when on digital modes.
- If not successful in breaking into someone else's QSO, pursue him as he QSYs to get away from you. Call over and over again.
- Repeatedly call stations carrying out a QSO on a digital mode you do not recognise, while you are on BPSK, to ask what mode they are using.
- Use wide band digital modes in the band portion assigned to narrow band digital modes. Try Olivia or RTTY in the PSK portion of the band. That really messes things up.
- Use your amplifier on digital modes.
- Use a high ALC setting or simply neglect to adjust your transmitter properly for use on digital modes.
- Tune up endlessly on a calling frequency in use, either whilst whistling, transmitting a CW tone, or repeating hoola hoola hoola over and over again.
- During a contest, barge onto someone else's frequency in use so you can get the multiplier he is trying to work.
- Tune up on an active Net frequency. This will always get you some comments.
- Transmit without first checking to see if the frequency is in use.

There are lots of other ways, but these tactics will get you well on your way to being more than just a prize nuisance.

Finally, you should get really, really, mad if someone else does this to you!

TCA

**WINLINK**

These activities would not have been possible without the Winlink Global Radio Email system, which made email communication between Honduras and the USA/Canada so straightforward.

Winlink is run entirely by volunteers under the umbrella of the Amateur Radio Safety Foundation, Inc., and deserves our thanks and continued support.

For more information please visit: http://www.arsfi.org

**N5TW**

The support given by N5TW in dedicating frequencies and antennas to our use during the mission in Honduras was invaluable. Thanks to Tom Whiteside.

**INTERNATIONAL HEALTH SERVICE**

As described earlier, this endeavour was with the International Health Service (http://www.ihsmn.org) which organizes the medical teams, the Amateur support, and the incredible logistics needed to support such missions twice each year.

In total, about 10 Amateurs go on a mission every February and one or two every October so there is always a need for help. Any ham who wants to join this mission is welcome.

Note that some sites use a more modest setup due to their needs for basic comm. IHS can help as they have some gear to equip each station. They also hold excellent Winlink on-air operations training weeks prior to departure.

To get involved, contact the International Health Service Communications Director, John Kirckof, KB0UUP, at JMKKEK@Yahoo.com or 320-634-4386. He would be happy to talk with you and send plenty of information about what these trips involve.

In addition, please feel free to contact me at 905-575-3647 or by email at g@gem.ca.

*Gordon Murray emigrated from Dublin, Ireland in 1972. He earned his Amateur Radio licence and call sign VE3JSJ in 1979. He also holds the call G4RDG. His PhD is in Genetics and his career has been in Biomedical Research. He lives with his wife Linda in Hamilton, Ontario and their son Kevin, VE3CNV, is a Graduate student in Electrical/Computer Engineering at the University of Toronto.*

TCA

# Calgary Scouts Radio Tower Replacement Project

**Alan Davidson, VE6DE**
**18th Calgary Scout Radio Club (VE6JAM)**

It's January 9, 2015 and two cranes are finally lifting the top section of the tower, with new Amateur Radio antennas, into place 30 metres above the 18th Calgary Scout Group's Hall in the centre of Southwest Calgary. It's taken three days just to mount our equipment on the tower section, while on the ground in the yard. It's been four years in the planning and execution.

This has been no ordinary project. The 18th Calgary Scout Radio Club has operated an Amateur Radio station from this location with the VE6ANX call since 1962, and additionally VE6JAM for the past 20 years. We started with two 30-foot telephone poles supporting triband dipoles, in use for the annual Scout Jamboree on the Air – known to most Scouts in the world as JOTA. We then progressed to a triband beam on top of a 30-foot windmill tower on top of our flat-roofed Scout Hall.

In 1993, due to a roof renovation, the windmill tower was removed and we subsequently installed a donated 100-foot Lattice-type tower with a triangular 15-foot footprint on top of three 26-inch diameter by 20-foot deep concrete footings, with an HF triband beam, a Ringo Ranger, and an 8-element, 2 metre vertically polarized beam.

About four years ago, we were discussing replacing the more than 500 three-quarter inch Galvanized bolts in the tower, and we received an offer from the Calgary Fire Department to replace them all as part of an exercise, as they had been using the tower from time to time for rescue training practice for firefighters. However, we never got that far.

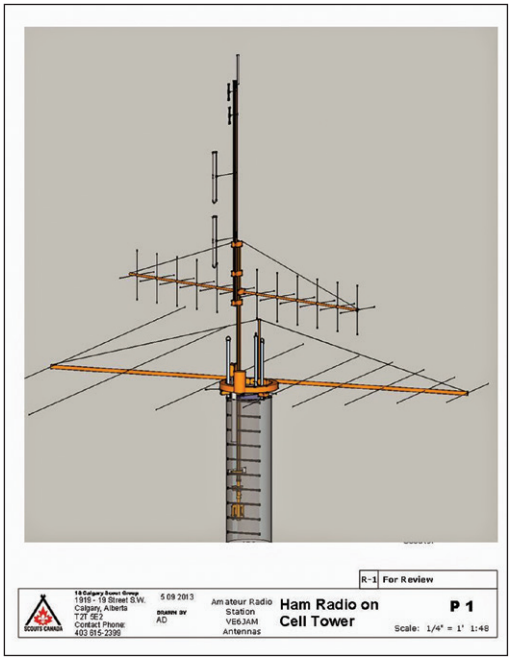
In early 2011, we were approached by a representative of a tower company that wanted the site for Wind mobile. This was partly because if they replaced our existing tower with a new one, it could bypass the public consultation process as it would be a replacement tower.

I asked an Amateur Radio friend at Rogers Wireless if the deal they were offering was reasonable and, subsequently, Rogers Wireless came back with an even better package in which Rogers would replace the tower, and also provide space for Wind or another Wireless carrier as well as allowing us to re-install our Amateur Radio Equipment on the top of the tower.

We agreed that the installation would be as close to commercial standard as was possible – that is, as robust as possible – and that we would have our design approved by the tower manufacturer engineers, who did require some minor improvements.

The City of Calgary has a policy that cellphone towers in Calgary should be "monopole design". Rogers then proceeded to design a 30-metre high replacement tower, with a 42-inch diameter steel pipe as the mast, and a 60-inch diameter by 40-foot deep concrete footing as the base of the tower. The soil is a clay and sand mixture.

To replace the existing antennas, for the vertical we decided on two 2 metre dipoles, plus separate two 70 centimetre dipoles above on an upgraded 16-foot aluminum mast from Comprod.




This would allow both local 2 metre and 70 centimetre operation, and the possiblility of installing repeater equipment on one or both. Below this on the same mast would be mounted a 10/10-element Vertical and Horizontally polarized M2 two metre beam so we could work regional VHF repeaters, and try some weak signal 2 metre operation.

We decided that full satellite beam rotators would be too difficult logistically to install and, more importantly, to maintain, as only approved tower climbers may access the antennas.

The engineer required the bottom mast to be Schedule 80, 3-1/2 inch diameter aluminum pipe, which is supported by two large ball bearings: one on top of the tower and one eight-feet down inside the tower. Below this is an Alfa Spid RAK rotator, mounted to a custom adjustable bracket below. The rotator can be removed for maintenance if need be, leaving the mast in place.

The Spid has extra mechanical limit switches to ensure it does not over-travel and tear off the cables if the controller becomes misconfigured.

The omnidirectional dipoles on top are rotated when the beam is rotated, but this does not affect their operation.

Four RG-8 type cables come down to the top of the tower, where two from the beam go to an H/V relay and, subsequently, to three new runs of Andrews AVA-5 to the building, where they interface with the existing 7/8-inch coax to the VE6JAM radio room. To effectively manage these four lines, a 4-turn stainless steel, 1 inch by 1/8 inch, spring was fabricated outside the mast, and the four lines are shrink wrapped to the spring so that the cables are managed and do not interfere with the HF antenna cables.

The HF antenna was originally a Triband Beam. When I had visited the United Kingdom and operated Scout Stations at Jamborees (GB4KIJ and GB75RH),

**Frank, VE6ANL and Howard, VE6GT, install shrink tubing.**

the newer WARC bands were well used so we decided on a heavy duty M2 skip log periodic covering 7 and 10 to 30 MHz. The rotator was more of a problem. Because the tower has an internal ladder – including a closing hatch at the top – the rotator had to have a ring rotor that would go around not only the hatch, but the VHF/UHF and other equipment on top of the tower. We also wanted to install a gin pole that could be used for subsequent equipment lowering.

Our deal with Rogers was that they would install the antennas with their crane as they installed the rest of the tower, but we would be responsible for any ongoing maintenance, to be done by an approved tower crew. The result was a K0XG heavy duty ring rotor, with a motor and gearbox that is as large as most regular Amateur rotors. However, the major problem was how to route the feedline and power from the fixed tower to the rotating antenna and rotator motor.

We had agreed with Rogers that we would not have any cables hanging down below the top of the tower, as their top antennas would be about one metre below. Several possible designs were suggested: one with a pulley with a weight inside the tower, and a channel built on the inside of the ring rotor to catch the cable, was a serious contender until we considered the problems with it during snow and frost conditions.

The tower designers agreed we could build up above the tower so we designed a five-foot high curved extension above the tower ladder, and fabricated a top rung using Key Clamp hardware to allow the cables to droop from this to a separate pipe mounted on the HF beam support mast. These cables also are wrapped with shrink fit tubing. To ensure the cables will not interfere with the VHF antenna mast, the HF antenna is limited to about 340 degrees of rotation, but as the beam width of the log periodic is rated at 35 degrees, this seemed like a good trade-off. The HF antenna also has a run of 7/8-inch AVA-5 coax to the shack.

On the original tower we had an 80 metre "inverted V" with the centre at the top of the tower, down to the original telephone poles.

Rogers did not want our dipoles in front of the cellphone antennas so we agreed to install them below at 20 metres above the ground. Two sets of pulleys are installed on Stainless Steel Boat hardware down to 6 metres above the ground, where the RG/11 WP cable is connected from a new balun to a run of Times 600-75 75 ohm cable to the shack.

We had considerable debate on whether to use 75 ohm or 50 ohm coax. This dipole may also have a 160 metre dipole with folded ends down the telephone poles. This design means we don't have to call in tower climbers for dipole maintenance.

As the equipment was slowly assembled in the Scout Hall garage, a "dummy mockup" of the top of the tower was created, to ensure everything would fit properly, and the lines were cut to the correct lengths. All of the steel brackets, etc. were sent to a local galvanizing shop. Even then last minute bolts and spacers were necessary once the top of the tower arrived, and connecting the last of the 15 wires from the Teck control cable occurred as the crane waited to lift it into place.

During the installation of the coax cables in the tower, one of our members suggested we install a power-over-ethernet webcam at the top so we could see our antennas turning from the shack – and this is also available on the Scout website at http://www.calgary18th.com. One can see the coax spring, the log periodic and a view of the City.

The old tower was removed on December 6, 2013. Due to some tower fabrication delays, the old tower footings were not removed until April 2014, and the new tower footing was installed in May, with considerable difficulty in drilling a five-foot diameter hole and pounding in a 40-foot length of five-foot diameter pipe in five-foot sections.

This noise alerted the neighbourhood to the construction and some community members asked local, provincial and national politicians to have Industry Canada halt the construction and require Rogers Wireless to go through a public consultation process, even though it was not required by the legislation regarding replacement towers. This process took six months and Rogers then had the contractors place the tower on January 9, 2015. We were able to test the antennas on January 29 after the rotator control cables and coax cables were installed and swept by the awesome tower crew from Walsh Wireless.

Many thanks to all of the hams and want-to-be hams involved in the project. In particular Alan, VE6DE, Sean, VE6UH, Peter, VE6KK, Vince, VE6LK, Ray, VE6LG, Howard, VE6GT, Frank, VE6ANL, Wayne, VE7DUC, Scott, VA6OC, Tony, VE6MX, Lew, VE6CHJ, Terry, VE6AVR; and Scouters Willy Martin, Ralph Garrett, John Martin and Jim Tobias; and several Scouts, who all of this is for. Even more we want to thank Rogers Wireless for all of the support in installing what we believe are the first set of rotating antennas on one of their cell towers! Not to mention working through all of the consultation process.

We are planning a weekly VE6JAM operation schedule and a subsequent Amateur Radio course for our Scouts to be able to make use of the new antenna farm. It has been a treat to design and install a system of this calibre for Amateur Radio use. Contact us at ve6jam@rac.ca for a sked!

*Alan Davidson, VE6DE, was first licensed in 1961 as VE6AHM, then VE4FV in 1966-68, and has held VE6DE since then. He is retired from 24 years of teaching in Calgary, which included a year in Australia (VK4DEV), and a year in the UK (G4EDS). Alan's wife Linda has not become a ham, but two of his three children are: Jayne, VE6YLJ and Heather, VE6HEY. He is a member of RAC, QCWA, and the Calgary Amateur Radio Association.*

# CANADA IN THE ARRL FIELD DAY 2014

**Prepared by Bob Nash, VE3KZ**

The fields were alive with the sound of CQ FD as 149 Canadian stations took to the Amateur bands in June 2014. North America's premier emergency response exercise was in gear testing the ability of Amateur Radio operators to assist the public by providing communications in situations of dire need.

