TCA

The Canadian Amateur

Canada's Amateur Radio Magazine

La Revue des Radioamateurs Canadiens

NOVEMBER / DECEMBER 2014 – NOVEMBRE / DÉCEMBRE 2014

Season's Greetings – Joyeuses Fêtes

"A Very Memorable Ontario QSO Party 2014..."

Publications Mail Agreement # 40028682 Registration # 09866

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Canada's Amateur Radio Magazine
La Revue des RadioAmateurs Canadiens

VOLUME 42 NUMBER 6 – TCAMAG@YAHOO.CA – NEW ADDRESS: HTTP://WP.RAC.CA/P155/

"Two weeks before the start of the Ontario QSO Party, I called a friend who lives on Manitoulin Island and discovered that there had been massive snowfalls that buried the region in four feet of snow.

He also informed me that the constant wind had dropped the temperature to –14 ° Celsius, and that my usual dedicated area for setting up antennas was impossible to use.

The only redeeming news was that there was a tractor at hand, which could be used to clear the path to my cottage."

– see page 41 for the rest of the story

NATIONAL & INTERNATIONAL

TECHNICAL

WHAT'S NEW ON THE "COMMUNICATIONS" FRONT AT RAC?

RAC's social media membership keeps growing! Our Facebook page is nearing the 3,500 mark and our Twitter close to 1000. Social media is a great way to get and share spontaneous Amateur Radio related information from RAC and by contributing members. Drop by either one or both often and tell your friends to join if they haven't already.

RAC still needs member contributions to add content to *The Canadian Amateur* and also to our newsletters. We are looking for members to share bio write-ups, photos of their ham shacks, how they got involved in Amateur Radio, DX contest success stories etc. In addition, we are looking for technical articles on a wide range of topics. Please use our new website as the old isn't being updated and choose menu options on the right of main page: WP.RAC.CA. Contact RAC at rachq@rac.ca if you have any questions about navigating on the new site.

Do you have an electronic Club Newsletter? Send it to us if you would like to have it forwarded to our long list of Affiliated Clubs. You favourite Amateur photos, stories, achievements? Send them to us if you would like to be featured in our social media, newsletters or website.

RAC Facebook: https://www.facebook.com/groups/2624005010/ – RAC Twitter: @RACTWEETS

Vincent Charron, VA3GX/VE2HHH – RAC Director of Communications and Fundraising
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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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There are limits and restrictions for use of the Outgoing QSL Bureau. For more information, surcharges and card sorting details, visit http://wp.rac.ca/ or http://www.magma.ca/~ve3exy/bureau.html.

The **Incoming QSL Bureau** service is a user-pay system, using one of four methods – (**A**) envelopes (**B**) credits (**C**) labels or (**D**) combination credit with labels – to get cards to you. For more information on the incoming system visit wp.rac.ca/ . ***(*Note: Method B is preferred).***

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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.

VA7DEF – Derek Fiddes, of Duncan, BC, at age 80, on September 6, 2014.
VE1BZA – Malcolm Duncan, of Lawrencetown, NS, at age 78, on August 2, 2014.
VE1RFL – Rafael Candela, of Moncton, NB, on July 22, 2014.
VE1TJP – Tom Preston, of West Brooklyn, NS, on July 27, 2014.
VE2FEN – Guy Gadbois, of Sorel-Tracy, QC, at age 71, on August 30, 2014.
VE2QA – Lee Cunningham, of Pointe-à-la-Garde, QC, at age 76, on June 29, 2014.
VE3BBB – Paul Waechter, of Breslau, ON, at age 76, on August 13, 2014.
VE3BZB – Gord Pierce, of Selwyn, ON, at age 87, on July 29, 2014.
VE3CMR – Eldon Robinson, of Windsor, ON, at age 86, on September 17, 2014.
VE3DCN – John Zumstein, of Winslow, ON, at age 88, on April 27, 2014.
VE3GVJ – Greg James, of Port Hope, ON, at age 58, on August 21, 2014.
VE3PEM – David Steele, of Pembroke, ON, at age 88, on May 22, 2014.
VE3US – Don MacLean, of Sudbury, ON, at age 76, on March 9, 2014.
VE3YLF – Ray Schierling, of Oakville, ON, at age 83, on September 5, 2014.
VE4KEN – Ken Mills, of Winnipeg, MB, at age 50, on August 21, 2014.
VE5AEO – Pat Caswell, of Balgonie, SK, at age 64, on August 1, 2014.
VE5KP – Don Prickett, of Saskatoon, SK, at age 76, on July 5, 2014.
VE6BAT – Bill Tymchuk, of Edmonton, AB, at age, 90, on August 26, 2014.
VE6CEI – Richard Sopczak, of Calgary, AB, at age 85, on August 29, 2014.
VE6LLV – Joe Hickey, of Calgary, AB, at age 73, on August 13, 2014.
VE6NOE – Larry Kyhn, of Calgary, AB, at age 72, in March 2014.
VE6RME – Don Everton (VA6DE), of Calgary, AB, at age 86, on August 2, 2014.
VE6YCA – Alan Clark, of Hinton, AB, at age 86, on September 6, 2014.
VE7ALN – Jim Milligan (VA7ND), of Kamloops, BC, on August 9, 2014.
VE7BDY – Syd Jameson (VE7BOP), of Nelson, BC, at age 81, on August 16, 2014.
VE7CMA – Ches Allen, of Maple Ridge, BC, at age 91, on August 3, 2014.
VE7FT – Stu Furneaux, of Surrey, BC, on August 5, 2014.
VE7KX – Austin (Ozzie) Candy, of Kingston, ON, at age 96, on August 23, 2014.
VE7WLL – Bill Rimmer, of Sechelt, BC, at age 83, on April 3, 2014.
VE7YF – Albert Stephens, of Kamloops, BC, at age 89, on September 16, 2014.
VE9CO – Richard Carr, of Fredericton, NB, at age 69, on July 23, 2014.
VE9DCB – Don Bilensky, of New Maryland, NB, at age 85, on July 11, 2014.
VE9GN – Gérald Gauvin, of Bouctouche, NB, at age 72, on July 7, 2014.

*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 at rachq@rac.ca.

DARF IS THE DEFENCE OF AMATEUR RADIO FUND

It is a Trust Fund established in the early 90s 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.

The Fund is maintained by Donations from individual Canadian Amateurs and from Canadian Amateur Radio Clubs. Donations are deposited in the trust fund account and the fund is administered by the three DARF Trustees.

The trust is entirely separate from, and cannot be used for, RAC financial transactions.

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,
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Visit darf.rac.ca for more information.

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RAC

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Join RAC or renew your membership at: https://www.rac.ca/en/rac/membership/form/

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Volunteers needed
We are actively looking for new Section Managers and other volunteers. Please see pages 60-64 for a Section Manager Election Notice and for the Section Reports.

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A MESSAGE FROM THE PRESIDENT / UN MESSAGE DU PRÉSIDENT

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Canada has been described in a variety of ways over its history. Voltaire famously and dismissively described Canada as “a few acres of snow”.

The US geographer Robert D. Kaplan in his book “The Revenge of Geography”, described our country as a “thin band of middle class civilization between the US border and the arctic”.

The Canadian author Brett McGillivary in his text “Canada: A Nation of Regions” described Canada as just that: “A Nation of Regions”.

I have travelled from coast to coast to coast – from Canada’s farthest western point (Beaver Creek in the Yukon) to its farthest eastern point (Cape Spear in Newfoundland) and to Baffin Island in the north – and the phrase a “nation of regions” rings true. We are a rich tapestry of unique communities. British Columbia, the Yukon, Alberta, Saskatchewan, Manitoba, Northern Ontario, Southern Ontario, Quebec, the Maritimes and Newfoundland, the Northwest Territories and Nunavut all have their own sense of themselves and a sense of being different from the Rest of Canada (ROC). When I was younger I only heard the phrase ROC in reference to Quebec in relation to the other provinces, but more recently I have heard it used in relating other regions to the whole. The regions view themselves as having unique properties and have their own views of the ROC. All hold stereotypical views of the ROC. The federal governance of our country is intended to respect the regional nature of our country. It is interesting that unitary nations such as the United Kingdom are struggling to evolve into a federal structure.

Our country is huge geographically and while we view ourselves as low density and small in population, we have the 37th highest population in the world. We are largely strung out along the US border, with very few population centres above the 50th parallel, and often feel ourselves a small country because we compare ourselves to our large neighbour to the south. The United States has the third largest population in the world and is nearly 10X our size population-wise. (It was former Prime Minister Pierre Trudeau who said living with the United States in North America is “in some ways like sleeping with an elephant. No matter how friendly and even-tempered is the beast… one is affected by every twitch and grunt). Comparisons with our neighbour are unavoidable.

What has this to do with Amateur Radio or a national Amateur Radio society? RAC is the second largest national society in the Americas. We punch above our weight in international matters. The RAC governance structure was and is designed to respect the regional nature of our country. Like any representational system anywhere it is imperfect and ours is underutilized. We have the option for Deputy Directors but do not have a full slate of Deputy Directors. Having a geographical distribution of Director / Deputy Director in a Region would help to ensure a greater regional representation. More Deputy Directors means greater representation and communication.

Le Canada a été décrit de plusieurs façons au cours de l’histoire. Voltaire a décrit le Canada au moyen de sa fameuse phrase « quelques arpents de neige ».

Le géographe américain Robert D. Kaplan, dans son livre “The Revenge of Geography”, a décrit notre pays comme « une mince bande de civilisation moyenne entre la frontière des États-Unis et la région arctique ».

L’auteur canadien, Brett McGillivary, dans son texte « Canada: A Nation of Regions » a décrit le Canada, justement, comme! « une nation de régions ».

J’ai parcouru le Canada d’un océan à l’autre – de l’endroit le plus éloigné à l’Ouest (Beaver Creek au Yukon) jusqu’au point le plus à l’Est (Cape Spear à Terre-Neuve) et la Terre de Baffin au Nord – et c’est le dicton « nation de régions » qui est le plus juste. Nous sommes une riche mosaïque de communautés différentes. British Columbia, et Yukon, Alberta, Saskatchewan, Manitoba, Nord de Ontario, Sud de l’Ontario, Québec, les Maritimes et Terre-Neuve, les Territoires du Nord-Ouest et le Nunavut s’estiment tous uniques et sont conscients d’être différents du reste du Canada (ROC). Quand j’étais plus jeune, j’entendais le mot ROC seulement pour distinguer le Québec des autres provinces, mais récemment j’ai entendu l’expression qui situait d’autres provinces par rapport à l’ensemble canadien. Les régions se considèrent uniques avec leurs caractéristiques propres et voient le ROC à leur façon. Toutes ont une perception stéréotypée du ROC. L’administration fédérale de notre pays tend à vouloir respecter le caractère propre de chaque région du pays. Il est intéressant de noter que des nations unitaires comme le Royaume uni se battent pour évoluer vers une structure fédérale.

Notre pays est géographiquement immense et même si nous nous voyons comme une population de faible densité et peu nombreuse, nous sommes au 37ième rand parmi les plus fortes populations dans le monde. Nous sommes grandement répartis le long de la frontière américaine avec très peu de population au-dessus du 50ième parallèle, et nous avons souvent l’impression d’être un petit pays comparé à notre grand voisin du Sud. Les Etats-Unis possède la troisième plus grande population au monde ce qui fait près de dix fois la nôtre. (C’est l’ancien premier ministre Pierre Trudeau qui disait à propos de États-Unis en Amérique du Nord « d’une certaine façon c’est comme dormir avec un éléphant. Peu importe l’amitié et le bon comportement de la bête… on est affecté par ses sursauts et ses grognements ». Les comparaisons avec notre voisin sont insoutenables.