Although not a contest as such, there were many competitive aspects to the exercise as clubs and groups strived to improve their performance. Here are some of the "winners" and some of the statistics from last year's performances.

The Mississauga ARC VE3MIS overpowered last year's overall high scorer, VE3XR, the Peel Amateur Radio Club, using 10 operating positions. The Halifax Amateur Radio Club VE1FO placed third and the Durham Region QRP Club rounded out the top four entries, all above 7,000 points.

Portable stations in the single-, two- and three-transmitter classes were the most popular, accounting for 105 of the 149 total entries.

The two operators at VA3DF scored highest in the single transmitter class with over 5,000 points. VE1FO led the two-transmitter contingent with VE4BB, the Winnipeg ARC leading the three-transmitter group. VE3MIS had the largest number of QSOs at 2,043. The Hamilton ARC had the largest number of participants at 97.

From an ARRL section standpoint Ontario South, ONS, had the most entries at 29. There were 1,735 individuals participating in the 2014 Canada Field Day. Six of the high Regional scorers repeated their success from 2013 with four Regions sporting new winners. Over 56,900 QSOs were made!

**Regional High Scores for Portable or EOC Stations in the 2014 Field Day**

| Call | Category | Name |
|---|---|---|
| VO1AA | 2A | Society of Newfoundland Radio Amateurs |
| VE1FO | 2A | Halifax Amateur Radio Club |
| VE9ND | 3A | Not Named |
| VE2UMS | 1A | Union Metropolitaine des Sans-Filistes de Montreal |
| VE3MIS | 10A | Mississauga Amateur Radio Club |
| VE4BB | 3A | Winnipeg Amateur Radio Club |
| VE5NN | 3A | Regina Amateur Radio Association |
| VE6KZ | 1B2 | Not Named |
| VE7SAR | 2A | Surrey Amateur Radio Club / SEPAR |
| VE8YK | 2AB | Yellowknife Amateur Radio Society |

**THE CATEGORIES:**

Class A stations are Clubs or a non-club groups of three or more persons set up specifically for Field Day. Score listings are grouped according to the number of transmitters in simultaneous operation. Some Class A entries whose transmitter classification is two or more transmitters also operated one additional HF station known as the Get-On-The-Air (GOTA) station, a chance for inactive Amateurs to get on the air. An additional B indicates operation by a power source other than commercial power mains or motor-driven generator, usually batteries.

| Call | Score | Category | QSOs | Pwr | GOTA | Section | Participants | Club |
|---|---|---|---|---|---|---|---|---|
| VE2UMS | 3,676 | 1A | 875 | LP | | QC | 30 | Union Metropolitaine des Sans-Filistes de Montreal |
| VE3SGB | 2,864 | 1A | 907 | LP | | ONS | 6 | South Georgian Bay Amateur Radio Club |
| VE2ARC | 2,604 | 1A | 561 | LP | | QC | 20 | West Island ARC (VE2CWI) and Montreal ARC |
| VE2CRS | 2,000 | 1A | 377 | LP | | QC | 5 | Club Radio Amateur Saguenay Lac St-Jean |
| VE3OD | 1,900 | 1A | 336 | LP | | GTA | 8 | Halton Amateur Radio Club |
| VE6CJ | 1,874 | 1A | 662 | LP | | AB | 4 | Fort Saskatchewan Amateur Radio Club |
| VE2CYH | 1,438 | 1A | 283 | LP | | QC | 20 | Covey Hill Amateur Radio Club |
| VE7NOR | 692 | 1A | 152 | LP | | BC | 6 | North Okanagan Radio Amateur Club |
| VA3NRR | 636 | 1A | 193 | LP | | ONE | 20 | Renfrew County Amateur Radio Club |
| VO1BRK | 518 | 1A | 109 | LP | | NL | 10 | Baccalieu Amateur Radio Klub |
| VE1UW | 502 | 1A | 98 | LP | | MAR | 7 | |
| VE3SDF | 354 | 1A | 27 | LP | | ONS | 6 | St. Mary's Amateur Radio Club |
| VE3DZ | 346 | 1A | 74 | LP | | ONS | 3 | Niagara Peninsula Amateur Radio Club |
| VE7QF | 4,630 | 1AB | 420 | QRP | | BC | 5 | Island Contesters |
| VE2CBS | 2,365 | 1AB | 190 | QRP | | QC | 8 | Club Radio Amateur Sorel Tracy |
| VE2CAM | 1,430 | 1AB | 93 | QRP | | QC | 3 | Club Radio Amateur Maskoutains |
| VO1MRC | 510 | 1AB | 6 | QRP | | NL | 11 | Marconi ARC of Newfoundland / Signal Hill Splinter Group |
| VA4PAR | 1,760 | 1AC | 705 | LP | | MB | 10 | Pathfinders Amateur Radio Club |
| VE1FO | 7,218 | 2A | 1,997 | LP | VE1QD | MAR | 37 | Halifax Amateur Radio Club |
| VE7SAR | 6,256 | 2A | 1,541 | LP | VE7HME | BC | 30 | Surrey Amateur Radio Club / SEPAR |
| VE3HB | 6,108 | 2A | 1,597 | LP | VE3OAK | GTA | 21 | Oakville Amateur Radio Club |
| VE3ORF | 3,772 | 2A | 1,076 | LP | VE3KY | ONE | 20 | VE3ORF 3730 ARG (Repeater Group Ottawa) |
| VE7PCE | 3,540 | 2A | 1,215 | LP | | BC | 25 | EPCOM (Port Coquitlam) |
| VE3RC | 3,480 | 2A | 746 | LP | VE3NCR | ONE | 50 | Ottawa Amateur Radio Club |
| VE7NSR | 3,382 | 2A | 847 | LP | VE7EMR | BC | 40 | North Shore Amateur Radio Club |
| VA7ODX | 2,874 | 2A | 597 | LP | | BC | 9 | Orca DX & Contest Club |
| VE7VCC | 2,694 | 2A | 517 | LP | | BC | 9 | |
| VE3SOO | 2,588 | 2A | 682 | LP | | ONN | 12 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| VE2CQ | 2,022 | 2A | 408 | LP | VE2CDX | QC | 58 | Club Radio Amateur de Quebec |
| VE7CVA | 1,884 | 2A | 604 | LP | | BC | 21 | Cowichan Valley Amateur Radio Society |
| VE7SCC | 1,712 | 2A | 295 | LP | VA7BHA | BC | 15 | |
| VE7UT | 1,664 | 2A | 251 | LP | | BC | 31 | Kamloops Amateur Radio Club |
| VE3GCB | 1,612 | 2A | 249 | LP | VE3RAG | ONS | 14 | Barrie Amateur Radio Club |
| VO1AA | 1,588 | 2A | 152 | LP | | NL | 9 | |
| VE6YAC | 1,410 | 2A | 386 | LP | | AB | 7 | Yellowhead Amateur Radio Association |
| VE3AIR | 1,352 | 2A | 241 | LP | VA3ZUO | ONE | 4 | Manotick Amateur Radio Group |
| VE5AA | 1,328 | 2A | 232 | LP | | SK | 16 | Saskatoon Amateur Radio Club Inc. |
| VE3OKV | 1,294 | 2A | 176 | LP | | GTA | 8 | South Halton ARES |
| VA3LNZ | 1,200 | 2A | 400 | LP | | ONE | 10 | Victoria Haliburton Amateur Radio Association |
| VE7NA | 986 | 2A | 145 | LP | | BC | 20 | Nanaimo Amateur Radio Association |
| VE1ARC | 976 | 2A | 228 | LP | | MAR | 18 | Greenwood Amateur Radio Club |
| VE6FT | 883 | 2A | 325 | HP | | AB | 14 | Mayerthorpe Flying Tigers |
| VA2HMC | 740 | 2A | 245 | LP | | QC | 8 | Le club de radioamateur de la Haute-Matawinie |
| VE7MIR | 730 | 2A | 74 | LP | | BC | 18 | Mid Island Radio Association |
| VE6YOD | 670 | 2A | 50 | LP | | AB | 12 | Cold Lake Amateur Radio Society |
| VE6NQ | 422 | 2A | 36 | LP | | AB | 22 | Calgary ARA / Calgary Regional ARES |
| VA3OVQ | 1,555 | 2AB | 89 | QRP | | ONE | 3 | Ottawa Valley QRP Society |
| VE8YK | 1,430 | 2AB | 70 | QRP | | NWT | 5 | Yellowknife Amateur Radio Society |
| VE6MRF | 117 | 2AC | 61 | HP | | AB | 10 | Mackenzie Regional Radio Club |
| VE4BB | 4,798 | 3A | 1,049 | LP | VE4VZ | MB | 73 | Winnipeg Amateur Radio Club |
| VE3SAR | 4,342 | 3A | 915 | LP | VE3CGC | ONS | 22 | |
| VE2CSP | 2,906 | 3A | 568 | LP | | QC | 18 | Association Radioamateur de Portneuf |
| VE2CVR | 2,816 | 3A | 632 | LP | | QC | 21 | Club Radioamateur de la valle du Richelieu |
| VE3RL | 2,648 | 3A | 550 | LP | | ONE | 21 | |
| VE7VCT | 2,568 | 3A | 436 | LP | VA7VCT | BC | 40 | VECTOR (Vancouver) |
| VE5NN | 2,126 | 3A | 444 | LP | | SK | 20 | Regina Amateur Radio Association |
| VE9ND | 1,868 | 3A | 272 | LP | | MAR | 20 | |
| VE3OSR | 1,260 | 3A | 178 | LP | | ONS | 18 | Georgian Bay Amateur Radio Club |
| VE3NAR | 1,124 | 3A | 342 | LP | | ONS | 7 | Nortown Amateur Radio Club |
| VE1GX | 1,028 | 3A | 268 | LP | | MAR | 15 | Yarmouth Amateur Radio Club |
| VE5MA | 946 | 3A | 124 | LP | | SK | 9 | |
| VE3CV | 902 | 3A | 193 | LP | | ONS | 5 | Bayfield Area Radio Ops |
| VE2CWQ | 894 | 3A | 272 | LP | | QC | 13 | Club RadioAmateur VE2CWQ |
| VA3TOP | 758 | 3A | 29 | LP | | ONN | 10 | Elliot Lake Amateur Radio Club |
| VE8AU | 690 | 3A | 119 | LP | | NWT | 6 | |
| VE3XR | 7,348 | 4A | 1,857 | LP | VE3AZA | GTA | 35 | Peel Amateur Radio Club |
| VE3RB | 4,616 | 4A | 1,189 | LP | VE3KRG | ONE | 25 | Peterborough Amateur Radio Club |
| VE3DC | 4,460 | 4A | 1,360 | LP | | ONS | 97 | Hamilton Amateur Radio Club |
| VE3NSR | 2,500 | 4A | 505 | LP | VE3QG | GTA | 25 | North Shore Amateur Radio Club |
| VA5DR | 1,582 | 4A | 209 | LP | | SK | 20 | Meewasin Amateur Radio Society |
| VE7CMR | 1,150 | 4A | 300 | LP | | BC | 16 | Maple Ridge Amateur Radio Club |
| VE3BA | 832 | 4A | 166 | LP | | ONS | 6 | Brantford Amateur Radio Club |
| VE3RSE | 2,455 | 4AB | 197 | QRP | | ONS | 10 | Elgin Amateur Radio Society |
| VE3VM | 6,128 | 5A | 1,626 | LP | VA3ROW | ONS | 35 | Niagara Peninsula Amateur Radio Club Inc. |
| VE3YRA | 4,588 | 5A | 1,177 | LP | VE3YRK | GTA | 61 | York Region Amateur Radio Club |
| VE3OW | 4,204 | 5A | 1,399 | LP | | ONS | 25 | BCRC / SPR Amateur Radio Club |
| VE3SWA | 3,998 | 5A | 920 | LP | | ONS | 5 | South Waterloo Amateur Radio Club |
| VE3TNC | 2,404 | 5A | 531 | LP | VE3BGD | ONS | 20 | Toronto Amateur Radio Club |
| VE3SME | 1,694 | 5A | 309 | LP | | ONS | 15 | Norfolk Amateur Radio Club |
| VE3RAM | 1,312 | 5A | 175 | LP | VA3CUA | ONE | 12 | Ottawa Valley Mobile Radio Club |
| VE3FRG | 3,556 | 5AC | 1,423 | LP | | ONE | 6 | Frontenac Radio Group |
| VE3QDR | 7,055 | 6AB | 640 | QRP | | ONE | 6 | Durham Region QRP Club |
| VE7SUN | 3,230 | 7A | 570 | LP | VE7LEE | BC | 40 | Delta Amateur Radio Society |
| VE3IC | 2,004 | 7A | 370 | LP | | ONS | 18 | Kitchener Waterloo Amateur Radio Club |
| VE3MIS | 7,818 | 10A | 2,043 | LP | VE3RCX | GTA | 44 | |
| **CLASS F STATIONS: Emergency Operations Centres (EOC) stations** | | | | | | | | |
| VE9BPD | 598 | 1F | 124 | LP | | MAR | 6 | Bathurst Area Amateurs |
| VE3RCMP | 1,310 | 2F | 253 | LP | | ONE | 20 | RCMP Group Ottawa |
| VA2RUF | 636 | 2F | 134 | LP | | QC | 23 | Club Radio Amateur de l'Estrie |

The first Field Day. It was December 12, 1901. G. Marconi and crew readying the Kite-borne antenna. Thanks SONRA, VO1AA.

**CLASS B STATIONS: Portables manned by one or two operators**

| Call | Score | Category | QSOs | Pwr | Section | Participants |
|---|---|---|---|---|---|---|
| VE7JKZ | 1,614 | 1B1 | 366 | LP | BC | 1 |
| VE8GER | 482 | 1B1 | 166 | LP | NWT | 1 |
| VE7HLW | 446 | 1B1 | 148 | LP | BC | 1 |
| VE7GYR | 370 | 1B1 | 110 | LP | BC | 1 |
| VA2NU | 130 | 1B1 | 40 | LP | QC | 1 |
| VE3EDX | 1,640 | 1B1B | 139 | QRP | ONN | 1 |
| VE3UZ | 1,600 | 1B1B | 135 | QRP | ONS | 1 |
| VA3PAW | 1,070 | 1B1B | 82 | QRP | ONE | 1 |
| VE3IGJ | 880 | 1B1B | 83 | QRP | ONE | 1 |
| VE3LVW | 490 | 1B1B | 28 | QRP | ONS | 1 |
| VE6ZC | 465 | 1B1B | 19 | QRP | AB | 1 |
| VE3AIH | 420 | 1B1B | 22 | QRP | ONE | 1 |
| VA3TPV | 300 | 1B1B | 10 | QRP | ONE | 1 |
| VA3PCJ | 240 | 1B1B | 9 | QRP | ONE | 1 |
| VE3RCN | 794 | 1B1C | 202 | LP | ONS | 1 |
| VA3KHH | 98 | 1B1C | 24 | LP | ONS | 1 |
| VE6KZ | 4,658 | 1B2 | 1,102 | LP | AB | 2 |
| VE3EY | 2,330 | 1B2 | 1,387 | HP | GTA | 2 |
| VA3DF | 5,320 | 1B2B | 517 | QRP | ONS | 2 |
| VA3YV | 3,500 | 1B2B | 358 | QRP | ONS | 2 |
| VE9AA | 1,665 | 1B2B | 153 | QRP | MAR | 2 |

**CLASS C STATIONS: Mobiles**

| Call | Score | Category | QSOs | Pwr | Section | Participants |
|---|---|---|---|---|---|---|
| K2NV/VE3 | 734 | 1C | 171 | LP | ONS | 1 |
| KF4KI/VE3 | 160 | 1C | 5 | LP | ONS | 1 |
| VA7RU | 70 | 1C | 10 | LP | BC | 1 |

**CLASS D STATIONS: Home stations using commercial power**

| Call | Score | Category | QSOs | Pwr | Section | Participants |
|---|---|---|---|---|---|---|
| VA3ATT | 1,298 | 1D | 312 | LP | ONS | 1 |
| VE2FK | 1,106 | 1D | 264 | LP | QC | 1 |
| VE2BWL | 938 | 1D | 230 | LP | QC | 1 |
| VA3FN | 750 | 1D | 175 | LP | ONS | 1 |
| VA7JC | 748 | 1D | 142 | LP | BC | 4 |
| VE3SSB | 508 | 1D | 125 | LP | GTA | 2 |
| VE3FJ | 386 | 1D | 84 | LP | GTA | 1 |
| VE9LMN | 242 | 1D | 96 | LP | MAR | 3 |
| VY2DM | 188 | 1D | 47 | LP | MAR | 1 |
| VE3HED | 180 | 1D | 130 | HP | ONE | 1 |
| VE3NDI | 180 | 1D | 90 | LP | ONN | 1 |
| VE6VS/VE5 | 164 | 1D | 57 | LP | SK | 1 |
| VE9FX | 132 | 1D | 82 | HP | MAR | 1 |
| VE6SPS | 122 | 1D | 43 | LP | AB | 1 |
| VE3GF | 114 | 1D | 16 | LP | ONE | 1 |
| VE2KOT | 100 | 1D | 25 | LP | QC | 1 |
| VE3FMK | 68 | 1D | 34 | LP | ONE | 1 |
| VE2PIJ | 52 | 1D | 1 | LP | QC | 1 |

Surrey Emergency Preparedness Program Amateur Radio (SEPAR)


**CLASS E STATIONS: Home stations using emergency power**

| Call | Score | Category | QSOs | Pwr | Section | Participants |
|---|---|---|---|---|---|---|
| VE3MGY | 2,638 | 1E | 724 | LP | ONS | 1 |
| VE7NI | 2,620 | 1E | 227 | QRP | BC | 1 |
| VE3PYG | 2,030 | 1E | 177 | QRP | ONE | 1 |
| VA7ST | 1,340 | 1E | 109 | QRP | BC | 1 |
| VE2AWR | 688 | 1E | 155 | LP | QC | 1 |
| VA3TGS | 512 | 1E | 81 | LP | ONE | 2 |
| VE6UX | 426 | 1E | 69 | LP | AB | 1 |
| VE4XM | 414 | 1E | 132 | LP | MB | 1 |
| VE6SKY | 300 | 1E | 10 | QRP | AB | 1 |
| VE3RHE | 248 | 1E | 49 | LP | GTA | 1 |
| VE3JOG | 190 | 1E | 20 | LP | ONS | 1 |
| VE7WNO | 175 | 1E | 5 | QRP | BC | 1 |
| VE3XAM | 164 | 1E | 32 | LP | ONE | 1 |
| VA6PRC | 52 | 1E | 1 | LP | AB | 1 |
| VA7MM | 2,086 | 2E | 417 | LP | BC | 4 |
| VE6FI | 1,700 | 2E | 1,550 | HP | AB | 5 |
| VE3LM | 894 | 2E | 140 | LP | ONE | 2 |
| VE6FAR | 1,226 | 3E | 298 | LP | AB | 10 |

Above: Winnipeg Amateur Radio Club set up Field Day.
Below: VE2FAB and VE2TZT at VE2UMS.

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**Milton, ON L9T 2Y1**
**Tel. 905-878-7382**
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# THE SPORTS PAGE

## — THE CANADIAN CONTEST SCENE

### SPORTS PAGE INFO:

For more contest information check out these sites:

http://www.hornucopia.com/contestcal/weeklycont.html

http://www.contesting.com

http://www.sk3bg.se/contest/

http://www.arrl.org/contests/calendar.html

http://www.arrl.org/contests/rate-sheet/about.html

http://www.cq-amateur-radio.com/awards.html

http://www.arrl.org/files/file/DXCC/2013%20DXCC%20Current_a.pdf

The "Contest Calendar" at the end of this column is presented as a guide only.

RAC and TCA do not necessarily endorse or support any of the contests or the accuracy of the information.

Bands: The 30, 17 and 12m bands are never used in any contest.

### THANKS TO GARY AND THE MCC

For the past several years Gary, VE1RGB, Scott Nichols, VE1OP and other Maritime Contest Club members have provided invaluable assistance by looking up and presenting a complete listing of all the Canadian contest results for all of us in each issue of TCA.

Unfortunately, Gary has been sidelined with a severe back problem which makes it impossible for him to carry on and indeed to participate in those CW contests in which he was very active. I will take over this task as I used to do in the past, but I would like to solicit some help from anyone who has the interest in Contests and time available to fill the void left by Gary. Thank you Gary for all your hard work. Get well soon!

### SOME EXTRA COMMENTS ON THE CONTESTS

The month of May starts with a bang. There are seven contests listed for May 2! They range from a selection of three QSO parties to a Microwave Sprint plus a major DX contest.

The ARI DX Contest is enjoying resurgence under the care of Bob, I2WIJ. This contest, which was very popular a decade or more ago, went through a severe drop in popularity. His rescue brought the number of received logs from less than 1,000 in 2009 to 1,655 in 2014. During this period Canadian participation went from virtually zero to 18.

After the first two weekends, the month of May features only one event per weekend – the last being the biggest draw – the WPX CW event.

June continues with the Alabama QSO Party grabbing sole control over the first weekend, and the second weekend being the pileup of four events. Field Day completes the month and Canada Day (see page 46) comes along three days later.

### FIELD DAY AS AN ENTRANCE TO CONTESTING

The ARRL Field Day is an excellent opportunity to bring new talent into our sport (see page 53). Many of you will be playing major roles in operating the event. It is a perfect site to "Elmer" another Amateur into the fun of contest-style operating.

Another possibility to involve "New Blood" is the use of a Get-On-The-Air (GOTA) station.

Quoting the rules:

*"The GOTA station may be operated by any person licensed since the previous year's Field Day, regardless of licence class.*

*It may also be operated by a generally inactive licensee. Non-licensed persons may participate under the direct supervision of an appropriate control operator."*

Find a way during your day on the field to bring more people to our sport. We appreciate competition!

Field Day is also an opportunity to shake off any rust on your own operating techniques in preparation for Canada Day.

It is mid-week and may be the start for many a long weekend south of the border. Let's hope many will stay home to help us celebrate our 148th Birthday!

*73, Bob, VE3KZ*

TCA

**VOLTA RTTY CONTEST**

| Call | QSO | Points | Score | Category |
|---|---|---|---|---|
| VA7ST | 315 | 6171 | 190,498,770 | SO |
| VE2FK | 266 | 3956 | 87,340,568 | SO |
| VA1CHP | 283 | 4469 | 74,618,893 | SO-15 |
| VE2SG | 169 | 3028 | 25,074,868 | SO |
| VE2EBK | 152 | 2249 | 23,587,512 | SO |
| VE2NMB | 107 | 1552 | 8,137,136 | SO |
| VE3AJ | 100 | 1349 | 7,149,700 | SO |
| VY2LI | 69 | 1235 | 2,300,805 | SO-20 |
| VE2QV | 57 | 725 | 1,363,725 | SO |
| VE7FCO | 17 | 386 | 91,868 | SO |

**ALABAMA QSO PARTY**

| Call | QSO | Mult | Score | Class |
|---|---|---|---|---|
| VE3KZ | 176 | 39 | 6,864 | SO CW LP |
| VA3ATT | 60 | 18 | 1,080 | SO CW LP |
| VA3GKO | 23 | 17 | 391 | SO SSB LP |
| VE3HED | 16 | 15 | 240 | SO SSB LP |

**ARI INTERNATIONAL DX CONTEST**

| Call | QSO | Mult | Score | Class |
|---|---|---|---|---|
| VE3FH | 171 | 119 | 111,741 | SO MIX LP |
| VA1CHP | 187 | 109 | 102,569 | SO RTTY LP |
| VE3FJ | 114 | 82 | 60,762 | SO CW HP |
| VA7ST | 170 | 68 | 51,680 | SO RTTY HP |
| VE3UTT | 163 | 68 | 50,715 | SO CW HP |
| VE1DT | 94 | 64 | 35,712 | SO CW HP |
| VE2HAY | 61 | 54 | 32,562 | SO SSB HP |
| VE2NMB | 102 | 68 | 32,232 | SO RTTY HP |
| VE2FK | 101 | 53 | 29,733 | SO RTTY HP |
| VA3IK | 57 | 39 | 10,530 | SO MIX LP |
| VE3BK | 270 | 25 | 6,752 | SO SSB LP |
| VE9ML | 28 | 26 | 6,682 | SO MIX LP |
| VE7CA | 39 | 28 | 4,788 | SO CW LP |
| VE3AJ | 40 | 27 | 4,644 | SO RTTY LP |
| VA2ES | 24 | 21 | 2,373 | SO CW LP |
| VE2PIJ | 16 | 15 | 2,055 | SO SSB LP |
| VE3AUO | 8 | 7 | 560 | SO SSB LP |
| VE3TW | 8 | 6 | 480 | SO CW LP |