Qu’est-ce que ceci a à faire avec le radioamateurisme ou avec une société nationale radioamateure? RAC est la deuxième plus grande société nationale des Amériques. Nous comptons davantage que notre « poids » dans les affaires internationales. La structure administrative de RAC est constituée de manière à respecter la nature des régions de notre pays. Comme tout système représentatif, peu importe où, il n’est pas parfait et le nôtre est sous-utilisé. Nous avons le choix d’assistants directeurs mais notre liste (territoriale) n’est pas complète. Posséder une répartition équilibrée de directeurs et d’assistants directeurs par région nous aiderait à assurer une meilleure représentation régionale. Plus d’assistants directeurs signifie une meilleure représentation et une meilleure communication.

Il m’a fait chaud au cœur de voir un large éventail d’indicatifs d’appel à notre kiosque du Dayton Hamvention, et de constater que beaucoup de membres sur les comités portaient l’indicatif d’appel, que ce soit celui de la planification des bandes ou du conseil de revue éditoriale de TCA. Nous devons travailler davantage sur cet événement pour parvenir à une meilleure représentation régionale en tout et partout.

Nous devons aussi mieux différencier les intérêts nationaux des intérêts régionaux.

It warms the cockles of my heart to have a broad range of call signs at our booth at the Dayton Hamvention and to have wide call sign membership on committees, whether band planning or TCA's Editorial Review Council. We need to work on this even more to achieve regional representation on all of our components.

We also need to better differentiate national from regional interests.

Some Amateur Radio activities are largely regional and not national. Think about the Amateur Radio Emergency Service (ARES): served agencies are at the regional level; EmComm serves municipal and provincial agencies. There are rare occasions that the served agency is federal in nature; in Manitoba the Federal Prairie and Arctic Storm Prediction Centre has VE4WWO (Winnipeg CanWarn weather net) which has an ARES station but this is an exception. The United States has a strong federal agency, the Federal Emergency Management Agency (FEMA), and the ARRL recently signed a Memorandum of Understanding (MoU) with FEMA.

Canada does not have a strong federal emergency response presence that is in any way comparable to FEMA. Regional (municipal/provincial/territorial) jurisdictions and agencies are responsible to deal with emergencies and define non-radio criteria for those that serve them. For example, compensation, human rights and labour legislation are all provincial responsibilities when the served entity is a municipality or province; there is no federal legislative application in these areas notwithstanding the fact that RAC is a national organization. Some regions (Newfoundland, Manitoba, Alberta, British Columbia and the Yukon, and parts of North and East Ontario) have had significant emergency response activities involving Amateur Radio over the last decade. All of these responses were at the municipal and/or provincial/territorial level. The army (federal) was brought in to Manitoba in 1997, but its role was not command and control but to begin preparation to evacuate Winnipeg at the behest of provincial and municipal authorities; it subsequently became part of the large workforce building provincial and municipal dikes. There was no national RAC role in that emergency. RAC's role would have been limited to interregional cooperation.

RAC, at a national level, does not extend command and control over the actions of ARES units during the course of an emergency. Nor should it. RAC limits its actions to standards (which includes voluntary training standards), best practice exchange and interregional cooperation. RAC's role in organizational issues is limited to model structures. Details of organizational structures within regions may be driven by the needs of that region and the wishes of the served agency. ARES is a regional responsibility focusing on providing service to regional entities. This is the served agency model.

What issues cut across all regions?

National Amateur Radio interests include frequency protection and enhancement. We have had many recent examples of frequency enhancement at the national and international level, including 60 metres nationally, and in which RAC is providing leadership internationally. National interests include lobbying governments and practising advocacy, establishing voluntary training standards, liaising with and among Amateur Radio clubs and associations, promulgating best practices, promoting Amateur Radio and raising its profile within the public. Issues such as antenna restrictions and intrusions into Amateur bands have national components as the legislation is federal and precedence impacts the entire country.

Certaines activités radioamateures sont nettement régionales et non nationales. Réfléchissez aux Services d'urgence radioamateurs (SURA - ARES): les agences sont de niveau régional; EmComm est au service des municipalités et de la province. Il n'est que rarement de nature fédérale. Au Manitoba, le « Federal Prairie and Arctic Storm Prediction Centre », un VE4WWO (réseau météorologique Winnipeg CanWarn) opère une station ARES, c'est une exception. Les États-Unis ont une importante agence fédérale, la Federal Emergency Management Agency (FEMA), et ARRL récemment signait une entente (Memorandum of Understanding - MoU) avec FEMA.

Le Canada n'a pas une forte présence fédérale en matière d'urgence, ou quoique ce soit comparable à FEMA. Les juridictions régionales (municipal, provincial, territoires) et les agences sont responsables de la gestion des urgences et définissent les critères non radiophoniques pour ceux qui s'y intéressent. Par exemple, les indemnités et dédommagements, les droits humains et les lois du travail sont du ressort provincial dès qu'ils s'adressent aux municipalités ou à la province; il n'y a pas de législation fédérale qui s'applique à ces domaines nonobstant le fait que RAC est une organisation nationale. Des régions (Terre-Neuve, Manitoba, Alberta, Colombie-Britannique, le Yukon et des parties du Nord et de l'Est de l'Ontario) n'ont pas eu d'activités à caractère d'urgence impliquant la radio amateur depuis dix ans. Toutes ces activités étaient du ressort des municipalités, de la province ou des territoires. L'armée (juridiction fédérale) a été appelée au Manitoba en 1997, mais son rôle ne touchait pas au commandement ou au contrôle et consistait plutôt à participer à l'évacuation de Winnipeg sous l'autorité de la province ou de la municipalité; Plus tard, elle participa à la construction de digues provinciales et municipales. Il n'y avait pas de rôle pour RAC lors de cette urgence. Il aurait été limité à une coopération interrégionale.

Le rôle de RAC, au niveau national, ne s'ajoute pas à celui d'ARES en matière de commandement et de contrôle des opérations lors d'une urgence. Il ne doit pas. RAC limite son action à des activités générales (ce qui inclus la formation volontaire), et à de meilleures méthodes de coopération et d'échanges interrégionaux. Le rôle de RAC en matière d'organisation est limité aux structures de base. Les détails qui relèvent des régions, dépendent des besoins de la région et du désir des agences. ARES est de niveau régional et vise à fournir des services à des groupes régionaux. Voilà un bon modèle d'agence de services.

Quels sont les enjeux régionaux?

Les intérêts du radioamateurisme national comprennent la protection et le renforcement de notre réseau de fréquences. Nous avons connu plusieurs exemples de renforcement de nos fréquences aux niveaux national et international, comprenant le 60 mètres nationalement, dans lequel RAC exerce un leadership sur le plan international. Les intérêts nationaux incluent le lobby auprès des gouvernements et l'interventionnisme, l'établissement des standards de formation volontaire, la liaison entre clubs radioamateurs et associations, la promulgation de meilleures méthodes, la promotion du radioamateurisme et l'amélioration de sa perception dans le public. Les enjeux de restriction des antennes et l'intrusion dans les bandes amateures ont une résonance nationale puisque la législation est fédérale. Les impacts touchent donc le pays au complet.

Une tournée

Au début des années 1960, John Steinbach a écrit un livre dont le titre est Travels with Charley au sujet d'un voyage aux États-Unis dans les années 1960 en roulotte (RV) avec son chien Charley et sa perception des conditions de vie américaine à ce moment-là. La roulotte fut surnommée Rocinante, le nom du

On Tour

In the early1960s, John Steinbach wrote a book entitled Travels with Charley about a 1960 tour of the United States in an RV with his dog Charley and his view of the condition of the US at that time. The RV was named Rocinante which was the name of Don Quixote's horse. (My son gave me the book as a present.) I have been on tour in my RV with my small cocker spanielish rescue dog Ginger. I haven't named my RV (and won't name it after Don Quixote's horse as I have more optimism) although its nickname is BUFF (Big Ugly Fat Fellow). To learn, you have to get out and about.

The Yukon

I would be remiss if I didn't take briefly take the time to discuss my visit to the Yukon (there will be more in the next issue of The RAC Report). These Amateurs punch above their weight. The Amateur Radio community is deeply embedded in their community and they have excellent relationships with their emergency measures organization, power corporation and telecommunications supplier. Repeater sites and their maintenance is often a shared affair. Readers of TCA are familiar with the activities of the Yukon Amateur Radio Association (YARA).

In the Yukon Amateur Radio is a utility. Few highways do not have VHF/UHF repeater coverage.

British Columbia

RAC's Annual General Meeting (AGM) was held in New Westminster and I had the privilege to meet with BC hams in the area and touched base with hams in Prince George (there are lots of Search and Rescue activities in British Columbia).

Alberta

In 2013, certificates of appreciation were handed out by RAC to RAC/ARES officials in recognition for their services during the 2013 floods in Alberta. There were two anniversary events in Alberta to honour Amateurs who served their communities during that flood.

TCA readers will also know that the Foothills Amateur Radio Society organized a one-year anniversary recognition dinner in High River, Alberta for Amateurs who served their community during the flood of 2013 that nearly destroyed their town. I was honoured to be asked to be part of the head table with key Amateur officials and the Mayor and the town's Fire Chief. On the RAC website you can read the letter from the town to RAC praising the role of Amateurs in helping their community. FARS, Calgary ARES and RAC handed out a certificate to each Amateur who served during the flood.

In Edmonton, the Northern Alberta Radio Club (NARC) organized a BBQ to honour Amateurs from Edmonton and Red Deer who assisted in the flooding. The event was held at the training trailer in the NARC complex on the outskirts of Edmonton and a certificate was handed out to each Amateur. As I noted in my report at the AGM and other writings, the actions of Amateurs in Alberta in 2013 were among the highest traditions of Amateur Radio operators supporting their communities and province and they serve as examples of dedication to Amateurs across Canada.

I also met with Amateurs in Grand Prairie, Lloydminster, Saskatoon and Regina. I'll provide more information about these meetings in The RAC Report and on Facebook, Twitter and on the RAC website.

Geoff Bawden, VE4BAW – RAC President and Chair

TCA

cheval de Don Quixote. (Mon fils m'a fait don de ce livre!). Je suis parti en tournée en compagnie de mon petit chien de sauvetage, un épagneul du nom de Ginger. Je n'ai pas choisi de nom pour la roulotte (et ne la nommerai pas du nom du cheval de Don Quixote; je suis plus optimiste!) quoique son surnom est BUFF (Big Ugly Fat Fellow). Pour apprendre, il faut sortir et se promener!

Le Yukon

Je m'en voudrais si je ne devais prendre quelques minutes pour parler de ma visite au Yukon (vous en lirez plus dans le prochain numéro de RAC en bref). Des amateurs qui vont au-delà d'eux-mêmes. Les radioamateurs sont profondément impliqués dans leur communauté et leurs relations sont excellentes avec les organisations chargées des mesures d'urgence, la compagnie d'électricité et le fournisseur de télécommunication. Les répéteurs et leur entretien sont souvent une affaire de partage. Les lecteurs de TCA sont familiers avec les activités de l'Association radioamateure du Yukon (YARA).

Au Yukon, la radio amateur est utile. Quelques grandes routes cependant ne sont pas couvertes par des répéteurs VHF/UHF.

British Columbia

L'Assemblée générale annuelle (AGM) de RAC s'est tenue à New Westminster et j'ai eu le privilège de rencontrer les amateurs de la région et de m'entretenir avec des amateurs de Prince George (il y a beaucoup d'activités, de recherches et de sauvetages en Colombie-Britannique).

Alberta

En 2013, des certificats d'appréciation furent remis par RAC à des responsables de RAC et ARES en reconnaissance de leurs services durant les inondations en Alberta en 2013. Il y a eu la célébration de deux anniversaires en Alberta en 2014 en l'honneur d'amateurs qui se sont dévoués pour leur communauté durant l'inondation.

Les lecteurs de TCA se rappelleront que la Foothills Amateur Radio Society a organisé un dîner à High River, Alberta, pour souligner le premier anniversaire de la participation d'amateurs en faveur de leur communauté durant l'inondation de 2013, qui a presque détruit leur ville. J'ai eu l'honneur d'être invité à siéger à la table d'honneur avec les principaux amateurs responsables, le maire et le chef des pompiers. Sur le site web de RAC vous pouvez lire la lettre que la ville a envoyée à RAC remerciant le rôle des amateurs en faveur de leur communauté. FARS, Calgary ARES et RAC ont remis un certificat à chaque amateur qui a combattu les effets de l'inondation.

À Edmonton, le Northern Alberta Radio Club (NARC) a organisé un BBQ en l'honneur des amateurs d'Edmonton et de Red Deer qui ont aidé à combattre l'inondation. L'événement s'est tenu à la roulotte de formation au complexe NARC, en périphérie d'Edmonton, et un certificat a été remis à chaque amateur. Comme je le signalais dans mon rapport à l'AGM et dans d'autres écrits, l'action des amateurs en Alberta, en 2013 se situe au plus haut niveau des pratiques opérationnelles et des traditions radioamateures au service de leur communauté et de leur province. Ils sont des exemples pour les amateurs partout au Canada.

J'ai aussi rencontré des amateurs de Grande Prairie, Lloydminster, Saskatoon et Regina. Je livrerai plus d'informations au sujet de ces deux réunions dans le RAC en bref, sur Facebook, Twitter et le site web de RAC.

Geoff Bawden, VE4BAW – RAC Président-directeur général

– Traduction par Claude Lalande, VE2LCF. Merci Claude!

SIX METRES AND DOWN

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FALL CONTESTING VS THE WEATHER: THE GOOD AND THE NOT SO GOOD

Hello to everyone and welcome to the last 2014 edition of this regular feature in TCA. Who knew 27 years ago that our UHF/VHF column would be continuing today? I hope that everyone enjoys reading it. I can't wait to see what the propagation gods have in store for us in 2015, and we will report it here in the pages of TCA.

During the last few months, I have been trying to get my UHF/VHF and Microwave station set up and working. I am pleased to report that finally, after all this time, I am almost there, with 50 MHz, 144 MHz, 222 MHz, 432 MHz, 902 MHz and 1296 MHz working, and 2304 MHz on deck. The antennas are all up on the tower for the five bands and we were able to give everything a shakedown in the ARRL June VHF QSO Party, the CQ WW VHF, the ARRL UHF Contest and the ARRL September VHF QSO party.

The next phase will be a complete station automation and amplifiers, which will be done during those cold dark nights of a good old Canadian winter, which I expect we shall have this year. I just hope we don't suffer any severe weather this year. It's bad enough Calgary had snow in September!

Its great to see so many people discovering the bands above 50 MHz. Our UHF/VHF and Microwave spectrum, has been a resource for Amateur Radio since the end of World War II. Now keep in mind that Amateurs played a major role in so much of the development of technology during the war, and many of our fraternity upon arrival home from the war couldn't wait to get back on air.

I recently came across a copy of a bulletin, stuck in between the pages of the November 1945 issue of "Xtal", issued by the Canadian Amateur Operators Association – the predecessor to the Canadian Radio Relay League, the Canadian Amateur Radio Federation, the Radio Society of Ontario and so on. It lists our bands and there are some penciled in the notes. What's interesting is that even back then we had allocations available to us as of 3 am EST on Thursday November 15, 1945 including: 28 – 29.7 MHz , 56 – 60 MHz, 144 – 148 MHz, 2300 – 2450 MHz, 5250 – 5650 MHz, 10,000 – 10,500 MHz and 21,000 – 22,000 MHz!

The notes indicated that in January 1946, 420 – 450 MHz and 1,215 – 1,295 MHz were added. Then in March 1946, 235 – 246 MHz and 50 – 54 MHz were added, replacing our 5 metre allocation. Interestingly, our HF allocations were released between March and November 1946. So the VHF gang was happy, but the HF guys must have really been chomping at the bit until 14.0 – 14.4 MHz was released on November 1, 1946!

Of course, since that time we have added more HF bands, the 33 cm 902 – 928 MHz band, a new LF band, and we continue to pioneer operations well up into the wavelengths of light! This is the true nature of Amateur Radio: experimenting, learning and sharing knowledge nationally and internationally.

50 MHZ ACTIVITY

The summer E skip season is now pretty well gone. We had one modest European opening on July 23, with F2DX, EI3KD and G8GCB in loud to Toronto between 1300 and 1400 UTC. July 27 brought OX3KQ in briefly at 0110 UTC, and KU9C/VP9 an hour later!

We did manage to catch some of the western DX on August 31 with VA5DX, N7HRO, WOSZ, KOGXI, AB0HF, VE4EA, W7MEM, VE4TV all worked between 0150 and 0330 Z. In addition, we did catch some Trans-Equatorial Propagation (TEP) when the earth took a bullseye M class and X class flare shot from the sun on September 3.

I was sitting with the rig on 50.110 MHz when up from the noise came LU5FF, LU9AEA and LU6DRV in a 10-minute opening.

Out west John, VE7DAY, writes:

"I was treated to a few little surprises in late August.

Aug 20 06:02 WA6LIE CM96 56. Then I called a few CQs after seeing 10 metres open.

Aug 28 03:51 K6RMJ DM13 58.
:53 WA6APQ DM03 59
They were as surprised as I.

Aug 28 05:13 K7CW CN87 55A for an auroral contact. Then ten was open a bit to the south so I called CQ on six.

Aug 31 03:45 KE7NR DM54 59
:55 N6RW DM34 599 He heard me for about 20 mins. No more signals heard here but Doug, VE5UF, spotted VY0YHK/b, VE4ARM/b, VY0SNO/b and K6FRC/b. Randy, VA6EME, spotted VY0YHK/b and VY0SNO/b AUEs not strong, with QSB. Some Es clouds still floating around. Ten open marginally today so I called CQ six.

Sept 1 04:01 WA6IKE CM98 59
:13 WA6LIE CM96 55
:14 W6INO CM97 55
VE8WD/b DP22 heard for over an hour starting at 07:08, 599 for extended periods. VY1DX/b CP20 heard for 1/2 hour starting 07:50 not strong, 549 peaks.

I called CQ over the pole for an hour but heard nothing other than the beacons.

Ten open again. CQ six.

18:35 NA6R DM14 56
:41 AA6DD DM13 54
:42 WK6F DM14 54
:43 K6JAD DM13 54

It's interesting that six has been open for a short period for three days now."

144 MHZ

On September 12, the band was in pretty good shape when K1RZ was testing prior to the ARRL September VHF QSO Party. I got on too late and missed the Auroral opening but found Dave, K1RZ, in FM19, loud on 144 MHz, tropo and talking to Stan, VA3ST, in Font Hill. I followed them up to 432 MHz and Dave's signal was 10 over S 9.

222 MHZ

Having the ability to now switch easily from band to band, we were able to work W3IP in FM19 at 535 kilometres on 222.1 MHz on September 18, and K2OS on September 19, in FN13 across the lake in Rochester, New York.

Ray, VE3FN, in FN25 is now QRV on 222 MHz with 300 watts. Ray has a great signal in Toronto now on that band as well as 144 and 432 MHz. He reported working K2OS and VE2DSB on Aurora on September 12.

Peter, VA3ELE, is now QRV on 125 cm as well, with a DEMI (Down East Microwave Inc) transverter and 7-element yagi.

It's nice to have the company up there!

432 MHZ

During the ARRL September VHF QSO Party, we worked VE3AQQ in FN25. Dave was running just 5 watts and operating from the Gatineau Hills so it was satisfying to hear him in Toronto!

September 20 found the 70 cm band open to Quebec from southern Ontario. Don, VE2DFO, was receiving the VE3DDW beacon from EN93 and I was copying the VE2FUT beacon in Toronto.

902 MHZ

Following the 432 contact with K1RZ in FM19, we then went to 902.1 MHz and worked there too, with great signals running 579. Dave runs 150 watts on that band so he was pretty loud and he copied my tiny 10 watts solidly.

We then tried on 1296 with no joy.

During the September QSO Party we managed to work three stations on 902 MHz including K2LIM in FN12, K1RZ in FM19 and VE3SMA in EN93.

1296 MHZ

During the VHF QSO Party the following day, we did manage to work W4IY in FM08 and missed K1RZ again, after running the bands with Dave.

2014 ARRL MICROWAVE CONTEST

The ARRL Microwave Contest runs for two weekends in August and in September. Operating at 10 GHz and above is a challenge, compounded by unknowns like the weather. This year was no exception here in the east.

A REPORT FROM RAY, VE3FN, IN OTTAWA:

The First Weekend

Rain showers were forecast for Saturday and Sunday at all the sites from which I operate. On Saturday, Doug, VE3XK, drove to Foymount, Ontario (FN15ik) realizing there would be scattered showers, but hoping they would be scattered so that we would have time to operate during breaks between the rain. Foymount is at an elevation of almost 1800 feet ASL and is the highest location in that neck of the woods. It was the site of a military radar in the old Pinetree Line.

After a drive of two hours, we arrived and found it raining lightly but the rain soon became heavier. After an hour or so, the rain stopped and we set up. But shortly after we completed setting up, the rain started again. The weather radar indicated that it would continue for hours so we tore down everything and went home without trying to make any contacts.

On Sunday, Jean, VE2FDJ and I drove to the summit of Mont Ste-Marie, Quebec (FN25bw). Its summit is over 1800 feet ASL and it provides a clear shot in all directions. There is a small wooden gazebo at the summit which provides a good location for operating. The drive to the summit is over a "road" made for utility trucks although an all-wheel drive car (such as mine) can make it if driven carefully and very slowly.

This year, Jean, VE2FDJ, drove his truck thus making the trip to the summit a lot easier!

Ray, VE3FN, operating at Mont Tremblant, his hair standing up not from static electricity or 10 GHz RF but from the wind!

The showers didn't arrive until the afternoon and most went around us. Unfortunately, we made only two contacts on 10 GHz: K2DH in FN02xu (384 km) and KA1OJ (FN42bl) at 499 km. Both had good signals. We tried a couple of other contacts but failed to make them. Nevertheless, I am confident I could have worked more if I had been able to drum up more skeds on 2 metres.

The Second Weekend

Once again, mother nature failed to cooperate. The forecasts for all my sites called for rain showers on Saturday and rain on Sunday. I decided to try Mont Tremblant, Quebec (FN25rf) on Saturday and to return to Mont Ste-Marie, Quebec (FN25bw) on Sunday. A ski lift at the summit of Mont Tremblant provides some shelter while the gazebo on Mont Ste-Marie provides a little better shelter for the heavier precipitation forecast for Sunday. But I was still very doubtful about the possibility of operating at either site because of the weather forecast.

The ski resort at Mont Tremblant is a pedestrian village. Fortunately, there is a small lift that will transport people from the entrance up to the base of the gondola ski lift. I had found that the gondola lift started at 9:00 so we arrived in time to catch it. Unfortunately, upon arrival we learned that the small lift (to take us up to the gondola) didn't start operating until 10:00! So we waited. At 10:00 they tried without success to start the small pedestrian lift – they eventually got it going about 10:15. This was a bad omen!

While there was no wind at the base of Mont Tremblant, it was at least 40 miles per hour at the summit (2,000 feet above the base) – and gusts peaked higher. The temperature was about 49 degrees F – substantially cooler than at the base. Standing in the gusts was difficult and there is no way my equipment could have been set up. And we were in the clouds with a visibility not exceeding 50 feet.

We took refuge in the nearby lounge building which has large windows facing south and west. The manager gave us permission to set up. But there must have been a lot of steel in the building as the "local" VE2FUT 2-metre beacon was only S1 even though the antenna was pointed in its direction out the window. And unfortunately, the 2-metre antenna was damaged in transit – the connection of the coaxial balun to the driven element was broken. I pointed the 10 GHz antenna through the window and tried a long-haul QSO with VE3SMA, but it failed. The metal in the building sure didn't help.

Both KT1J and N1JEZ planned to operate from Whiteface (FN34bi) and I was counting on working at least them as they always have strong signals over the 200 kilometre path. But we never found them on 2 metres and they did not answer their cellphones. Perhaps they could not operate because of the wind.