**CQ WPX CW**

| Call | QSOs | WPX | Score | Category |
|---|---|---|---|---|
| VC7X | 4,178 | 1,145 | 14,162,505 | MULTI-MULTI |
| VY2TT (K6LA) | 3,402 | 1,085 | 11,629,030 | SO HP ALL |
| CF3A (VE3AT) | 3,080 | 1,076 | 10,492,076 | SO HP ALL |
| VA2EW | 2,609 | 931 | 8,271,004 | SO HP ALL |
| VE3YAA | 2,661 | 987 | 8,121,036 | MULTI-TWO |
| VE3EJ | 2,611 | 997 | 8,001,922 | MULTI-TWO |
| VE7GL | 2,428 | 965 | 7,487,435 | MULTI-ONE HP |
| VE3DZ | 2,154 | 888 | 5,956,704 | SO HP ALL (T) |
| VE3UTT | 1,839 | 865 | 5,478,045 | SA HP ALL |
| VE6JY (VE5MX) | 1,966 | 1,013 | 5,131,858 | SA HP 20M |
| VB7R (VA7RR) | 1,639 | 821 | 3,444,095 | SO HP 20M |
| VA7ST | 1,414 | 654 | 2,603,574 | SO HP ALL |
| VB7X | 1,297 | 615 | 2,129,745 | MULTI-ONE LP |
| VO1MP | 985 | 581 | 1,418,221 | SO HP 15M |
| VE3JM | 764 | 466 | 1,180,378 | SO LP ALL |
| VE7XF | 778 | 508 | 1,083,056 | SA HP ALL (T) |
| VE4EA | 842 | 476 | 1,017,212 | SO LP ALL |
| VE3RZ | 673 | 448 | 981,120 | SA HP ALL |
| VE3CR | 663 | 539 | 961,037 | SO HP 20M (T) |
| VE2FK | 716 | 430 | 946,000 | SA HP ALL |
| VE3MGY | 561 | 325 | 764,075 | SO LP 40M (T) |
| VE3FH | 654 | 368 | 742,256 | SO LP ALL |
| VA7OM | 605 | 464 | 733,120 | SO HP 20M |
| VE2AWR | 651 | 361 | 716,224 | SO LP ALL |
| VE3EY | 529 | 340 | 578,680 | SO HP ALL (T) |
| VA3ATT | 536 | 327 | 573,885 | SA LP ALL |
| VE3AAQ | 498 | 327 | 562,767 | SO LP ALL (T) |
| VE3TW | 509 | 322 | 485,898 | SA LP ALL (T) |
| VE4VT (VE4EAR) | 447 | 340 | 422,280 | SA HP ALL |
| VE4YU | 508 | 308 | 416,724 | SO LP ALL |
| VE9ML | 340 | 338 | 380,926 | SA LP ALL |
| VE1RSM | 425 | 281 | 372,325 | SO LP ALL |
| VE3BR | 394 | 275 | 339,625 | SO LP ALL (T) |
| K2NV/VE3 | 406 | 257 | 318,680 | SO LP ALL |
| VA6AM | 428 | 274 | 293,454 | SA LP ALL |
| VE7WO | 416 | 291 | 285,180 | SO HP 20M |
| VE3VN | 341 | 250 | 264,500 | SO QRP ALL |
| VA1MM | 339 | 287 | 254,569 | SA QRP 20M |
| VE3IAE | 342 | 284 | 253,044 | SO LP 20M (T) |
| VA6UX | 344 | 252 | 247,464 | SO HP ALL |
| VE7IO | 325 | 266 | 221,844 | MULTI-ONE HP |
| VE1DT | 215 | 190 | 220,400 | SO HP 40M |
| VE3GTC | 330 | 226 | 210,632 | SO QRP ALL |
| VE1RGB | 294 | 211 | 193,909 | SO LP ALL |
| VA2ES (VE2AXO) | 289 | 197 | 170,405 | SA QRP ALL |
| VA3EC | 243 | 184 | 158,976 | SO LP ALL |
| VE6LB | 245 | 211 | 136,939 | SA HP ALL |
| VE7FO | 247 | 184 | 117,944 | MULTI-ONE HP |
| VE3GFN | 228 | 173 | 113,661 | SO LP ALL (T) |
| VE3CX | 271 | 176 | 107,008 | SA HP 10M |
| VE3MM | 182 | 169 | 105,287 | SA LP ALL |
| VC6Z | 214 | 183 | 103,761 | SO LP ALL |
| VA3EJN | 190 | 156 | 76,752 | SO LP ALL |
| VE3XD | 188 | 161 | 75,348 | SA QRP 15M |
| VY1EI | 174 | 174 | 72,906 | SA HP 15M (T) |
| VE2EBL | 112 | 104 | 52,728 | SO LP 40M |
| VA3QN | 98 | 97 | 48,209 | SA LP 40M |
| VE3HEU | 136 | 112 | 39,200 | SA LP ALL |
| VY2LI | 100 | 83 | 37,350 | SO HP 80M (T) |
| VE2EZD | 113 | 96 | 34,752 | SO LP ALL |
| VE6UM | 117 | 111 | 30,747 | SO QRP 15M |
| VE2SG | 101 | 95 | 26,410 | SA HP ALL (T) |
| VE9AA | 109 | 96 | 26,400 | SO HP 10M |
| VA3GUY | 103 | 97 | 25,608 | SO LP 20M |
| VE3DTI | 108 | 94 | 24,628 | SO QRP ALL |
| VE9OA | 104 | 100 | 24,400 | SO LP 15M |
| VA7VJ | 91 | 80 | 20,800 | SO LP ALL |
| VE3VSM | 97 | 84 | 20,076 | SO LP ALL |
| VO1BQ | 78 | 67 | 19,765 | SO LP ALL |
| VE3FK | 98 | 82 | 19,516 | SA LP ALL |
| VE3XAT | 86 | 84 | 18,900 | SA LP ALL (T) |
| VE7BGP | 80 | 70 | 12,810 | SO LP ALL (T) |
| VE5KS | 66 | 66 | 12,210 | SA LP 15M |
| VE3CFK | 67 | 48 | 12,000 | SO LP 160M |
| VA3DBT | 57 | 51 | 9,741 | SO LP ALL (R) |
| VE6SQ | 68 | 61 | 9,211 | SA LP ALL (T) |
| VE2QV | 56 | 50 | 8,700 | SO LP ALL |
| VE7GM | 56 | 44 | 5,940 | SO QRP ALL |
| VE4SN | 49 | 47 | 5,640 | SO LP ALL |
| VE3FJ | 49 | 44 | 5,368 | SO LP 10M |
| VA3RKM | 46 | 42 | 5,082 | SO QRP ALL |
| VE2ZA | 46 | 43 | 5,074 | SO LP ALL |
| VE3RSA | 34 | 32 | 4,768 | SO QRP 40M |
| VE3HG | 41 | 39 | 4,368 | SO QRP 20M |
| VA7MM | 38 | 37 | 4,366 | SO LP ALL |
| VA5LF | 19 | 19 | 1,045 | SO LP ALL |
| VA3FN | 21 | 20 | 1,020 | SO LP 15M |
| VE3ZY (VE3FFK) | 18 | 15 | 750 | SO LP ALL |

**ARRL JUNE VHF QSO PARTY**

| Call | QSO | Mult | Score | Class |
|---|---|---|---|---|
| VE3SMA/R | 391 | 157 | 127,641 | R |
| VE3OIL/R | 396 | 152 | 125,704 | R |
| VE3WJ | 196 | 101 | 41,107 | R |
| VA3ZV | 312 | 104 | 38,896 | A |
| VE3WCC | 192 | 84 | 27,636 | M |
| VE3KU | 141 | 68 | 12,784 | A |
| VA7FC | 155 | 61 | 9,516 | B |
| VE3FGU | 139 | 57 | 7,923 | B |
| VE7DAY | 133 | 53 | 7,208 | 3B |
| VA3ST | 69 | 47 | 3,901 | B |
| VA6AN | 85 | 43 | 3,741 | 3B |
| VE3JVG | 61 | 40 | 2,840 | A |
| VE3RB | 68 | 32 | 2,368 | L |
| VE3RX | 66 | 34 | 2,244 | A |
| VE3WY | 55 | 33 | 2,244 | A |
| VE3LC | 63 | 24 | 1,824 | A |
| VE2DSB | 39 | 34 | 1,700 | M |
| VE3EJ | 50 | 32 | 1,600 | M |
| VE3CVG | 53 | 21 | 1,554 | A |
| VE3RCN | 41 | 22 | 968 | 3B |
| VE6UM | 35 | 20 | 700 | B |
| VE3KGC/R | 25 | 15 | 675 | RL |
| VA7MM | 36 | 18 | 648 | 3B |
| VE1WOW(K1WO) | 31 | 19 | 589 | A |
| VE7AFZ | 32 | 15 | 585 | A |
| VE3AAQ | 24 | 17 | 527 | Q |
| VA2HMC | 28 | 16 | 496 | M |
| VA7ST | 25 | 13 | 325 | M |
| VE4EA | 18 | 16 | 288 | M |
| VE3IAE | 20 | 13 | 260 | A |
| VE5UF | 14 | 15 | 210 | B |
| VE3RSA | 13 | 11 | 143 | A |
| VE6NR | 11 | 9 | 135 | 3B |
| VA3RKM | 18 | 6 | 126 | L |
| VE6CCL | 9 | 9 | 117 | B |
| VE3VCF | 14 | 5 | 100 | A |
| VA7IR | 11 | 9 | 99 | A |
| VE3RKS/R | 9 | 10 | 90 | RL |
| VA3PC | 10 | 7 | 70 | A |
| VE4VT | 10 | 6 | 66 | 3B |
| VE7JDZ | 11 | 5 | 55 | A |
| VE3BJY | 6 | 5 | 45 | A |
| VE6CPP | 6 | 6 | 36 | B |
| VE3GTC | 5 | 5 | 25 | A |
| VE2PIJ | 5 | 4 | 20 | B |
| VE7BGP | 4 | 5 | 20 | R |
| VE4SNA | 4 | 3 | 12 | A |
| VE5MX | 3 | 3 | 9 | A |
| VE3FU | 1 | 1 | 1 | A |

**INDIANA QSO PARTY**

| Call | QSO | Mult | Score | Class |
|---|---|---|---|---|
| VE4VT | 26 | 20 | 670 | SO HP |
| VE3HED | 10 | 9 | 140 | SO HP |
| VY2LI | 10 | 6 | 130 | SO HP |
| VE3PQ | 29 | 20 | 630 | SO LP |
| VE5KS | 6 | 6 | 66 | SO LP |
| VE6UM | 3 | 3 | 18 | SO LP |
| VE2PIJ | 2 | 3 | 4 | SO LP |
| VA3GKO | 115 | 56 | 6,375 | MO |
| VE2FK | 17 | 14 | 476 | MO |

**CQ-M CONTEST**

| Call | QSO | Mult | Score | Class |
|---|---|---|---|---|
| VE1RSM | 218 | 77 | 46,508 | SOAB CW |
| VE2BWL | 94 | 41 | 11,398 | SOAB LOW CW |
| VA3EJN | 87 | 43 | 10,535 | SOAB CW |
| VE5MX | 87 | 36 | 8,820 | SOAB LOW CW |
| VE6UX | 54 | 24 | 3,816 | 20M SOSB CW |
| VE3EY | 59 | 19 | 3,306 | 15M SOSB CW |
| VE7CA | 34 | 13 | 1,183 | SOAB LOW CW |
| VE2PIJ | 11 | 11 | 352 | SOAB LOW SSB |