Early in the afternoon the clouds started to thin out and the wind dropped to a level we thought was acceptable. We moved the 2 metre station outside to the balcony and the VE2FUT beacon was now over S9! Doug, VE3XK, quickly contacted Tommy, W1AUV, who was on Mount Equinox (FN33kd). Tommy had to move to get a clear shot in our direction and we needed time to set up 10 GHz. My two electronic compasses stopped working so I used an analog magnetic compass. My IF radio also failed so I replaced it with an old Icom IC-202.

We finally worked W1AUV on SSB with S9 signals over a path of about 361 kilometres. But that was it. W1AUV was the only station we heard that day on 2 metres and the only station we worked on 10 GHz. Too bad because I believe there were several other stations set up in his neck of the woods and we should have had a good shot at making more 10 GHz contacts if they had looked north on 2 metres.

On Saturday night, the forecast for Sunday at Mont Ste-Marie was rain and some wind. After our experience at Mont Tremblant – and since the walk to the site includes crossing a large sloping rock – I feared that footing would be dangerous in the rain. Plus I had a few repairs to make and I was too tired to make them. So I decided to stay home on Sunday. As it turned out, there was quite a lot of rain on Sunday so by remaining at home I made the correct decision.

It was a very disappointing second weekend – and contest. We made a lot of effort for only three contacts!

A REPORT FROM HUGH, VA3TO, IN FN03BI

Hugh, VA3TO, wrote that his best DX during the contest was 318 kilometres, with most of his points scored during the August weekend. He worked 13 unique call signs. Hugh's report is provided below.

Thankfully, I got some DX contacts in over the first leg of the contest in August. I was only able to operate for a half-hour during the second leg in September due to a family medical issue on Saturday and a prescheduled event with my son for the better part of Sunday.

I finally got out later in the afternoon on Sunday, but only managed to get one contact in with VE3CRU from FN03BI to FN04NA.

After calling endlessly for contacts on the 2 metre liaison frequency with nobody heard, I decided to move to a hilltop a little north of my previous location. No sooner did I get it set up when a gust of wind toppled my dish and destroyed it well beyond field repair.

Apparently, I was VE3CRU Bill's only contact and he was out for a good part of the day on Sunday. From what I heard it seems like conditions were flat and it was slow all around.

VOLUNTEER AWARDS / RÉCOMPENSES AUX BÉNÉVOLES

It was with great pleasure that on September 30 in Regina I presented, on behalf of RAC, a special volunteer award to the organizers of the RAC Canada Day Contest and the RAC Winter Contest:

Bart Ritchie, VE5CPU – RAC Canada Day Contest

Sam Ferris, VE5SF – RAC Winter Contest

For over a decade they have managed two great RAC traditions that are recognized internationally as outstanding RAC contributions to Amateur Radio contesting.

Ce fut un grand plaisir, le 30 septembre à Regina, de décerner de la part de RAC, un prix spécial aux organisateurs chez RAC du concours Canada Day et du concours RAC Winter:

Bart Ritchie, VE5CPU – concours RAC Canada Day

Sam Ferris, VE5SF – concours RAC Winter

Depuis plus de dix ans, ils ont dirigé ces deux grands événements traditionnels de RAC reconnus internationalement à titre de contribution exceptionnelle de RAC parmi les concours radioamateurs.

Geoff Bawden, VE4BAW
RAC President and Chair / RAC Président-directeur général

– Traduction par Claude Lalande, VE2LCF. Merci Claude!

Lessons learned

1) Ideal line-of-sight locations on a hilltop or a great lake beach often equals higher winds... go figure (duhh)! Acquire a more stable tripod and secure/guy it!

2) I now believe there is no huge advantage going with a larger dish for uWave hilltopping/contesting. If conditions are good you'll work 'em with a 2-footer and if conditions are flat then the extra gain of a 3-footer isn't going to make much difference. The marginal advantage is superseded by the lesser wind loading and easier manageability for transport.

I'm going to rebuild using a commercial 2-foot dish that I acquired with integrated WR-90 buttonhook feed. I'll also look for a better tripod or devise a simple but effective way to guy my present tripod.

Thanks for the reports Ray and Hugh. The Microwave guys as a group were out in force during the second weekend despite the high winds! Kudos for the group and let's hope for mild weather next year!

Well that's it for now. Remember to keep an ear out for the Winter 50 MHz Es openings in December, and don't forget the ARRL January VHF SS on January 24-25. Remember this is later than usual due to football games in the US. So hope to hear you in the contest!

AN AMATEUR RADIO APPROACH TO SPECTRUM SHARING STUDIES

Bryan Rawlings, VE3QN
RAC Special Advisor – WRC-15

I am sometimes asked how the Amateur Radio community goes about acquiring new frequency space and why it seems to take as long as it does. In the following article I hope to give a partial answer to at least the first part of that question.

I feel I should say at the outset that the principal reason RAC participates as it does in the affairs of Industry Canada and the International Telecommunications Union is to help ensure continued unimpeded access to our existing bands. Our new allocations at 138 kHz and 472 kHz, and the seeking of a new allocation at 60 metres are undertakings which, while exciting, are not our main *raison-d'être*.

That said, let me try to explain, by example, how we might try to make a case – as we are doing now in the preparations for the 2015 World Radiocommunication Conference – for a secondary allocation at 60 metres.

First of all, like seafront property, there are no unallocated frequencies in the parts of the radio spectrum of interest to Radio Amateurs. Any allocation involves sharing the spectrum with existing users who have primary allocations there.

After a demanding exercise justifying why the Amateur Radio service needs more spectrum (saying we need more space to ragchew or contest garners no sympathy), we are usually called upon to document our case in a sharing – or compatibility – study.

At its simplest, this involves demonstrating that Amateur use of the spectrum will not disturb the operations of the primary users. A simple assertion that this will be the case won't be sufficient. Nor does resorting to our good record of "listen-before-transmit" help enough. In the end generally a full-blown compatibility study is called for.

While there are a number of different and creative ways to do this, the most-accepted method and the one with the greatest likelihood of success is to follow a process based upon the ITU's own Recommendations.

First, the primary user or users are asked to provide their "protection ratios" which, simply put, quantify how much interference they could tolerate before their uses of the frequencies are impeded. There are a number of technical formulations this might take; however, a primary service might indicate that they require a 29 dB ratio of signal to noise plus interference for their use of SSB voice in 3 kHz channels. Here "noise" would be understood to be the normal atmospheric plus man-made noise, and the "interference" would be as might be caused by the proposed Amateur operations. Of course, where the primary users use the spectrum for something else, e.g., data, they might express the protection requirement in very different technical parameters.

Note: *The locations in this example have been chosen to be familiar to Canadian Amateurs. They are different from those used in the Canadian contribution to the current WRC-2015 agenda item. Those were chosen to show higher latitudes so as to be more comparable with other similar studies. The current studies are in the public domain and can be accessed at the link referenced in the footnote) – see note 1 at the end of this article. The primary user is assumed to be using reference log-periodic antennas which are pointed at each other and which are assumed to exhibit considerable gain. The Amateur antennas are assumed to be half-wave dipoles broadside to each other with zero gain.*

For our part, we Amateurs would have to specify what would be the minimum criteria for us to use the spectrum space for our purposes. Again, there might be several ways to express this depending on what we are seeking. A simple example, however, might be that we require a minimum of, say, a 19 dB margin of received signal to noise for a useable Amateur 3 kHz SSB link.

There are a number of scenarios that might be prepared to quantify to what extent these conditions might prevail. Some of these can be quite creative and – indeed – fanciful depending upon whether you are trying to argue that the Amateur operation can coexist or whether you are arguing the opposite.

Here's a simple scenario which is representative of one approach. We imagine a primary user – for example, a government or military communications link, who operates a 5 kW link over a path of about 1500 kilometres at around 5 MHz – and an Amateur path of about the same distance both of which terminate in the same general vicinity. While contrary to our reputation for good operating practice, we will consider what might happen if both signals are on the same frequency.

To better visualize this, imagine the primary user link on about 5.3 MHz is between Churchill, Manitoba and Sault Ste-Marie, Ontario – a path length of about 1,510 kilometres. The Amateur path might be from Regina, Saskatchewan to Sault Ste-Marie over a 1,550 kilometre length as shown in the map at the top right.

Since the receiver geographical locations are in the same general area for both the primary user link and the Amateur link, the "noise" for the purposes of our study will be assumed to be of the same magnitude at both receiving sites. The noise here is understood to be the natural cosmic and terrestrial noise plus the ambient man-made noise at Sault Ste-Marie. The forecast program used in the study would input the noise parameter in a standard format, e.g., noise power in dBW for a 1 Hz bandwidth.

Now, estimating the signal strength for a given ionospheric path can be done using a variety of tools. The best known tool is probably the Voice of America Coverage Analysis Program (VOACAP) for which there is a well-known interactive Amateur online calculator by Jari Perkiömäki, OH6BG (see note 2), which will calculate signal strength and noise (both in dBW) for any path on any Amateur HF band.

For an ITU study, however, it is more convenient – and likely more accurate – to use the ITU's own Recommendation for the calculation. Recommendation ITU-R P.533 (see note 3) and, in particular, REC533 software implementing the

Table 1: Primary-User SNR @ Sault Ste-Marie

UTC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
January	30	32	32	31	31	32	24	10	9	13	23	23	25	33	30	30	32	34	37	37	42	40	29	30
February	32	33	31	30	29	25	22	10	9	10	21	14	19	28	25	25	27	30	33	34	38	40	30	30
March	26	20	21	22	20	17	18	15	19	23	7	12	10	21	20	20	25	26	29	30	34	37	35	30
April	27	18	21	16	20	19	22	22	22	16	13	10	9	21	21	21	24	25	27	28	30	33	31	31
May	28	22	18	17	24	23	25	20	20	21	11	9	8	19	18	17	21	22	23	24	27	29	27	28
June	29	29	28	28	25	22	25	31	29	28	24	23	21	21	20	20	21	22	23	23	25	28	27	28
July	30	29	29	23	22	21	24	25	26	27	23	22	21	22	21	21	22	23	24	24	26	28	28	29
August	32	32	25	24	26	25	26	28	26	27	25	22	21	22	22	22	23	24	25	26	28	30	30	32
September	25	18	20	22	25	22	19	14	19	16	11	9	9	20	19	18	22	23	25	26	29	30	28	31
October	24	19	20	22	30	23	19	13	18	23	16	18	15	25	23	23	27	29	31	32	35	37	33	28
November	25	21	21	21	29	25	20	13	13	20	14	20	19	29	27	26	30	32	34	36	39	38	26	25
December	31	33	29	33	32	28	22	10	9	9	26	22	26	34	31	30	32	34	37	38	41	32	30	31

Table 2: Amateur SNR @ Sault Ste-Marie

UTC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
January	12	12	16	16	16	16	16	8	-5	-5	8	4	5	-1	5	3	3	8	12	18	18	23	18	10
February	11	13	10	9	10	10	8	5	-6	-6	5	2	4	-1	4	3	4	8	12	17	17	21	21	11
March	9	7	5	5	-4	0	1	2	-1	4	7	1	-3	-7	-2	-2	-2	2	5	9	11	16	20	18
April	15	5	4	-4	-7	-1	-1	2	3	7	5	-2	-5	-7	-1	-2	-2	0	2	5	7	11	15	16
May	13	11	3	1	3	12	15	12	7	5	5	-3	-6	-8	-2	-3	-4	-1	1	3	4	8	11	11
June	13	14	14	13	5	7	9	11	12	13	11	3	0	-3	-2	-3	-3	-1	1	4	3	6	9	11
July	14	15	14	6	5	8	10	11	11	5	10	2	0	-3	-1	-2	-1	1	3	5	3	7	10	12
August	17	15	8	8	8	6	5	6	15	11	12	4	1	0	1	1	0	2	4	7	6	9	12	15
September	14	6	5	-2	-7	0	-2	-4	-8	5	3	-1	-4	-8	-2	-3	-3	0	2	4	6	9	13	15
October	8	8	5	5	3	5	1	-1	-5	5	10	8	3	-2	2	0	1	4	6	9	11	15	19	15
November	9	9	0	5	5	14	7	4	-3	-1	11	9	7	2	5	3	2	6	9	13	15	19	15	9
December	13	4	5	6	9	11	12	11	-3	-6	1	6	7	1	6	3	3	7	11	17	17	21	13	11

recommendation (see note 4), is used to estimate signal strength on a given path given a set of parameters.