## CONTEST CALENDAR FOR MAY, JUNE AND EARLY JULY 2015

| Contest Name | Start | End | Web Address |
|---|---|---|---|
| ARI DX Contest | 1200z May 2 | 1159z May 3 | http://www.ari.it/index.php?option=com_content&view=category&layout=blog&id=250&Itemid=270&lang=en |
| 7QP QSO Party | 1300z May 2 | 0700z May 3 | http://ws7n.net/7QP/new/page.asp?content=start |
| 10-10 Int. Spring CW | 0000z May 2 | 2359z May 3 | http://www.ten-ten.org/ |
| Microwave Sprint | 0800 Local May 2 | 1300 Local May2 | https://sites.google.com/site/springvhfupsprints/home |
| Indiana QSO Party | 1600z May 2 | 0400z May 3 | http://www.hdxcc.org/inqp/index.html |
| FISTS Slow Speed Sprint | 1700z May 2 | 2100z May 2 | http://www.fistsna.org/ |
| New England QSO Party (Pt 1) | 2000z May 2 | 0500z May 3 | http://neqp.org/ |
| New England QSO Party (Pt 2) | 1300z May 3 | 2400z May 3 | http://neqp.org/ |
| CQ-M Int. DX Contest | 1200z May 9 | 1159z May 10 | http://www.srr.ru/contest/rulres.php |
| Volta WW RTTY Contest | 1200z May 9 | 1159z May 10 | http://www.contestvolta.com/ |
| 50MHz Sprint | 2300z May 9 | 0300z May 10 | https://sites.google.com/site/springvhfupsprints/home |
| FISTS Unlimited Spring Sprint | 1700z May 9 | 2100z May 9 | http://www.fistsna.org/ |
| King of Spain Contest CW | 1200z May 16 | 1200z May 17 | http://concursos.ure.es/en |
| NAQCC Sprint | 0130z May 21 | 0330z May 21 | http://naqcc.info/ |
| CQ WW WPX CW | 0000z May 23 | 2400z May 24 | http://www.cqwpx.com/rules.htm |
| ARCI Hootowl Sprint | 2000 Local May 24 | 2400 Local May 24 | http://www.qrparci.org/ |
| Alabama QSO Party | 1600z Jun 6 | 0400z Jun 7 | http://www.alabamaqsoparty.org/ |
| NAQCC Sprint | 0030z Jun 10 | 0230z Jun 10 | http://naqcc.info/ |
| Portugal Day Contest | 0000z Jun 13 | 2400z Jun 14 | http://www.rep.pt/portugal_day_contest/rules.html |
| GACW WW South America CW | 1500z Jun 12 | 1500z Jun 13 | http://www.wwsatest.org/ |
| ARRL June VHF QSO Party | 1800z Jun 13 | 0300z Jun 15 | http://www.arrl.org/june-vhf |
| ARCI QRP Shootout | 1800z Jun 14 | 2100z Jun 14 | http://www.qrparci.org/ |
| NAQCC Milliwatt Sprint | 0030z Jun 18 | 0230z Jun 18 | http://naqcc.info/ |
| West Virginia QSO Party | 1600z Jun 20 | 0200z Jun 21 | http://www.qsl.net/wvsarc/wvqp/wvqp.html |
| All-Asia DX Contest CW | 0000z Jun 20 | 2400z Jun 21 | http://www.jarl.or.jp/English/0-2.htm |
| SMIRK 6m Contest | 0000z Jun 21 | 2400z Jun 22 | http://www.smirk.org/contest.html |
| ARRL Field Day | 1800z Jun 27 | 2100z Jun 28 | http://www.arrl.org/field-day |
| King of Spain Contest SSB | 1200z Jun 27 | 1200z Jun 28 | http://concursos.ure.es/en |
| Canada Day Contest | 0000z July 1 | 2359z July 1 | http://www.rac.ca/service/infocont.htm |
| DL-DX RTTY Contest | 1100z July 4 | 1059z July 5 | http://drcg.de/index.php?lang=en |
| Venezuelan Independence Day | 0000z July 4 | 2359z July 5 | http://www.radioclubvenezolano.org/rules.htm |
| IARU HF World Championship | 1200z July 11 | 1200z July 12 | http://www.arrl.org/iaru-hf-championship |

### NEW ENGLAND QSO PARTY

| Call | QSO | Mult | Score | Class |
|---|---|---|---|---|
| VA1MM | 117 | 50 | 11,350 | SOQRP |
| VE4VT | 121 | 48 | 9,120 | SOLP |
| VE5KS | 77 | 36 | 4,680 | SOLP |
| VA7ST | 61 | 37 | 4,514 | SOLP |
| VE2FK | 61 | 35 | 4,270 | SOHP |
| VE9AA | 59 | 33 | 3,894 | SOLP |
| VE6UM | 53 | 38 | 3,762 | SOLP |
| VA1CHP | 34 | 25 | 1,700 | SOLP |
| VE3DQN | 33 | 25 | 1,650 | SOQRP |
| VE3PQ | 36 | 26 | 936 | SOLP |
| VE3HED | 30 | 21 | 630 | SOHP |
| VE2ZA | 14 | 11 | 308 | SOLP |
| VE2PIJ | 4 | 4 | 16 | SOLP |
| VE9ML | 2 | 2 | 4 | SOLP |

### ALL-ASIA CW CONTEST

| Call | QSO | Mult | Score | Class |
|---|---|---|---|---|
| VA7ST | 269 | 141 | 38,493 | A |
| VE1ZJ | 155 | 117 | 18,135 | A |
| VA2WA | 159 | 108 | 17,172 | A |
| VE4EA | 153 | 107 | 16,371 | A |
| VE7IO | 147 | 106 | 15,582 | A |
| VE1DT | 141 | 98 | 13,818 | A |
| VE5MX | 97 | 75 | 7,275 | A |
| VE3DZ | 90 | 56 | 5,040 | 15 |
| VE3AAQ | 68 | 56 | 3,808 | A |
| VE3BR | 70 | 52 | 3,640 | A |
| VE7YU | 62 | 52 | 3,276 | A |
| VE7BGP | 64 | 45 | 2,880 | A |
| VO1HP | 62 | 46 | 2,852 | A |
| VA2EU | 47 | 39 | 1,833 | 20 |
| VE9OA | 43 | 37 | 1,591 | A |
| VA3GUY | 32 | 24 | 768 | 15 |
| VE3CX | 23 | 19 | 437 | 15 |
| VE3FJ | 14 | 14 | 196 | 15 |
| VE2KOT | 2 | 2 | 4 | A |
| VE7UF | 1,507 | 475 | 769,975 | M/M |

### 7TH CALL AREA QSO PARTY

| Call | QSO | Mult | Score | Class |
|---|---|---|---|---|
| VE4VT (VE4EAR) | 269 | 96 | 62,880 | SO MIX HP |
| VE3KP | 269 | 82 | 58,630 | SO MIX HP |
| VE3KZ | 163 | 83 | 36,437 | SO MIX LP |
| VE1RGB | 78 | 44 | 10,296 | SO CW LP |
| VE6UM | 68 | 42 | 7,728 | SO MIX LP |
| VA3RKM | 62 | 39 | 7,254 | SO QRP MIX |
| VE5KS | 59 | 39 | 6,591 | SO MIX LP |
| VE5XU | 68 | 45 | 6,120 | SO SSB HP |
| VE4YU | 54 | 34 | 5,066 | SO MIX LP |
| VE7IO | 60 | 28 | 5,040 | MS HP |
| VE2FK | 42 | 29 | 3,652 | MS HP |
| VE3TW | 41 | 28 | 3,444 | SO CW LP |
| VE5GC | 39 | 28 | 3,276 | SO CW LP |
| VA3GKO | 42 | 27 | 2,268 | MS LP |
| VE7BGP | 31 | 26 | 2,236 | SO MIX LP |
| VE3DQN | 29 | 21 | 1,827 | SO QRP MIX |
| VA3NGE | 29 | 26 | 1,508 | SO SSB LP |
| VE3HED | 34 | 20 | 1,360 | SO SSB HP |
| VA7MJR | 27 | 21 | 1,134 | SO SSB LP |
| VE3CX | 21 | 17 | 1,071 | SO CW LP |
| VY2LI | 18 | 17 | 612 | SO SSB HP |
| VA3PAW | 12 | 10 | 260 | SO MIX LP |
| VE2PIJ | 7 | 7 | 98 | SO SSB LP |
| VE3AUO | 3 | 3 | 18 | SO SSB LP |

**BRITISH COLUMBIA/YUKON:**

SM Acting Bill Gipps, VE7XS
A/SM Ron McFadyen, VY1RM
A/SM Neil King, VA7DX
STM Al Ross, VE7WJ
SEC Acting Al Munnik, VA7MP
SEC Terry Maher, VYIAK (Yukon)
OBM Bill Foster, VE7WWW
OOC: Dennis Wight, VE7IJJ
ACC: Karla Wakefield, VA7KJW
Website: www.va7mpg.ca

**JANUARY-FEBRUARY SM REPORT:**

The long awaited Earthquake Preparedness Consultation Report, prepared by Chair Henry Renteria, was recently released to the public and can be found at: http://www.embc.gov.bc.ca/em/hazard_preparedness/earthquake/index.html

The Simulated Emergency Test (SET) summary report is not yet completed. Work and life have gotten in the way of getting this done, and we will strive to have it completed before the next status update.

There was an error in reporting the Public Service Honour Roll in the last report: VE7RV was credited, when it was John MacKay, VE7RB, who should have been highlighted.

**Langley ARES Group:**

The Langley ARES Group continues to do weekly nets on our local 2m repeater every Monday night at 7 pm on 147.380 + Tone 77.0. We have checkins from Surrey, Langley and sometimes Vancouver. The net allows us to check our own equipment and practise passing traffic. For those who have a dual band radio we also check in on our UHF Frequency of 441.375 +. Looking forward to hearing you on the air.

*– Bill Gipps, VE7XS*

**Public Service Honour Roll**
**January:**
VA7MPG: 176; VE7DWG: 63;
VE7GN: 140; VE7RB: 69;
VE7WJ: 85; VE7XLH: 130
**February:**
VA7MPG: 72; VE7DWG: 62;
VE7GN: 140; VE7RB: 68;
VE7WJ: 83; VE7XLH: 120

**ALBERTA:**

SM: Garry Jacobs, VE6CIA
SEC: Neal Sunderland, VE6NL
STM: Jack Humphries, VE6JRH
OOs: Don Momen, VE6JY
Tom Martens, VE6TRM

**JANUARY-FEBRUARY SM REPORT:**

I would like to correct an error that I made in the last report. In the fourth paragraph near the middle I got the East and West mixed up. Being that we live on the SK/AB boarder and AB is west of us the line should read "for the Western SK and Eastern AB Area."

**Sask/Alta Radio Club**
*Joe, VE5JM*

The Sask/Alta Radio club holds its meetings ever second month with July and August off. Our first meeting of 2015 was held on Tuesday, February 3 and one of the topics we talked about was the City Emergency exercise which was held on Wednesday, February 25.

We use FT8800 radios, Kantronics PKC-3 TNCs, and laptops loaded with RMS Express software. With this configuration we can send emails between the Emergency Operations Centre (EOC), the Command Bus in the field, and the Warming/Registration Centre, as well as any other place we may be needed. In preparation for the exercise we checked out the radios and computers since the equipment had not been used in a long time. The computers had to have a lot of updates done and we needed to obtain some new equipment to replace the older things.

We got all the stations running and we had a test run with moderate success. The exercise was an Alberta provincial operation that involved a snow and ice storm along with some local events the city added. It all went fairly well, with a number of things noted that we can work on as the after actions reports indicated.

We did get a permanent antenna mounted on the building that is used for the warming/registration location. Arrangements are underway to install an antenna at the Airport in case it is needed to relay weather and other information. We did not get the antennas installed on the Main EOC yet but the order has been submitted.

Something else that has been in the works for a while, but finally come to fruition is the Amateur Radio Basic Qualification Course. It is being held at the Armoury in Vermilion and there is a complete Amateur Radio station in the building. It started with 10 students on Wednesday, February 11 and will run until Wednesday, June 3. We have two main instructors Greg, VA6GWS and Richard, VA6RLB, and a few others that will add their expertise to lessons as the course progresses. We also have an examiner here in Lloydminster (Bill Till, VE5FN) and he will take over at the end of the course to administer the exams. There is also some time in the training sessions for students to use the 2m, and possibly the HF equipment ,so they can get a feel for the operation of the radios. We hope to have some new emergency radio operators by the end of June.

The Sunday evening 2m ARES net for this period had six sessions and generated 35 checkins. That is a marked increase from the previous period. We hope to see it keep moving in that direction.

Thanks for the great report Joe. Wish there were more...Garry VE6CIA RAC Alberta SM

**ARES Update for Medicine Hat**
*Joel, VE6KEE*

The Medicine Hat Amateur Radio Club met this month and there were members of the Red Cross that also attended. We had four of our members take sign-up sheets for the Red Cross. During this meeting it was stated that I was

## MESSAGE FROM THE RAC CHIEF FIELD SERVICES OFFICER

I am pleased to accept the position of the RAC Chief Field Services Officer and I am looking forward to working with you.

I have been an Amateur since May 2006 and have held the call sign VE4BOZ since moving to Manitoba in 2010. VE4IR was my uncle's call sign which I applied for in his memory after he became a Silent Key in 2012.

I have been an ARES Certified Emergency Coordinator since December 2007 and am certified in Incident Command System I-400 (Advanced ICS) and I-401 (Mutli-agency Coordination).

From 2002 to 2010, I served as the Emergency Management District Officer for Alberta Municipal Affairs in North Eastern Alberta, working with federal, provincial and municipal levels of government.

I worked with 50 plus municipalities in maintaining Emergency Plans, training emergency management staff, developing and conducing varying degrees of training exercises from tabletop to full-scale deployments.

I developed and presented local training programs for municipal Emergency Operation Centres, Reception Centres and elected officials. I also worked with Alberta Health and municipalities in developing integrated emergency operations and management plans during heightened pandemic influenza threats. My military career also helped me develop expertise in operations management and conflict resolution

Since August 2012, I have served as the Manitoba Amateur Radio Emergency Service (ARES) Emergency Coordinator for the Rural Municipality of Dufferin, the Rural Municipality of Grey, the Town of Carman and the Village of St. Claude.