Similarly for noise, ITU Recommendation ITU-R P.372 (see note 5) is used to estimate the level of noise at a given receiver location again for a given set of parameters.

Now, with a forecast of signal-strength values and another of noise values, it is possible to construct a table such as Table 1 – which estimates signal-to-noise ratios at Sault Ste-Marie from the Churchill transmitter. Table 2 shows similar data for the Amateur signals from Regina as observed at the Amateur site in Sault Ste-Marie.

Note: *These tables show the received signal-to-noise (SNR) ratios and, in this example, are for an assumed smoothed sunspot number of 10.*

In addition to the parameters already mentioned – frequency, output power, antenna type and gain, and the geographical coordinates of the transmitting and receiving locations – other input parameters would include, for example, the transmission mode being employed, an estimated Smoothed Sunspot Number (SSN), desired format of the output data, e.g., periods per day, months per year, etc. Finally, there is also the desired degree of probability of the resulting data – for example, in what follows, a 50% availability probability has been specified.

In Table 1, the time periods when the signal is estimated to meet or exceed the user's useability criterion (29 dB SNR) are shown on a white background while those which do not meet this criterion are shown on a greyed background (and in italics). Similarly, in Table 2, for the Amateur link those time periods meeting or exceeding 19 dB are shown in white and those which do not are shown in grey.

Now, all of the Amateur signals shown in Table 2 might be counted as interference to the primary-user's received signal – shown in the "clear" in Table 1 – were we to assume the Amateur was transmitting on the same frequency and had not "listened before transmitting".

There are, however, two other considerations:

1) The Amateur should not be considered to be transmitting during those time periods when the path for him is not useable as previously defined (19 dB SNR)

2) The Amateur signal is being received off the side of the primary user's directional antenna and will accordingly exhibit a different – typically lower – SNR there.

Taking account of all these factors we can calculate Table 3 showing the SNR values of the interfering Amateur signal at the primary-user's site assuming the Amateur will only transmit when there is a "useable" path and that the primary user's antenna is not pointed at the Amateur transmitter.

Table 4 then calculates the impact on the primary user's signal of both the signal being received from Churchill, and the interference on the side lobe from the Amateur transmitter in Regina in those time periods when the Amateur might be transmitting. This can be shown as a "signal plus interference to noise" ratio.

Since the noise is common to both signals, the resulting "useability" criterion can be expressed as S/I – sometimes shown as C/I (where C represents "carrier").

For the primary user the channel would be useable for him at a ratio of 29 dB.

Table 3: SNR from an Amateur transmitter at Regina received on side of FL antenna at SSM when Amateur is transmitting

UTC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
January	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	18	na	na
February	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	16	16	na
March	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	15	na
April	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
May	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
June	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
July	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
August	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
September	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
October	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	14	na
November	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	14	na	na
December	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	16	na	na

Table 4: S/I Ratio at Primary-User in Sault Ste-Marie

UTC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
January	30	32	32	31	31	32	24	10	9	13	23	23	25	33	30	30	32	34	37	37	29	22	16	30
February	32	33	31	30	29	25	22	10	9	10	21	14	19	28	25	25	27	30	33	34	38	24	14	30
March	26	20	21	22	20	17	18	15	19	23	7	12	10	21	20	20	25	26	29	30	34	37	20	17
April	27	18	21	16	20	19	22	22	22	16	13	10	9	21	21	21	24	25	27	28	30	33	31	31
May	28	22	18	17	24	23	25	20	20	21	11	9	8	19	18	17	21	22	23	24	27	29	27	28
June	29	29	28	28	25	22	25	31	29	28	24	23	21	21	20	20	21	22	23	23	25	28	27	28
July	30	29	29	23	22	21	24	25	26	27	23	22	21	22	21	21	22	23	24	24	26	28	28	29
August	32	32	25	24	26	25	26	28	17	27	25	22	21	22	22	22	23	24	25	26	28	30	30	32
September	25	18	20	22	25	22	19	14	19	16	11	9	9	20	19	18	22	23	25	26	29	30	28	31
October	24	19	20	22	30	23	19	13	18	23	16	18	15	25	23	23	27	29	31	32	35	37	19	28
November	25	21	21	21	29	25	20	13	13	20	14	20	19	29	27	26	30	32	34	36	39	24	26	25
December	31	33	29	33	32	28	22	10	9	9	26	22	26	34	31	30	32	34	37	38	41	16	22	31

Now, let's look at Table 1 which is the primary user's expectation of signal useability without interference. Of the 288 time slots shown, the primary user's criterion of 29 dB would be met in 87 time slots. In Table 4, with the Amateur station operating as described, the useability criterion would be met in 80 time slots. Is this manageable?

Factor in a couple of other considerations. For starters, we have ignored for the sake of the foregoing the Amateur practice of "listen before transmitting" and indeed the obligations which would be on the Amateur station as a secondary user. In addition, the data in Tables 1 and Table 2 are calculated at an assumed 50% level of availability. The calculations generating Table 1 and Table 2 are uncorrelated so the probability of the two independent transmission events coinciding and resulting in the interference shown in Table 4 is theoretically 25%. So, while some interference situations may arise, they are likely to be quite infrequent.

Canada also submitted a spectrum occupancy survey for a period of one year to show that for North America there is unused spectrum for this band, notwithstanding a large number of primary-user licenses – many of them inactive – in the proposed Amateur allocation frequency range.

The foregoing (much-abbreviated summary) makes a case for Amateurs to share spectrum at 60 metres. As an argument it is not unassailable. Whether Radio Amateurs can gain an international allocation at 60 metres will depend on factors and agendas which are not evident in any of the foregoing – factors which are not deduced from mathematics. Leaving aside the very real role politics beyond our control play in these decisions, there are factors whose perception play in the margins of these decisions. How good is our reputation for not putting signals on frequencies which are in use? How responsible are Amateur Radio operators perceived to be by the delegates making the decisions at ITU Conferences? How well have we presented our most responsible and technically-savvy image in the ongoing meetings at the ITU and in Regional groupings over the years leading up to a Conference?

While detailed studies and years of meetings by ITU Working Groups precede decisions taken during a World Radiocommunication Conference, it is worth remembering that the delegates who cast their votes during the Conference are often not the individuals who have participated in these meetings and – in many cases – may not always have carefully read the preparatory material. Ultimately, 198 administrations have to agree to allocating spectrum space to the Amateur Radio service. So, we do the best we can and then hold our breath.

I hope, however, that this gives you some insight into how the Amateur Radio service has argued its case in this and in many preceding instances and will, hopefully, inspire us to continue this effort so as to preserve our hard-fought-for frequencies into the future.

In conclusion, I would be remiss if I didn't point out the debt I owe to those who have coached and guided me in these arcane processes: the late Ken Pulfer VE3PU, Jim Dean, VE3IQ, and above all in the present instance, Dr. Nur Serinken (ex-TA1RF) recently retired from the Communications Research Centre in Canada.

Also, my colleagues in the Amateur Radio working group at ITU-R and its chairman Dale Hughes, VK1DSH.

To these gentlemen goes all the credit for any insights and knowledge the reader may glean from this article.

Any errors, however, are entirely my fault.

Notes

1) http://www.itu.int/md/R12-WP5A-C-0543/en (Annex 10)

2) http://www.voacap.com/prediction.html

3) http://www.itu.int/rec/R-REC-P.533/en

4) http://www.greg-hand.com/hfwin32.html

5) http://www.itu.int/rec/R-REC-P.372/en

ANTENNAS & TRANSMISSION LINES

THE FUTURE OF ANTENNAS

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INTRODUCTION AND BACKGROUND

I have been writing my Antenna and Transmission Lines column since 2003 and now it is time for me to move on to other Amateur Radio activities such as doing an in-depth study of radio propagation and noise in urban areas.

At this time I wish to thank all of my readers who have helped me with the direction of my column through direct communication and also via letters to our editor.

The fact that TCA has encouraged me to keep writing the column has been a great honour for me.

I wish to thank Alan Griffin for his dedication to my column over these years. He is an excellent editor who has made many strong suggestions and editorial changes to my column over many years.

So, as a final issue of my column, I thought that it would be interesting if I gave my views (predictions) of the general direction of antenna technology as I see it today.

It has been a distinct pleasure working with you David. I look forward to receiving articles from you in the near future. – Ed.

PRESENT STATUS OF AMATEUR RADIO ANTENNAS

Presently, we all base our theory and experimentation on the pioneering work of the great scientists of the 19th and early 20th centuries, most notably the work of James Maxwell and Oliver Heaviside who gave us the so-called Maxwell's equations and the Telegrapher's equation which are the basis for all transmission lines and antenna radiation. When these equations are coupled to semiconductor, conductor and plasma theories, we get a complete set of mathematical tools for analyzing high speed electronic devices and radio wave propagation in the ionosphere.

Extensive research and development using the basic foundations have been applied to a huge variety of transmitting and receiving antennas for more than 100 years. The applications range throughout the electromagnetic spectrum from below 1 MHz to well into the microwave and optical regions. There are hundreds of antenna designs that have been developed over the years and many of them are still being used. Some of the classic antennas that all of us know are: the Beverage wave antenna for 160 metre receive applications; the G5RV antenna; the half-wave dipole that is used across the complete spectrum; the famous Udo-Yagi beam antenna; the helix antenna; the end fed Zepp antenna; the vertical ground plane antenna; patch antennas; small and big loop antennas; and many more including phased arrays.

Hence, the technology of antennas can be described as mature at this time and is similar to the technologies of signal processing and power engineering where the basics were laid down many years ago. But we are still on a large learning curve for all of these technologies. For example, the principles of nano-motors can be traced back to Faraday but they are now made possible via the methods of nanofabrication that were not available to Faraday. This same thing is now happening to antenna and radio systems design where the basics were laid down about 100 years ago but new supporting technologies were not available and still have not been adopted on a large scale.

So let's look back to about 1950. Here you will see many of the same antenna types that we still use today such as inverted V and Yagi antennas. You will notice that the articles are very well written with an abundance of formulas and hand calculations. There is little or no discussion of optimization methods or the use of modern materials such as carbon fibre. The physics of dissipative losses of radio waves in the ground were well established, but Amateurs did not generally have practical access to the results through calculations so it was quite common to stick with the tried and true design methods. Amateurs used 120 ground radials for vertical antennas, following the lead of the broadcast community, even if 16 radials does very well for us in the HF bands as demonstrated through the methods of numerical analysis and experimentation. Of course, many Amateurs still use 120 radials to get the very last decibel of gain out of their verticals at the expense of complexity, maintenance and initial cost.

We now have the design of many antenna types at our fingertips and the design tools to study the detailed performance of these systems through the use of advanced software modelling. We also have the capability of designing our own antennas for specific applications. The tools that we now have include:

NEC Antenna Modelling for Wire Type Antennas

These programs include several ground models and the use of buried radials. They are not perfect and have proven problematic for certain antenna types such as the radiating helix where the correlation with measurements have not been satisfactory. The ground models do not yet account for complex structures such as a layer of earth covering a large base of limestone. This presents a problem for modelling low frequency antennas.

Specialized Antenna Modelling Programs

There are many standalone programs that are specialized for certain antennas such as the Yagi. These are extremely useful for those who do not wish to use NEC-type software. If you are looking for a commonly used antenna, you can most likely find design calculators for it on the Web. Since there are a multitude of these calculators available, it is best to read a few reviews before using any of them for you needs.

Advanced Transmission Line Models

TLDetails is a good example of this type of program. It includes examples of almost all line types that are currently used by Radio Amateurs. Another extremely powerful transmission line modelling program is SimSmith which imports data from NEC programs, Network Analyzers and TLDetails into a single system type package. I have found this program to be extremely useful.

A THANK YOU TO DAVID CONN, VE3KL

In the January-February 2003 issue of TCA, readers were introduced to a new column: "Antennas and Transmission Lines" by David Conn, VE3KL.

In his first column, David provided some personal background summarizing his experience from his early days as an Amateur Radio operator in high school to his academic background as a professor of electrical engineering at McMaster University in Hamilton, Ontario.

Readers of his column have benefited from his unique skillset of being an active hands-on Radio Amateur, of having a strong academic background in the field, and having the innate ability to explain complex concepts in a clear and logical manner.

David's intention from the very beginning was to make his column tutorial in nature, to include material for all levels from beginner to advanced, to encourage readers to learn more about basic radio concepts, to avoid any significant mathematics, and to make effective use of simulators that are now readily available to Radio Amateurs

Looking back over his articles of the past 11 years, it is clear that he has succeeded completely. David's column has introduced many very important topics to beginners and at the same time has encouraged other readers to experiment with antenna topics so as to advance their understanding, and to improve the performance of their ham radio stations. After all, there is probably nothing of more fundamental importance to a ham radio operator than the antenna system.

We wish to thank David Conn for his contributions to TCA over the years and we wish him the very best in the future.

Submitted by Dave Green, VE3TLY. Photo by Greg Danylchenko, VE3YTZ.

For those who want to explore frequency and time domain techniques, we all have access to a free SPICE program called LTspice which can simulate transmission lines and solid state devices in a single simulation using large signals. This is an essential tool for the development of power amplifiers loaded by transmission line components.

Low Cost Computer Assisted Measurement Tools

Since the development of very low cost microcontrollers and microprocessors coupled with high speed surface mount devices, a large number of very high performance Vector Network Analyzers (VNA) have appeared on the market that measure the impedance of antennas and transmission lines. Some are intended for portable operation with self-contained rechargeable batteries. These units are about the size of a moderately sized cellphone complete with display and the ability to send data to a personal computer. This type of unit simply did not exist at any price in the 1980s.

Some of these analyzers have very large measurement ranges and cover the span from nearly DC to over 1 GHz. They are available in one- and two-port versions and are connected directly to a computer. The two-port versions have the capability of working directly with Scattering Parameters as well as Smith Charts.

Materials and Construction Techniques

Most modern materials are readily available to Radio Amateurs. This has had a big impact on small/portable antennas used in the field by QRP operators. Examples are the use of carbon fibre/fibreglass extendable masts, special small ultraviolet proof ropes and a good supply of aluminum telescoping tubes for making small portable dipoles, spider beams and other antenna types.

FUTURE TRENDS

The trend of developing novel antennas is likely to continue for all of the special applications being addressed by Radio Amateurs, especially antennas that are needed for small urban spaces located in noisy environments. However, there are several factors that are standing in the way of progress. These are:

1) The need for low cost software that integrates all of the tools that we presently use, and more, into one simple package. This would include advanced antenna simulators, probably based on the NEC algorithm attached to measurement tools and transmission line calculators in order to analyze a complete radio system under the umbrella of one "super program".

2) The need for the use of advanced optimization algorithms for optimizing the radio system performance over many frequency bands at the same time. This should be integrated into the "super program". Optimization is the process of finding the minimum or maximum of functions. At the present time, we use some simple optimizers in standalone programs in a rather limited fashion usually confined to a single or narrow frequency range. For example, we know that a simple dipole works fairly well at the third harmonic of its primary frequency of operation. What we should be able to do with simple software is to design a dipole that is designed to produce an SWR less than some value in its primary frequency band and also less than another value in its third harmonic band.

3) The need for more accurate ground loss models to address the need of Amateurs working at low and very low frequencies. Presently, the models consider the ground to be made from a single layer of lossy material of infinite depth.

– continued on page 17

SECOND NOTICE TO RAC MEMBERS RESIDING IN THE ONTARIO NORTH/EAST 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 positions of Director for the Ontario North/East Region (postal codes K and P).

If required, an election for this position will be held in February 2015. The Director will take office immediately to complete the two-year term ending December 31, 2016.

Incumbent:

Ontario North/East: Bill Unger, VE3XT (completed tenure)

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, January 9, 2015.

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

Faxed or emailed documents will not be accepted.

DEUXIÈME AVIS AUX MEMBRES DE RAC RÉSIDANT DANS LA RÉGION DE L'ONTARIO DU NORD-EST

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 du Nord-Est (codes postaux K et P).

S'il y a lieu, une élection à ce poste sera tenue en février 2015. Le directeur entrera en fonction immédiatement pour compléter le mandat de deux ans se terminant le 31 décembre 2016.

Candidat sortant :

Ontario du Nord-Est : Bill Unger, VE3XT (mandat terminé)

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 9 janvier 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.

- ✓ Clearly indicate on the mailing envelope that Nomination Documents are enclosed.
- ✓ The envelope will be held unopened until after the closing deadline of January 9, 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.
- ✓ Should a balloted election be required, ballots will be mailed from RAC Headquarters on or before February 6, 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".

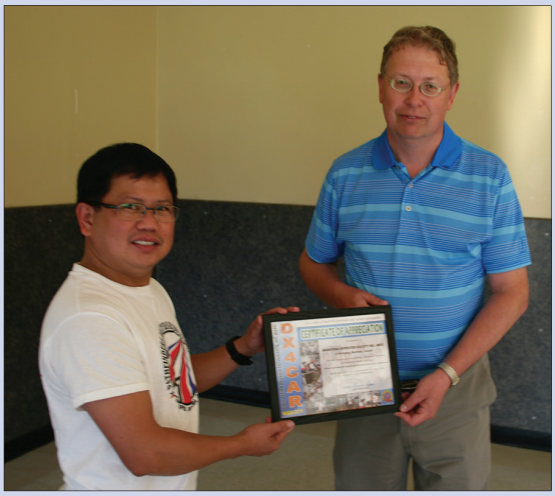
- ✓ Indiquez clairement sur l'enveloppe qu'elle contient des formulaires de mise en candidature.
- ✓ L'enveloppe restera scellée, jusqu'après la fermeture des mises en candidature le 9 janvier 2015. Après cette date, le comité électoral, sous la gouverne du secrétaire, ouvrira toutes les candidatures 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.
- ✓ Si une élection était requise dans l'une des régions, les bulletins de vote seraient postés du quartier général de RAC le 6 février 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 ».

Sunday Satiada, VE4SBS, President of the Pathfinders Amateur Radio Club Inc. in Winnipeg, Manitoba presented this Certificate of Appreciation to Ed Richardson, VE4EAR, President of the Manitoba Repeater Society Inc. on June 10, 2014.



The Manitoba Repeater Society Inc. donated a surplus MSR2000 repeater to the Pathfinders recently, to be delivered to the Philippines. Yori Tsuji, VE4ACX, tuned the repeater up. The Pathfinders then shipped it to Civic Action of Radio Enthusiasts, Inc. (CARE) DX4CAR, of Naga City, Philippines, to upgrade their Amateur Radio network.

CARE expressed their gratitude for our donation by presenting the Manitoba Repeater Society with this certificate.

Submitted by Dick Maguire, VE4HK
Secretary, Manitoba Repeater Society Inc

ANTENNAS – continued from page 15

4) The need for a more accurate method of modelling very complex antenna systems that are presently problematic with the NEC algorithms. These include long radiating helix structures, wire antennas fabricated from wires that are very short and some that are very long. An example is the linearly loaded antenna made from wires and 300 Ohm twin lead, where the spacing between the twin lead conductors is only a few millimetres while the antenna length can be 10 metres.

5) There will continue to be a strong effort by Amateurs to design and build multiband antennas which is probably one of the greatest challenges we face. These antennas always have compromises inherent in the idea so look for them to see if they meet your needs. The G5RV is one of these antennas. It has stood the test of time very well even with some of its built-in compromises. It is these compromises that make it very difficult for Radio Amateurs to select the best antenna for their applications.

6) Probably the biggest change with respect to fabrication techniques is the advent of three-dimensional printers which are just now emerging for use by Amateurs at a reasonable cost. Many communities are sponsoring this technology by offering the use of these printers free to its citizens. These printers will allow us, like other hobbyists, to create custom-designed components such as small Balun enclosures to be built around the shape of powdered iron cores instead of having to find a box that fits the components. These boxes will allow the best packaging for SMA connectors and other small items. It is up to our imagination how we use this new technology in antenna switches/traps and other subsystems.

7) Like all technologies, new applications drive the invention of new components and systems. A well-known example of this is the development of cellphones where an antenna was required to fit into a small device that could be stored in a shirt or coat pocket without breaking. This has always been the case for Amateur Radio systems. Every time a new band (VLF or Microwave) is approved for our use, a whole new set of problems face us as experimenters and this spawns the development of new antennas and even transmission lines at the extreme limits of our bands.

SUMMARY

I wish to encourage TCA to keep offering columns that have a wide variety of subject areas including those of Transmission Lines and Antennas as well as a much needed column on radio wave propagation.

Some of my readers noticed that I never wrote much about some of the very famous antennas such as the Yagi. I omitted this subject as a main theme because it has been well documented in very excellent articles and text books over the years. Instead, I opted to discuss phased arrays in general and mention Yagi antennas as examples.

73 to all. I hope that I have contributed to the understanding of Antenna and Transmission lines.

– Until later, David, VE3KL

REPLACE YOUR RIG'S LCD PANEL LAMPS WITH SURFACE MOUNT LEDs

Don Dorward, VA3DDN

There have been a number of articles recently that describe the replacement of incandescent panel lamps in radios with Light Emitting Diodes (LEDs).

The above photo shows the front panel of my treasured old Yaesu FT-6200 mobile transceiver, with two of the three original panel lamps used to backlight the liquid-crystal display (LCD) display, burnt out. The service manual optimistically says to "unsolder the old bulbs and install replacements." Easier said than done, as I found out, due to the closely packed Surface Mount Devices (SMD) on the control head pcb and the very small copper soldering lands on the printed circuit board (PCB) used for the mini-lamps originally used (9 volt Yaesu; part # Q10000065).

To be brutally honest, I actually did try to replace the tiny lamps, but I confess I botched the job and ended up damaging the PCB and was unable to clear the holes of solder! (Highly embarrassing for me as I have spent over 40 years in the electronics industry and used to judge solder joint quality according to IPC standards!) Anyway, I lived with it this way for quite a long time, but finally decided to fix it permanently.

The above photo shows the new, improved backlit illumination on the FT-6200 using surface mount LEDs instead of the tiny lamps.

THE NEXT STEPS

As described, I concluded that my only remaining option was to find and use some small, amber-coloured LEDs that could possibly be hot-glued in place on top of the display PCB and power them with a small wire-harness running to the outside of the radio control head. Not at all elegant, but perfectly practical.

However, I quickly found out that the standard size T1 3/4 LED (about five millimetres in diameter) was just too large to fit in the small places originally occupied by the mini-lamps! Too bad, because I had some in the junkbox, rated at 700 mcd (see the sidebar on the right). These had a clear lens which I abraded with sandpaper to simulate a diffused appearance.

With the radio front bezel removed, I dangled one of these LEDs near the side of the LCD display, as a trial, and was very pleased at the appearance. Even though I could not use these LEDs due to their size, this simple test told me that I did need to use high-brightness LEDs for the application.

I also had located some smaller three-millimetre T1 amber LEDs, that were rated at only 10 mcd and which proved not nearly bright enough in my crude test, although the color seemed perfect!

Most importantly, I still had not figured out how to mount these radial leaded parts in the original lamp positions but fully on top of the LCD display PCB.

It was beginning to look like this project was going nowhere, as an extensive catalogue and online search turned up no 700 mcd, three-millimetre, leaded, amber LEDs.