In 2013, I became the RAC Deputy Director of the Midwest Region and I served in this capacity until accepting the position of RAC Chief Field Services Officer.

**CHIEF FIELD SERVICES OFFICER**
Bill Boskwick,
VE4BOZ/VE4IR
PO Box 411
Elm Creek, MB
R0G 0N0
Tel. 204-436-3523
Email: ve4boz@rac.ca

I served with the Canadian Armed Forces for 32 years including 10 years as a radar tech on the Pinetree Line, as a Major, former Deputy Commander of 735 Signals Regiment and Senior Staff Officer Signals of the 38 Canadian Brigade Group Headquarters in Winnipeg.

In 1993-94, I served as a Field Monitor during a nine-month tour in former Yugoslavia as a member of the European Community Monitor Mission, Canadian Contingent in a mandate of conflict resolution and humanitarian issues.

I am currently retired and living with my wife in the RM of Grey.

the Emergency Coordinator for the area and I said that I would be looking for volunteers for our ARES group. I will be holding a meeting shortly to get some of the local guys together. If you live in the area and would like to sign up, look me up on QRZ or the phone book. Everyone is welcome!

A few local operators and I are going to try to establish a Southern Alberta Repeater Association link in this area. This is still under construction and more information to follow when we have it. What we will do is try to get into the Vulcan link first and go from there.

Our APRS system here in the Hat seems to be working fine – except for a few Igates in town – so we can help you when you come through Medicine Hat. We also monitor 146.520 and the local repeaters.

We are having some troubles with the Igate at the Red Cross location and we think it may be interference with the Telus building but this has yet to be determined. This Igate/digi helps with stations in the river valley.

In addition, we are turning the power down at VA6KRK-2 (north of town) as it does not need that much as its 200 feet elevation and 10 watts should be plenty to cover the area.

I will continue on with the effort here as there seems to be a bit more interest as some now know ARES is back in the group. I also check in regularly with nets when I can.

*Thanks for submitting the reports.*

*– 73, Garry, VE6CIA*

## RAC SECTION MANAGER ELECTION NOTICE:
### ONTARIO GTA, ONTARIO EAST AND BRITISH COLUMBIA SECTIONS

You are hereby solicited for nominating petitions pursuant to an election for Section Manager. The name of the incumbent appears on **page 4** of this issue of *The Canadian Amateur*. A petition, to be valid, must carry the signatures of 10 or more full members of RAC residing in the Section concerned. It is advisable to have more than 10. Photocopied signatures are *not* acceptable. Signatures must be on the petition. Petition forms are available from RAC Headquarters but are not required.

The form below is acceptable:

***Notice to all RAC members in the Ontario GTA, Ontario East and British Columbia Sections***

_____ (place & date)

RAC Chief Field Services Officer
720 Belfast Road, Suite 217
Ottawa, ON K1G 0Z5

We, the undersigned RAC Full members residing in the _____ Section, hereby nominate

_____

*(name & call sign)*

as Section Manager for this Section for the next two-year term of office.

_____

*(signatures & call signs)*

_____

*(addresses with postal codes)*

A Section Manager must be a resident of his or her Section, a licensed Radio Amateur holding an Amateur operator's Certificate (or equivalent as stipulated by the *Radiocommunication Regulations*) and should always operate radio equipment only within the limits and privileges of the certificate and qualification held, and have been a RAC Full Member for a continuous term of two years at the time of nomination.

Petitions will be received at the RAC Headquarters office until 1600E on **July 10, 2015**. If only one valid petition is received, the person nominated will be declared elected. If more than one valid petition is received, a balloted election will take place. Ballots will be mailed from RAC Headquarters on or about **August 1, 2015**. Return of ballots by 1600E **September 20, 2015** and will be counted after **September 27, 2015**.

A Section Manager elected will take office immediately to complete a two-year term from **July 1, 2015** until **November 1, 2017**. If no valid petition is received, the Section will be resolicited in *The Canadian Amateur*.

*Bill Boskwick, VE4BOZ, CEC – RAC Chief Field Services Officer*

## MANITOBA:

SM: Jan Schippers, VE4JS
STM: Jan Schippers, VE4JS
SEC: Vacant
DECs: Jeff Dovyak, VE4MBQ (Capital Region and CanWarn); Gord Snarr, VE4GLS (South-East Central Region / South-West Region); Wayne Warren, VE4WR (North Region and Special Projects); Vacant (North-Eastern Region); Vacant (North-West Region); EC Ron Wlliscroft, VE4QE (Selkirk and District); Bill Boskwick, VE4BOZ for RM of Grey, RM of Dufferin & Town of Carman

**JANUARY-FEBRUARY SM REPORT:**

The winter was a long one and I hope everyone enjoyed radio. I have heard people talk about their computers failing but it hadn't happened to me until recently. The lesson is to keep current backups.

**Winnipeg ARES**
*Jeff Dovyak, VE4MBQ*

Northern & Special Projects DEC Wayne Warren, VE4WR, gave us an interesting presentation on the new VE4PSC station at our January meeting. Wayne and Jim, VE4SIG, are collaborating on Instructions for VE4PSC similar to Instructions for VE4EMO. President Jim, VE4SIG, is polling the membership with regard to the establishment of an online discussion group for Winnipeg ARES members. Jim is also trying to get Winnipeg ARES qualified with Yaesu to be able to purchase a Yaesu "Fusion" repeater to possibly replace one of our existing repeaters.

On February 2, I was privileged to represent Winnipeg ARES at a special session of the City of Winnipeg Emergency Preparedness & Coordination Committee (EPCC) which hosted a delegation of Emergency Managers from the Philippines, who were visiting Canada to look at Disaster Risk Reduction.

ARES was the only NGO that was invited to brief the visiting delegation at the City of Winnipeg EOC. EOC sector coordinators who provided a briefing included Fire/EMS, Police, Transit, Public Works, Emergency Public Information, Public Aid/ESS, Corporate Risk Management, etc.

Instead of a single guest speaker at our last meeting, three Winnipeg ARES members gave us a briefing about the Scouts Canada Klondike Derby on March 7 and 8 at Camp Amisk: Bob Poole, VE4MAQ (Klondike Derby History, Purpose & ARES photos); Richard Kazuk, VE4KAZ (Crossband Re-Transmit) and Glen Napady, VE4GWN Equipment.

Approximately 20 of our volunteers will participate at the event.

*– Jan Schippers, VE4JS*

**Traffic Totals**
**January:** 5
**February:** 4

## ONTARIO NORTH:

SM: Al Boyd, VE3AJB
ve3ajb@vianet.ca
STM: Pat Dopson, VE3HZQ
dopsonp@vianet.ca
SEC: Stiig Larsen VE3LBX
slarsen@vianet.ca
OBM: Paul Caccamo, VA3PC
va3pc@ciinet.org
Website: http://ontario.racares.ca

**JANUARY-FEBRUARY SM REPORT:**

The Ontario North Section is going strong and is busy planning for Field Day 2015.

I want to thank Stiig Larson, VE3LBX, who has become the new SEC for Ontario North.

I am pleased to report that Jim McLean, VE3LJM, has been appointed as District Emergency Coordinator for the Killarney District. He brings with him much experience please join me in welcoming Jim to this new position. Jim will also continue to be the Emergency Coordinator for Manitoulin.

As indicated in previous reports, until the Section Managers are in place for the Ontario South and GTA Sections I have agreed to step in as an acting role.

If you have any questions or concerns please feel free to contact me at any time.

Again thank you to all of you for your continued support for ARES and RAC.

**Amethyst ARES**
*Fred, VE3FAL*

The Santa Shuffle, presented by The Salvation Army, was once again a success and communications were provided by the Lakehead Amateur Radio Club.

NWARES Net runs on nights that operators are on 3.750 and the 2m ARES net still runs weekly.

**Manitoulin Island**

Our ARES club decided to start the New Year with a goal of getting more Amateurs locally and globally interested in participating in the 2m nets. One of the reasons for this was that there were a lot of Amateurs in our area with digital D-STAR radios who are not using them to their full potential.

On January 12, the Manitoulin ARC started a new D-STAR net, called the Northern Ontario D-Star Net, which is held on the XRF021B Reflector (the same location as the Cannet) on Monday evenings at 8:30 pm. The move to the reflector was to accommodate any repeaters that wish to link in and participate from anywhere. Local stations can access the net by setting their D-STAR radio to transmit on the Little Current D-STAR 2m repeater on a frequency of 145.310 MHz with a negative offset. Anyone using a dongle, DVAP or any hotspot please connect directly to XRF021B.

Since its inception, this net has gained in popularity locally and, as the word spreads, it is starting to receive Amateurs from greater distances around the Province.

The club will be hosting a Basic Radio Course for interested individuals who would like to obtain their Amateur certification. A classroom has been secured, instructors prepared and we have begun taking applications for this event that will begin in April.

**Sudbury**

January saw some testing of Sudbury ARES field kits and EOC equipment by a small handful of dedicated members. Marc, Wayne and Alan were asked by the Greater Sudbury Police to do a demo and presentation prepared by Marc. We used a field kit and the station at the EOC to send digital messages to demonstrate our capabilities. They were very impressed and requested more presentations in the future.

I've been EC for about four years now, and it has become increasingly challenging and difficult to conduct any sort of ARES duties and activities locally. It's very hard to find a volunteer who will put in even a small amount of time for training (two hours) and exercises. Many just want their names on paper but if asked to participate in any activities they immediately become unavailable.

As an EC, I put a lot of effort into training preparation and liaising with agencies. It is very discouraging and frustrating to see only four or five people show up at a training session and only one of those members is paying attention and willing to learn! Others are there purely for a social outing.

Don't get me wrong, it's nice to meet up with people and chat but we also have some important material to learn. We are on the callout list of the City and other agencies and if we can't provide them with a more professional service, they will simply kick us out! We don't want members showing up at a shelter and trying to learn-on-the-fly.

If there was an emergency today, we would not manage well. The same five people can't run the show – especially if shift changes are needed. I don't know what the answer is, but I may likely have to scale down a little due to lack of support and participation.

*– Allan Boyd, VE3AJB*

**DECs reporting:**
VA3s: PC
VE3s: FAL, JX and LBX
**ECs reporting:**
VA3s: AJV, SPT
VE3s: EGC, LJM, OTL, MXJ, SUT

**Official Bulletin Stations**

*Brad Rodriguez, VE3RHJ, OBM*
November-December 2014
(ONS, ONE, GTA):
VE3GIO, VE3IQZ, VE3JUZ, VE3KII, VE3SHM and VE3VBR

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**ONTARIO EAST:**

SM: Michael Hickey, VE3IPC
Email: ve3ipc@gmail.com
SEC: Vacant
STM: Vacant
OBM: Vacant
Website: http://ontario.racares.ca

**JANUARY-FEBRUARY SM REPORT:**

Hello everyone. It certainly was a long winter, breaking records not seen since 1934. With snow shovels and snow blowers finally put away due to the hotter sun that is finally out and warming everything up, we can now move to inspecting/repairing and/or upgrading our home antennas.

Perhaps now is a good time to have an ARES training course as a refresher to the experienced Amateurs and to instruct the newer group members.

Spring is a great time for group leadership to begin looking at local and or district-wide ARES activities like tabletop – and possibly even deployed – exercises, for improved group readiness with lessons learned individually and collectively to better serve your local clients.

One fun activity to look forward to is going to many hamfests to get some great new additions to the station, or to sell older equipment to Amateurs who can make good use of it.

Clubs and groups no doubt will be in the planning stages by now for this year's Field Day which is scheduled for June 27-28 – it will be here sooner than you might think.

The Eastern Ontario ARES District Group Coordinator, Lance, VA3LP, reports that it has seen a cold and snowy month in January. We were lucky that areas within our district did not have any weather emergencies occur. All the groups stand ready to serve when emergencies strike. February appears to have been a very cold month, breaking records that has kept all but a few from venturing outdoors to ARES activities. Keep up the good work.

**Almonte ARC submitted by President Rob, VE3UIX**

The Almonte ARC that is active in ARES activities held its fifth annual dinner at the Almonte Branch of Royal Canadian Legion on Saturday, January 17. Thirty-eight people attended comprising club members and other Amateurs from the local area.

Robin Webb, Club President said, "each year our dinners get better and better and members and friends look forward to gathering at this annual event". He also told the attendees that during the year the club expanded its D-STAR digital communications network to improve coverage in the Rideau Lakes area as well as along the Ottawa Valley to Renfrew.

The club now has D-STAR repeaters in Almonte, Rideau Ferry and on the VE3STP tower near Renfrew. Internet facilities allow all the repeaters, including the ones in Ottawa, to be linked together.

The club also purchased a Yaesu DR-1X FM/C4FM repeater that is now operating in Almonte on 147.270 100Hz.

Club information may be found at http://www.almontarclub.ca.