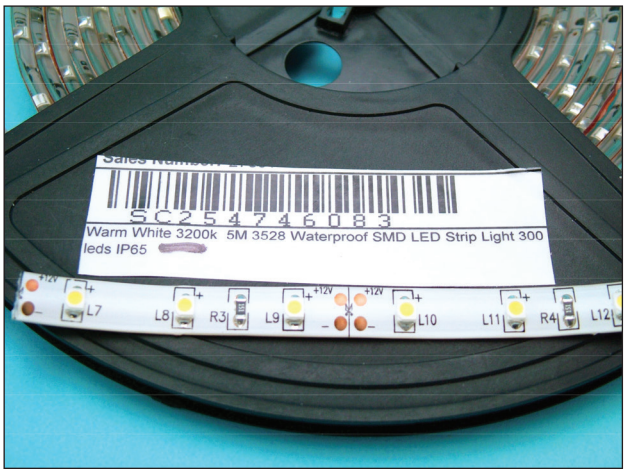
It finally occurred to me that there were lots of white, high-brightness **SMD LEDs** around, and all one would need to do would be to put a small piece of amber colour tape or film over it to act as a colour filter to simulate the amber glow from the tiny lamps.

Once again rooting in the junkbox turned up a part reel of high brightness strip LEDs – the kind that already have a current limiting resistor in series with three SMD LEDs and operate from a nominal 12v DC.

LED SPECS

The brilliance or light output of LEDs is commonly given by the manufacturer as the number of milli-candelas (mcd) at a fixed forward current, usually 20 milli-amperes (mA). One "rule of thumb" suggests that standard brightness LEDs have light outputs less than 100 mcd, whereas high brightness LEDs typically out put > 700 or more mcd. It was also evident that a diffused LED would better simulate the tiny incandescent lamps. Led's are usually available iwith either a diffused or clear lens.

For more information on LEDs please see the discussion online: at https://www.jameco.com/Jameco/workshop/TechTip/light-brightness-intensity.html

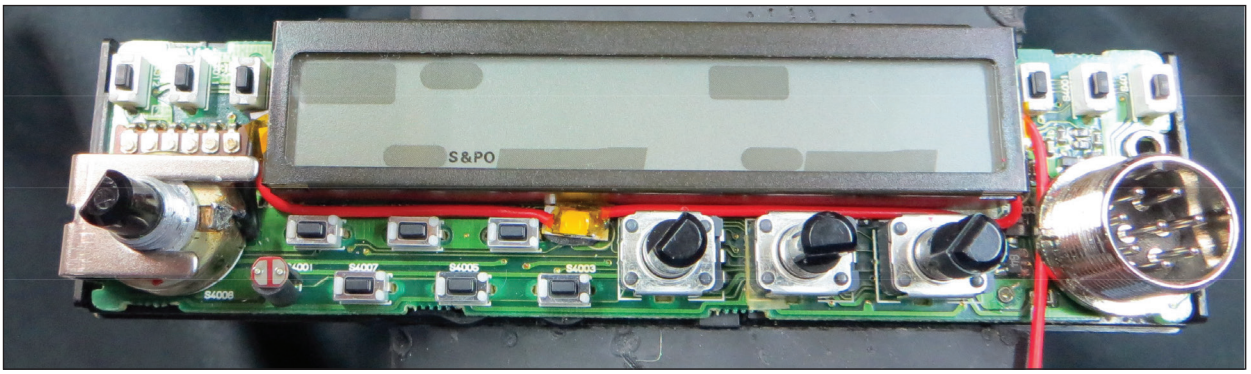


The LEDs come mounted on an adhesive backed copper strip and covered with a soft protective clear silicone coating to make them waterproof. They were intended to be cut off as required in multiples of two inches. The ones I had were described as "Warm White" (see the above photo) and I visualized mounting them to the radio PCB by using a small rectangle of double-sided mounting tape. Although these LEDs did not have a diffused lens, they are described as having a wide viewing angle of 120 degrees. Since the tiny lamps being replaced were mounted horizontally, they would have had a limited viewing angle of 180 degrees. Therefore, I hoped that this small viewing angle trade-off would work!

ALTERNATIVE SOURCES OF SUITABLE SMD LEDS

No, I don't really expect everyone who reads this to have the same LEDs available to them! The LED package size I used is called a PLCC2, or 1210, which is close. It is commonly used and I am

sure one can locate suitable parts from distributors like Jameco, Digikey and so on. You may even find them on eBay by searching for “SMD LED PLCC2 3528”. For example, Jameco lists their part number as 334756.



The difficulty of using loose, unmounted LED pieces will be in their handling, soldering wires to them and mounting them to a secure surface which will not short the radio PCB.

HOW TO CONNECT THE LEDS

The FT-6200 front panel and display assembly is removable for remote mounting. Perhaps because of this, only a regulated +9 volts is available inside the display assembly. Since each LED has a forward voltage drop near 3.0 volts, three in series will need greater than nine volts to operate properly.

The other alternative would be to connect the three LEDs in parallel and operate them from the +9 volts inside the display assembly with a suitable series current limiting resistor. The advantage of this approach is that no external connection would be needed for 13.8 volts.

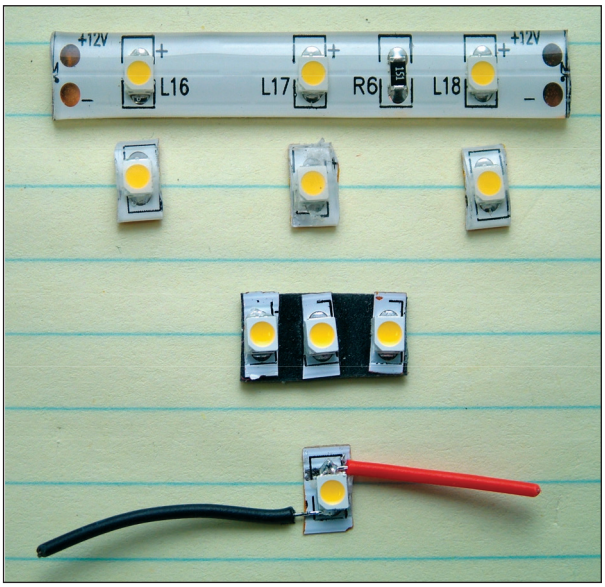
However, the big disadvantage would be the extra wiring needed to interconnect the three LEDs in parallel. This would be quite difficult to do given the very limited area for routing twice as many wires. If you look at photo at the top of the page, I think you can see what I mean. I realize, of course, that the situation may be quite different with other radios.

Finally, after making this decision I needed to find a solder point on the main PCB that was close to 13.8 volts, and also that was switched off when the radio power button was operated. Unfortunately, the service manual schematic and PCB layouts I had didn’t seem to fully agree with the actual radio layout.

I ended up using my digital multimeter to locate a suitable power-point, which was only 0.5 volts lower than the incoming 13.8 volts.

PREPARING THE LEDS FOR MOUNTING

In order to “prep” the LEDs for mounting, please refer to the photo below. At the top of the photo is the cut-off piece of the LED strip, about two inches long, showing three LEDs and the single series current limiting resistor.



The second row shows the three LEDs snipped out of the strip (we will not use the small resistor).

The third row shows the LEDs now stuck to a small piece of 3M 414C double-sided mounting tape. Note the clear silicone coating peeled off of the each LED (use tweezers or small needle-nose pliers to gently peel the coating off).

At the bottom is one of the LEDs prepared as above, but shown with connecting leads to the anode (red) and cathode (black). This particular style of Surface-Mount-Device (SMD) LED is called a PLCC2 SMD package. The cathode end is marked by the diagonally cut bottom left corner of the LED.

Note: *When soldering the leads to the LED, first strip and tin the wire end. Then hold the tinned wire end to the exposed solder at the top and then the bottom of the LED package, while using your smallest pointed soldering iron tip (also freshly tinned) to quickly reflow the solder. Excessive heat will damage the LED.*

POSITIONING AND CONNECTING LEDs

As you can see in the photo at the top of the page, the radio front panel bezel has been removed and if you look closely, you can see the left (LED1) and centre (LED2) LEDs – the yellow dots shown in the eTCA in full colour on the RAC website – mounted in place. Each LED has had a small amber coloured piece of tape stuck on to it. This was cut from a leftover bit of 3m 5413 polyimide electrical tape.

Note: *You could also use a piece of amber lens repair tape from the local auto parts store, or even better a small piece punched out of an amber colour binder tab.*

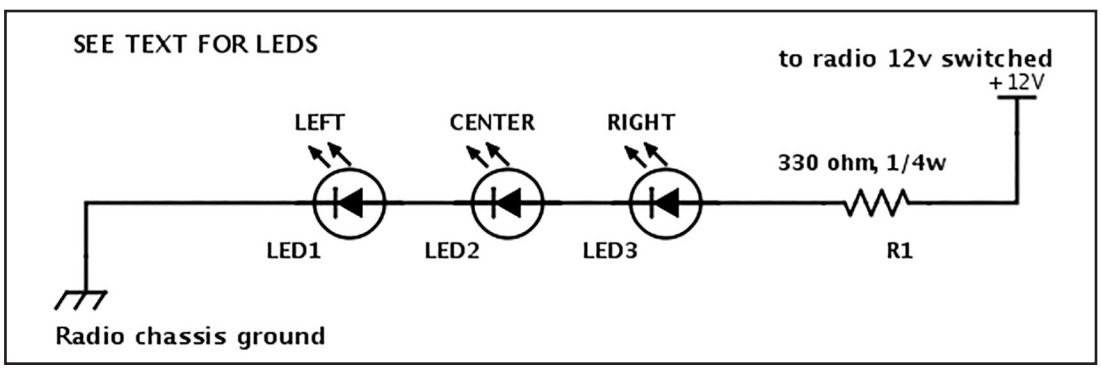
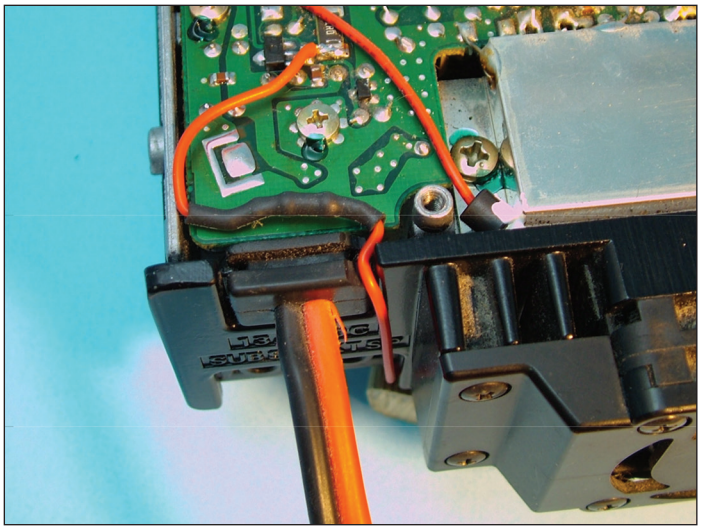


Figure 1: LED panel

The LEDs are connected in series as shown in Figure 1 on the previous page. The cathode end of LED1 was originally prepared with three-inch lengths of wire. After peeling off the double-sided tape paper, the LED assembly was pushed into place with tweezers. Then the connecting wires were carefully routed, clipped to length and tinned.

The same procedure was followed with LED2 and LED3, with the last red wire (about eight inches) from LED3 anode routed straight out as shown to the side of the 8-pin mic connector.

The above photo shows the red power wire exiting the front panel bezel through a 3/32-inch clearance hole and taped to the radio bottom cover.



The above photo shows the wire routed up the rear panel near the radio 13.8V DC power leads and into the area beneath the radio top cover. The corner of the rubber strain relief used for the radio 13.8V DC power leads, has been shaved off with a sharp knife to permit the red LED power wire to enter through the chassis. The black heatshrink covers the ¼-watt CF 330 ohm resistor, which sets the forward current and hence the brightness of the three-LED string. I used 330 ohms to set the LED current to approximately 14 mA. You may want to experiment with this value for the most pleasing appearance and brightness.