**Lanark-North Leeds-ARES submitted by AEC Norm, VE3VY**

Over the past 10 years, the Lanark/North Leeds (LNL)-ARES Group, together with Ottawa and Kingston Amateurs, has provided communication along a route for the Ottawa Bicycle Club's annual Rideau Lakes Cycle Tour.

Some 2,500 cyclists travel this picturesque route on a Saturday from Ottawa through Perth to Kingston and return on the Sunday. Typically, 40 Amateurs provide communications by establishing points of presence at strategic locations along the route.

Net control stations, utilizing the VHF repeaters in three sectors along the route, hand off control responsibilities as the bulk of the riders move from one sector to the next.

This exercise provides the three groups with the opportunity to maintain their communications skills, exercise their equipment and provide a vital service for the success and the well-being of the cyclists along the route.

Weather over the years has varied and has contributed to conditions from the most enjoyable to the most extreme. From sunstroke to hypothermia, the Amateurs have been called upon to coordinate medical assistance and find warm shelter and emergency bus transportation for the large numbers of cyclists that could not complete the route.

In addition the bicycle club provides support vehicles for routine transportation of disabled riders and repair vehicles for breakdowns along the route. All of which is coordinated by the

Amateurs relying on the VHF repeaters that provide the extensive coverage along this challenging route.

In preparation for this year's June 6 and 7 events, the following Amateur coordinators met in Perth with Ian Gillis the representative of the Ottawa Bicycle Club to review past participation and bring forward recommendations on all aspects for efficiency, safety, route congestion and communication protocols: Coordinators Theresa Mein, VA3TGS and Gord Mein, VE3FRB represented the Ottawa Sector; Bill Nangle, VE3CLQ, Don Gilroy, VE3MNE and Mark Podger, VE3EOG, representing the Kingston sector; and Al Nittymaa, VA3KAI and LNL Group Coordinator Barrie Crampton, VE3BSB, were the Lanark North Leeds representatives.

**Ottawa ARES/EMRG Group submitted by AEC Mike, VE3FFK**

The Ottawa ARES/EMRG Group performed the usual monthly repeater test on January 7. There was a good turnout and all of the repeaters were fine. Thanks to Tracy, VA3TXN, AEC Mike, VE3FFK, Stuart, VE3SMF, Tim, VA3PYC, Bob VA3QV, and Sandy VE3AAC. Tim made it into both UHF repeaters (Alta Vista and Barrhaven) from Carp. All was also well with the digital systems and the VE2CRA club repeater.

The only other activity was preparation for the upcoming Canadian Ski Marathon, which tasks about 70 Amateurs for safety and logistics communication.

Keep your batteries charged, and get the snow away from your furnace outlet. Nobody likes to be awakened at zero dark thirty by a CO alarm. Standing in the snowbank in your slippers isn't fun.

**RCE-ARES Group submitted by GC Debra, VE3IEH**

January 2015 was a quiet month for the group, although there have been some issues with the newly installed D-STAR repeater located on Kennelly Mountain at the VE3STP RPT site. Thanks to the project team, Rob, VE3JA, Jeff, VE3EFF, Dale, VE3XZT, with assistance from Rick, VA3RWH, corrective action was taken onsite to diagnose and fix the problem and RCE Group Coordinator Debra, VE3IEH, is pleased to report that the D-STAR repeater is back online and is functioning successfully. More tweaks will be required once the spring weather arrives – somewhere between the cold and snow and mosquito season.

In February, GC Debra, VE3IEH, was contacted by the Fire Prevention Officer for the Town of Arnprior with regard to a possible solution to the ongoing operational difficulties with the UHF ARES repeater VE3YYX, installed at the fire department. Following a few email messages, several telephone conversations and a meeting with the station licensee, a small team was formed to perform some tests on the equipment and to meet with fire department officials on March 10. There are some matters that must be considered before any extensive repairs or equipment replacement is scheduled. A report will be provided in the next TCA.

**SD&G ARES Group submitted by GC Earle, VE3IMP**

The Stormont Dundas and Glengarry (SD&G)-ARES Group continue to read ARES bulletins each Monday at 7 pm on the club's 2m net conducted on VE3SVC (147.180 MHz+). Amateurs are also asked to then check in on the VE3MTA (UHF) repeater.

Occasionally, we also call for checkins on a new ARES repeater located in Cornwall (VE3VSW) and VE3SVR in Morrisburg. This process confirms the serviceability of the nearby Seaway Valley Amateur Radio Club (SVARC) repeater systems, at least once a week, should they be required by SD&G ARES.

The SVARC, from where most ARES members come, held its last meeting on January 28, 2015.

Aside from the bulletins and club meeting things have been very quiet on the SD&G ARES front.

**RCW-ARES Group submitted by GC Bob, VE3YX**

The Renfrew County (RCW)-West ARES Group provided safety communications for the Deep River Silver Spoon Ski Race on Saturday, February 7.

This year, we had a station at the ski chalet which provided a link from the base station to the marshals. The station was manned by Tony, VA3HWH and Dan, VE3DAN/3. This was Tony's first time participating in the event as an Amateur instead of skiing as he had done for the past 42 years.

A second station with Rob, VA3AGN and GC Bob, VE3YX, was located on one of the trails to keep track of the skiers part way through the races. The base station was located beside the registration desk and kept Yvonne, VE3TYA and Ron, VE3ZRV busy. We used the VA3RBW 2m repeater in Point Alexander, but if necessary, we could have used simplex.

There were no issues during the race besides relaying a couple of DNS's (Did Not Start).

**Districts reporting:**
**Eastern Ontario**
**ECs (GCs) or assistants reporting:** VE3IMP, VE3VY, VE3FFK, VE3YX, VE3IEH and Almonte ARC President VE3UIX.

**DECs reporting:** VA3LP

**OBS reporting:** VE3YX, VE3KII, VE3VY, VE3ZJS and VE3IQZ.

*– 73, Michael Hickey, VE3IPC*

## RAC FIELD ORGANIZATION REPORTS

**National Traffic System (NTS) Net Reports**

| Net (Manager) | Sessions | QNI | QTC |
|---|---|---|---|
| **January 2015:** | | | |
| BCEN (VE7XLH) | 31 | 290 | 29 |
| BCYTN (VE7WJ) | 31 | 386 | 32 |
| Laurentian | 31 | 409 | 0 |
| MEPN (VE4JS) | 31 | 863 | 1 |
| MMWXN (VA4GD) | 31 | 650 | 2 |
| MRS (VE4HK) | 9 | 304 | 0 |
| MSMN (VE4AEW) | 22 | 525 | 0 |
| OPN (VE3XRC) | 31 | 51 | 2 |
| **February 2015:** | | | |
| BCEN (VE7XLH) | 28 | 251 | 24 |
| BCYTN (VE7WJ) | 28 | 343 | 32 |
| MEPN (VE4JS) | 28 | 668 | 2 |
| MMWXN (VA4GD) | 28 | 561 | 0 |
| MRS (VE4HK) | 8 | 263 | 0 |
| MSMN (VE4AEW) | 20 | 490 | 0 |

**NEWFOUNDLAND AND LABRADOR:**

SM: Vacant

**JANUARY-FEBRUARY SM REPORT:**

Winter time in the NL section slows to a crawl after Christmas and New Years and gets depressing when the credit card bills start arriving and you see how much you overspent during the holidays.

Best set plans for no such repeat for the next season somehow get lost over the summer.

There is still quite an interest in 6 metres in this section with a number of the fellows listening every day for the short and infrequent openings. The Lewisporte hams seem to be the ones who are most interested. There were also quite a number of Amateurs chasing after K1N with some of them getting up at ungodly hours to get in the log.

Joe, VO1NA, deserves a big pat on the back for receiving his DXCC Honour Roll plaque recently. He is the third recipient for the NL Section but the only one with the CW distinction. His father, Joe, VO1FB, and Frank, VO1HP, are the others. As an Amateur just getting in to enjoying the CW mode, I guess I have quite a ways to go. Congratulations Joe.

Speaking of awards, we are trying to renew interest in the WAVO (Worked All VO) award which is administered by the Society of Newfoundland Radio Amateurs. Dave, VO1LM and I have agreed to take over administration of the award.

The WAVO (Worked All VO) award is available to any Radio Amateur, not resident in Newfoundland and Labrador, who has worked at least 20 VO stations, of which one must be a VO2.

The award is also available to all VO1-VO2 stations who have worked at least 60 different VO stations, of which two must be from Labrador using the VO2 prefix. QSL cards are not required but a copy of the logbook entries must be sent to the award manager along with funds to cover return postage.

Applicants for the WAVO Award can apply to:

SONRA - WAVO Award
Box 23099
St. John's, NL A1B 4J9

That's it folks, short and sweet. It's in the winter time when you find the things that need fixing or adjusting and you don't have the weather to do it. So make a list so you don't forget when summer eventually rolls around.

The latest Net reports are provided below by thanks to Ira, VO1IRA.

*Charlie Marsh, VO1VZ*
*NL Section Bulletin Editor*

**Cod Jigger**
January 536
February 384
**Evening**
January 960
February 906

# COMING EVENTS

## THE HAMFEST AND FLEAMARKET CALENDAR

**The following events are listed by date. Some dates and details are tentative. For more Hamfests and Fleamarkets please go to http://rac.eton.ca/events/upcoming.php**

**NEAR-FEST XVII**
**Sponsor:** New England Amateur Radio Festival, Inc.
**Date:** Friday, May 1 and Saturday, May 2.
**Time:** Gates open at 9 am Friday for sellers and buyers.
**Place:** Deerfield, New Hampshire, USA
The Deerfield Fairground is located on Route 43 approximately 15 miles NE of Manchester NH. GPS coordinates: N42d 5m 57.4" W71d 14m 33.5s (Lat 43.099286 Lon -71.242663).
**Description:** NEAR-Fest XVII is a "FreeFester" to thank our loyal attendees for supporting us for the past eight years. There will be three huge buildings full of commercial vendors and dealers offering everything from the latest in radio equipment, books and accessories.
**Cost:** Public free; $10 per vehicle; camping fees are $30 a night; tent sites are $15.
All overnight fees are payable to the Deerfield Fair Association.
**Talkin:** K1JEK/RPT 146.700 MHz (-600 PL 88.5) 146.52 direct 3.885 MHz Tune your car radio to FM 95.1 or AM 650 for continuous hamfest news and entertainment.
**Info:** contact W1RC@near-fest.com
**Web:** http://www.near-fest.com/

**SIMCOE COUNTY HAMFEST**
**Sponsors:** Barrie Amateur Radio Club and the Junk in the Trunk Event Newmarket
**Date:** Saturday, May 2.
**Time:** Public 7:30 to 11:30 am; Vendors set up inside or out! Bring a table for your set up. Rain or Shine.
**Place:** Grenfell, Ontario (southwest of Barrie; at the Grenfell Community Centre / Arena, 1989 Sunnidale Road. Quick access to Highway 400.
**Description:** Indoor/Outdoor Hamfest Bring any or all of your surplus radio related items. Coffee and snacks will be available.
**Cost:** Public free! Vendors/tailgators $7.
**Talkin:** 147.000 + Tone 156.7.
**Info:** Mike, VE3MKX, at mkx@bell.net.
**Web:** http://www.barriearc.com/

**MAPLE RIDGE SWAP MEET**
**Sponsor:** Maple Ridge Amateur Radio Club
**Date:** Sunday, May 3.
**Time:** Vendors at 7:30 am; Public 9 am. Open for pancake breakfast 8 am. Concession will remain open during the event.
**Place:** Pitt Meadows, British Columbia; 12460 Harris Road, one Block South of the Lougheed Highway in the old REC Building.
**Description:** Ham Radio & Computer Swapmeet. The largest in the Fraser Valley. Great prices lots of stuff.
**Cost:** Public $5 (includes a chance to win a radio); Tables $20 (includes one entry and a chance to win a radio).
**Talkin:** 146.800 -600 + Tone 156.7
**Info:** Call Nick at 604 465-9476 or contact ve7te@mrarc.net.
**Web:** http://www.mrarc.net

**31ST SMITHS FALLS FLEAMARKET**
**Sponsor:** Rideau Lakes Amateur Radio Club
**Date:** Saturday, May 9.
**Time:** Vendors 7 am; Public 9 am.
**Place:** Smiths Falls, Ontario; at the Smiths Falls Curling and Squash Club (same location as last year), on Old Sly's Road.
**Description:** Our 31st Annual Fleamarket of Amateur Radio equipment includes a large number of Commercial and Private Vendors, a Canteen, a Consignment Table and an Equipment Test Table.
**Cost:** Vendors: Tables (Approx. 2 1/2 X 5 ft) $10 (admission not included).
Admission: $5 (includes a door prize ticket). Youth under 16 are admitted Free of Charge.
**Talkin:** VE3RLR on 147.21 MHz+.
**Info:** For more information or reservations, contact ve3rlr@gmail.com.
**Web:** http://ve3rlr.dyndns.org

**ANNUAL GENERAL MEETING – BCARCC**
**Sponsor:** British Columbia Amateur Radio Coordination Council
**Date:** Sunday, May 31.
**Time:** Registration 9 am; AGM: 10 am to 12:30.
**Place:** North Vancouver, British Columbia; North Shore Emergency Management Office, 147 E. 14th Street (2nd floor of RCMP Building) Hosted by North Shore Amateur Radio Club
**Cost:** 2015 Membership dues of $20 per delegate should be mailed to Treasurer Brian Summers, VE7JKZ, 10640 Sceptre Crescent, Richmond, BC V7E 2A7. Download a membership renewal form from website.
**Info:** Contact Secretary Ed Frazer, VE7EF, at 604-921-6614 or ve7ef@rac.ca.
**Talkin:** VE7NSR 147.26 MHz +600 No Tone.
**Web:** http://www.bcarcc.org

**QUEBEC HAMFEST 2015**
**Sponsor:** Club Radio Amateur VE2CBS Sorel-Tracy inc.
**Date:** Sunday, May 31.
**Time:** Inside Vendors 6 am; Public 7 am to 12 noon. Snack bar ready to serve you.
**Place:** Sorel-Tracy, Quebec; 200 rue Victoria.
**Cost:** $8 (free at 11 am); Vendors: Inside tables $15 includes one admission.
**Talkin:** Listen to the VE2RBS repeater on 145.370 (CTCSS 103,5). VA2CST-C 146.985 MHz - DV, VE2FCT-B 446.250 M - DV.
**Info:** Contact ve2cbs@raqi.ca.
**Web:** http://www.hamfest.qc.ca/

**STREETSVILLE BREAD & HONEY FESTIVAL**
**Date:** June 6 and June 7.
The Mississauga Amateur Radio Club VE3MIS will be operating a special event station at the Streetsville Bread and Honey Festival for QSL & certificate collectors, in Streetsville, Ontario. Operating times are 1400 to 2000 UTC on each day. SSB frequencies are 7.230 and 14.240 MHz +/- QRM. Requests for QSL cards to MARC, c/o Michael Brickell, VE3TKI, 2801 Bucklepost Crescent, Mississauga, ON L5N 1X6 Canada, with an SASE. Please note: we cannot use US stamps for return mail from Canada to the USA. However, green stamps will be gratefully received.
**Web:** http://w.marc.on.ca



**CENTRAL ONTARIO HAMFEST/ FLEAMARKET**
**Sponsors:** Guelph Amateur Radio Club & Kitchener-Waterloo Amateur Radio Club
**Date:** Sunday, June 7.
**Time:** Vendors 7 am; Public 9 to 12 noon.
**Place:** Cambridge, Ontario; Waterloo Regional Police Association Recreation Centre, RR2, 1128 Rife Rd. North Dumfries Township
Location: 43.344939, -80.418376
**Description:** 41 years and still going strong. Indoor tables and tailgating; major vendors, loads of collectibles; free prize draws, tasty refreshments. Easy parking.
**Cost:** General Admission $7 (under 12 free)
Vendors: Inside 8-foot tables $20 includes one admission. Additional inside tables $13.
Tailgater spaces $15 includes one admission. Additional Tailgate Pads $8.
**Talkin:** VE3KSR repeater on 146.970 (CTCSS 131.8) and 146.520. Simplex range switch to 146.520 and listen as above.
**Info:** Nick Waterman, VE3NNW by phone at 519-884-3760 (evenings & weekends only), email to info@hamfest.on.ca
**Web:** http://www.hamfest.on.ca

**CVRS ANTIQUE RADIO SWAPMEET**
**Sponsor:** Canadian Vintage Radio Society
**Date:** Sunday, June 7.
**Time:** 12 noon until 2 pm.
**Place:** Burnaby, British Columbia; Charles Rummel Park corner of Lozells Avenue and Government Road.
**Description:** Antique Radio Swap Meet, Radios, Parts, Tubes, Books etc.
**Cost:** Free admission, Free sellers tables
**Web:** http://canadianvintageradio.com/contact/

**LONDON VINTAGE RADIO CLUB FLEAMARKET**
**Sponsor:** London Vintage Radio Club
**Date:** Saturday, June 13.
**Time:** Public and vendors: 7 am.
**Place:** Guelph, Ontario; 394 Edinburgh Road North in the east side of the Hammond Mfg parking lot at the corner of Speedvale and Edinburgh.
**Description:** This fleamarket is an annual club event. Bring your own table. You will find antique and vintage radios, Amateur Radio equipment, tubes, radio collectables, parts, magazines and all sorts of radio goodies for sale, trade etc.
**Cost:** $10 for vendors; Public no charge.
**Info:** Contact larry.asp@sympatico.ca
**Web:** http://lvrc.homestead.com/fleamarket.html

**CAARC 45TH ANNUAL PICNIC**
**Sponsor:** Central Alberta Amateur Radio Club
**Date:** Friday, June 19 to Sunday, June 21.
**Place:** Red Deer, Alberta.
**Description:** SARA AGM, ARES Annual meeting, displays, vendors, tailgate fleamarket, pig roast Saturday night, pancake breakfast Sunday morning, draws and door prizes.
**Directions:** West of Red Deer on highway 11 to Range Road 284, south to Township Road 380, east to site.
**Talkin:** VE6QE 147.150 or 146.520 simplex
**Web:** http://www.caarc.ca

**52ND INTERNATIONAL HAMFEST**
**Date:** Saturday, July 11.
**Place:** US Lodge in the International Peace Garden; south of Brandon on the Canada-US border.
**Description:** Fleamarket. Rabbit Hunts. Prizes. Mobile Judging. Food Concession. Homebrew Contest. Saturday night Dance. Free Saturday lunch for those registered. Campers please identify yourself at the gate for special camping rates.
**Cost:** Registration fee is $15 per person.
**Info:** Richard Holder, VE4QK, ve4ihf@mts.net 204-268-1702
**Web:** www.mts.net/~holderr/ihf.htm

**ONTARIO HAMFEST 41st ANNIVERSARY**
Sponsor: Burington Amateur Radio Club
**Date:** Saturday, July 11.
**Time:** Inside & Commercial Vendors: 7 am at the Robert St Gate; Tailgate Vendors: 8 am at the Robert St Gate; Public: 9 am at the Thomas St Gate only.
**Place:** Milton, Ontario; the entrance to the General Admission parking is just opposite the JM Denyes Public School, 215 Thomas Street.
**Description:** Special Guest - Greg Jurrens, K5GJ, Vice President, Sales & Business Development FlexRadio Systems Courtesy of Radioworld.
**Cost:** General Admission $7.
**Tables:** $14 each; Tailgate Permit: $7 per space.
**Talkin:** 146.520 Simplex - Ontario Hamfest
**Info:** Hamfest Chairman: Bryce Lee, VA3TRN ontariohamfest@barc.ca
Vendor Registration Forms and Hamfest Flyers: Vendor Coordinator: Norm Freidin, VE3CZI ontariohamfesttables@barc.ca
**Web:** http://ontariohamfest.ca

**7TH ANNUAL JUNK-IN-THE-TRUNK EVENT**
**Date:** Saturday, August 22.
**Time:** 7:30 am until 12 noon.
**Place:** Newmarket, Ontario; in the paved parking lot of the Newmarket Theatre at 505 Pickering Crescent near Leslie Street and Mulock Drive.
**Description:** Junk in the trunk outdoor Amateur Radio Garage Sale Hamfest. Bring any or all of your surplus radio related items. Great Venue. Rain or Shine. Over 45 vendors attended last year!
**Cost:** Free admission; Vendors $5 per space per car and additional spaces $5.
All money is donated to the Newmarket Theatre group.
**Talkin:** 146.520 local repeater is 147.225
**Info:** Nick, VE3NJG at nickve3njg@rogers.com or Mike, VE3MKX at mkx@bell.net

**VHARA SWAP MEET**
**Sponsor:** Victoria-Haliburton ARA
**Date:** Saturday, August 29.
**Time:** Vendors 7 am; Public 8 am to 11 am.
**Place:** Lindsay, Ontario; Masonic Temple at 10 Ridout Street (Mill St. Entrance).
**Description:** Maple Leaf Communications will be one of the Vendors at the Swap Meet. Lots of Free Parking. Refreshments and Food will be available.
**Cost:** Free admission; Vendors: 6-foot Indoor Vendor Space $7. (You must bring your own table and chairs) Outdoor Tailgate Space $5. (Price is for floor space only!) Registration at the Door.
**Talkin:** VE3LNZ Repeater 147.195 MHz +
**Info:** Glen Glisinski, VA3GTH glenglisinski@gmail.com or 647-498-4231.
**Web:** www.vhara.ca

**OTTAWA (CARP) 18TH ANNUAL HAMFEST**
**Sponsor:** Ottawa Amateur Radio Club, Inc.
**Date:** Saturday, September 12.
**Time:** Vendors 7:30 am; Tailgaters: 8 am. Indoor Fleamarket open: 9 am to noon.
**Place:** Ottawa (Carp), Ontario; Carp Agricultural Fairgrounds, 3832 Carp Road (in the W. Erskine Johnston Arena at the north end of the fairgrounds).
**Description:** The region's largest fleamarket and hamfest. All of the big Ham Radio retailers are going to be there! Major door prize draws! Breakfast, coffee, and lunch concession. Volunteer organizations and displays. Onsite Amateur Radio licence exams. Get your licence, or upgrade during the hamfest! Note: if you are upgrading, bring the 11-digit certificate number on your licence to speed processing.
**Cost:** Public $6; Tables $12 plus admission, $5/tailgate (plus admission).
**Talkin:** VE2CRA, 146.94-, 100 Hz
**Info:** Ed Sich, VE3WGO, phone or text msg to: 613-853-2281, fleamarket at oarc.net
**Web:** http://www.oarc.net/fleamarket

**LONDON ARC 38TH ANNUAL HAMFEST**
**Sponsor:** London Amateur Radio Club Inc.
**Date:** Sunday, September 20.
**Time:** 9 am to 12 noon.
**Place:** London, Ontario; Hellenic Community Centre, 133 Southdale Road West.
**Description:** Sale of new and used radios, etc. Free parking, Coffee and muffins for small fee. Commercial Dealers and wheelchair access.
**Cost:** Admission $8; Tables $15 first one; $10 for each extra table.
**Talkin:** VA3LON, 147,060 PL 114.8
**Info:** Contact larchamfest@gmail.ca
**Web:** http://www.larc.ca

**HARC HAMFEST 2015**
**Sponsor:** Hamilton Amateur Radio Club
**Date:** Saturday, October 3.
**Time:** Public 9 am; Vendors 7 am.
**Place:** Ancaster, Ontario; Ancaster Fair Grounds in the School Fair Building, 630 Trinity Road.
**Description:** An Amateur Radio, computer, and electronics fleamarket. Parking and Mobile food truck onsite.
**Cost:** Public $7; Tables $12 each.



Mail payment to: The Hamilton Amateur Radio Club, 117-350 King Street East, PO Box 75073, Hamilton, Ontario L8N 4G6. Tables are reserved upon receipt of payment on a first come basis. Please book in advance to avoid disappointment.
**Talkin:** 146.76 (-) with tone 131.8 VE3NCF
**Info:** General info: Paul Fleck, VE3HTF ve3htf@hamiltonarc.ca or 289-431-1030
Vendor liaison: Mardy Eedson, VE3QEE ve3qee@hamiltonarc.ca or 905-648-0187
**Web:** http://www.hamiltonarc.ca

**COMFEST 2015 SWAP MEET**
**Sponsor:** Delta Amateur Radio Society
**Date:** Sunday, October 4.
**Time:** Doors open to the public at 10 am.
**Place:** Delta, British Columbia; Just south of highway 17 and 56th Street in Tsawwassen.
**Cost:** Public $5 per person.
**Info:** Contact gi@deltaamateurradio.com
**Web:** http://www.deltaamateurradio.com

**MONTREAL SOUTH SHORE HAMFEST**
**Sponsor:** Club Radio Amateur Rive-Sud de Montréal
**Date:** Saturday, October 17.
**Time:** Vendors 6 am; Public 9 am.
**Place:** Longueuil, Quebec (10 minutes from downtown Montreal); Place Desaulniers, 1023 Taschereau Boulevard.
**Description:** The biggest Hamfest in Quebec. Restaurant. Free parking. ATM onsite Accessible to handicapped persons.
**Cost:** Public $7; Table $10 (admission not included).
**Talkin:** 145.390 MHz (-) 103.5 Hz, VE2RSM
**Info:** Noël Marcil, VE2BR, 450-691-2009 or hamfest@ve2clm.ca
**Web:** http://www.ve2clm.ca/articles.php?lng=fr&pg=120

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