Don Dorward, VA3DDN: Ryerson Electronics Technology graduate 1963. Career positions included: management of R & D, ISO9001 and ISO13485 Quality Systems, Regulatory Affairs, in the areas of electronic components and materials technical support, environmental testing and instrument calibration, automotive electronics product development, switch mode power supply development, medical electronics, UL/CSA and EU product safety testing and certification, including EMI compliance, conducted and radiated. Share two patents. Licensed as VA3DDN since 2002, basic and advanced certification. Retired in 2006. Life Member IEEE, member of Radio Amateurs of Canada and the ARRL.

ROBERT (BOB) ELDRIDGE, VE7BS: IN MEMORIAM

On July 15, 2014, Robert (Bob) C. Eldridge, VE7BS became a Silent Key. He was 93.

Bob was the long-time columnist of "QUA: A Topical Digest" which started in 1989 and ran for more than 20 years in *The Canadian Amateur* magazine.

TCA Editor Alan Griffin said "I had the privilege of working with Bob for over 15 years. His was the first column that I would receive every issue and I don't remember him missing any columns."

In fact, in early July this year, the day before being admitted to Lions Gate Hospital, Bob emailed his final column to Editor Alan, and added:

"This is as far as I got before I was admitted to hospital. It seems certain this is my last QUA, as I don't know whether I will be able to use a computer or have Internet access for one in whatever facility I end up in. All in limbo at the moment, but I think my days as a columnist for TCA are over. It has been an interesting and rewarding 21 years or so."

Bob Eldridge was born in 1921 in Southampton, England and was brought up surrounded by wireless sets, radio valves and radio parts. His father was building four-valve receivers in the 1930s, and Bob often helped with the work.

In 1940, Bob joined the Royal Air Force (RAF) as a wireless operator and by D-Day was in charge of a mobile signals unit. He went ashore during the Normandy landings to establish an RAF fighter control station on the beachhead. He stayed in Germany for two years after the war ended. As soon as Amateur operations were permitted, he went on the air as G3AGQ and as D2GQ while in Germany.

In 1953, Bob, with XYL Claire and two young children, emigrated to Canada via Halifax and settled in Vancouver. The first thing he did upon arrival was to visit the Department of Transport office at 739 West Hastings Street to apply for an Amateur Radio licence. The examining radio inspector, W. A. Caton, quickly determined that Bob was very skilled in theory and Morse Code and offered Bob several choices of two-letter call signs.

Typical of the irreverent Bob, he picked VE7BS. The inspector also said that a local company was seeking experienced technicians, and soon after, Bob became the western service manager for a television set manufacturer, Fleetwood Industries.

In 1958 he joined the North West Telephone Company as a Mobile Craftsman. North West Tel was later absorbed into the BC Telephone Company where Bob became the company's expert on radio spectrum and regulatory issues.

He represented the Canadian telephone industry at many industry, governmental and international meetings – in Geneva at the United Nations (UN) Study Groups, in Ottawa with the Canadian Radio Technical Planning Board (serving as President in 1997), and with the Western Canada Telecommunications Council (WCTC).

In honour of Bob's years of contribution to the Council, the WCTC sponsored a scholarship at the BC Institute of Technology to be awarded to an electronics student demonstrating strong writing skills. In 1978, on the 50th anniversary of the UN's International Radio Consultative Committee (CCIR), Bob was honoured for "Contributions to CCIR studies in maritime and land mobile communications since 1960".

It is not known when Bob was first licensed in England, but it was likely just before or after WWII, since all Amateur operations were suspended during the war. His first call sign was G3AGQ, and it is clear from his many operating awards that he was active and a keen contester.

He preferred CW, worked most HF bands, but favoured 160 metres, the Top Band. His awards include highest score in British Columbia for the 1958 Radio Society of Great Britain's British Empire Radio Union Contest, numerous awards for the CQ's 160M DX Contest, the Canadian Amateur Radio Federation's Winter Contest, the Telephone Pioneers QSO Party and also CQ's WorldWide DX Contest.

Upon retirement in 1983, he left Vancouver and moved to several acres near Pemberton, British Columbia, where he used numerous high cottonwood trees to install wire antennas for his favourite band, 160 metres.

He was a prolific writer for several Amateur Radio magazines and provided reviews for new books on radio communications and testing methods. He would receive dozens of books each year for review, which he added to his extensive library.

He was a member of the Royal Society of Great Britain, the Canadian Radio Relay League and Canadian Amateur Radio Federation (which merged to become Radio Amateurs of Canada), the Society of Wireless Pioneers, the American Radio Relay League, the Telephone Pioneers of America, the American Institute of Electrical Engineers and the Institute of Radio Engineers (which merged to become the Institute of Electrical and Electronics Engineers), the Radio Club of America, the Wireless Institute of Australia and the First Class CW Operators' Club (FOC).

Bob was predeceased by his wife Claire and son Tony. He is survived by daughter Anne (of Pemberton, British Columbia and Brazil), granddaughter Taomi and great grandsons Gabriel and Bernardo (in Brazil) and two sisters Brenda and Olive (in England).

Prepared by Ed Frazer, VE7EF

AMATEUR RADIO SATELLITES

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

I trust you are continuing to enjoy listening for (or working through) our ever-expanding fleet of Amateur Radio satellites. In this edition of the column, I have some exciting good news to report, as well as some very sad news.

So, first, the sad news.

VO-52 GOES SILENT

In a published report from its ground handlers in India, they noted that their Indian "HAMSAT" (also known to the rest of us as VO-52) went silent on July 11, 2014 (on its 49,675th orbit) due to the failure of the satellite's onboard lithium ion batteries. Although other systems and sub-systems were working normally at the time, from the latest downlink telemetry they received, it appeared the onboard computer kept defaulting to the satellite's "reset" mode due to the failure of the spacecraft's batteries.

A true masterpiece among small satellite design and originally conceived for just a one-year mission life, the satellite exceeded all expectations by operating for almost 10 years in orbit. VO-52 was a truly autonomous satellite, with "zero maintenance" in terms of mission operations. It proved to be an excellent springboard to test many new concepts such as a Lithium-ion based power system, automatic spin rate control and an automatic mechanism for maintaining the Satellite's attitude in space without any ground commands.

India's Hamsat (VO-52) is shown here sitting on its carrying structure just prior to launch in May 2005. All contact with the satellite was lost on July 11, 2014 when the satellite's battery failed after nearly 50,000 orbits of the Earth. (Courtesy: ISRO)

It also goes without saying that VO-52 was a very popular satellite within the Amateur Radio community. This was largely due to its high sensitivity receiver and strong transmitter. Here's hoping that the group in India that brought us this fantastic satellite are now hard at work on a follow-on to VO-52. Clearly, they have a tough act to follow.

A WORD ABOUT SATELLITE BATTERIES

Since battery failure appeared to be the direct cause of VO-52's demise (and as I've noted in this column on a couple of occasions in the past), one of the "long poles in the tent" with satellite design and construction is trying to maximize the satellite's battery life.

As most of us also know, the electronic state-of-the-art has progressed to the point that our personal electronic devices can now be fit into ever-smaller spaces.

Indeed, some of us "older folks" may well remember the *Dick Tracy* comic strip from the 1950s and 1960s, with our hero using not only a two-way "wrist radio", but also a two-way "wrist TV". Clearly, today's cellular telephone technology is just one small step away from bringing reality to that 1950s-era fiction.

But, unfortunately, battery technology to *run* all of these modern devices has not kept pace with the technology that it powers. Specifically, designing batteries for satellites that are destined to operate in the harsh thermal and atmospheric environment of space has continued to be a daunting challenge. In fact, more than any other single cause, most failures of Amateur Radio satellites over the years have been attributed to the eventual failure of their onboard batteries.

What's more, "new" is not necessarily "better" when it comes to battery design in the space biz. For example, AMSAT North America's experimenters have designed and flown a number of different rechargeable battery designs over the years. But they keep coming back to plain old Nickel-Cadmium batteries as offering the best balance between battery life, cost and robustness for operation in the harsh environment of space.

It's also important to remember that the outer skin of a satellite in a polar, low Earth orbit bakes in the Sun at a temperature of +250 degrees Celsius (or so) for about 45 minutes on each orbit. This is immediately followed by a chilling cold of –250 degrees Celsius for another 45 minutes while the satellite is behind the lighted side of the Earth (in eclipse).

For a satellite in such an orbit, this massive swing in the satellite's operating temperature happens upwards of 15 times *every day*. Toss in the fact that the satellite is operating in a vacuum and is

Portions of this article previously appeared as "New Amateur Radio Satellites on the Horizon" in the September, 2014 edition of The Spectrum Monitor Magazine. Thank you!

SELECTED FREQUENCY AND MODE DATA

Satellite	Uplink (MHz)	Downlink (MHz)	Mode
QB50p1 (EO-79)	435.035 – 435.065	145.935 – 145.965 145.815	SSB/CW (Inverting) CW, AX.25Beacon
QB50p2 (EO-80)	435.080	145.840 145.880	FM Voice (217.7 Hz CTCSS) 9600 bps FSK FX.25 CW, AX.25 Beacon
UKube-1	435.080 – 435.060	145.930 – 145.950 145.840, 145.915 437.425 – 437.525 2401.0	CW/SSB (Inverting) CW + BPSK Beacons Spread Spectrum QPSK-OQPSK

being used to power not only the satellite's transponders, but also to provide power for other spacecraft systems, and it becomes clear why battery life is such a precious commodity for satellites.

This is also why its important to run *no more power on the satellite's uplink than is absolutely necessary* for your signal to simply be heard on the downlink!

As I've noted in the past, satellite work is weak signal work. That is, when you are operating on the satellites, you need to leave your "S-9+" ego trips from the HF world at the door of your ham shack. If you and the other station can simply hear each other through the satellite, then you are probably using *more* than enough power on your uplink to communicate. Overpowering your uplink signal beyond that point will only "pump" the satellite's automatic gain control to bring your signal back into line with others in the pass band. That action uses satellite power.

And as there is only a fixed amount of power available to power the satellite *and* its receiver(s) and downlink transmitter(s), *your* selfish action will rob others of their chance to be heard through the satellite's transponder – *besides* needlessly gobbling up precious battery power in the process.

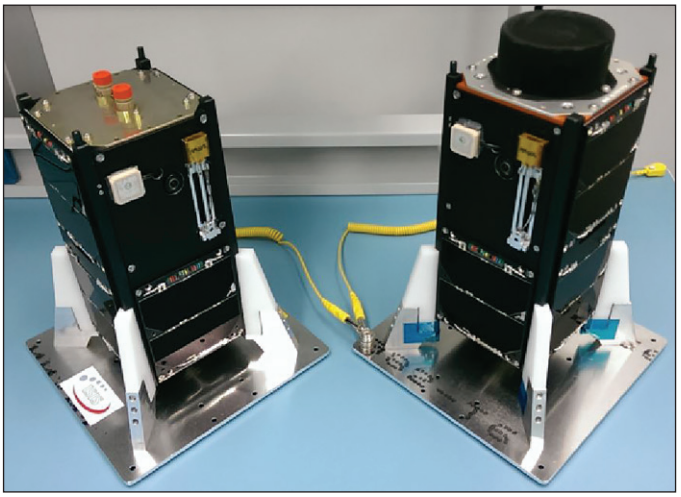
Remember, each full recharge of a satellite's battery on orbit is one less recharge that will be available for you (and others) from the satellite in the future. Or, to borrow a phrase, the battery lifetime *you* help save by keeping *your* uplink power down may well turn out to be that of *your* favourite satellite!

NOW THE GOOD NEWS

As I've shown from the discussion above, Amateur satellites in Earth orbit have a definite lifetime. That's the bad news. The good news is that, besides AMSAT-NA, numerous organizations around the world are continuing to build and launch them. Indeed, since we last met, there have been a couple of new ones sent into orbit and which are now in various stages of checkout.

QB50p1 (EO-79) & QB50p2 (EO-80)

A pair of 3-U CubeSats, built largely by members of AMSAT-Netherlands (AMSAT-NL), were successfully launched on a Dneper rocket from the Yasny Launch facility in Russia on June 19, 2014. This launch carried an astounding *37* (!) individual satellites to orbit; eclipsing the record set just last November by the previous Dnepr launch (including AMSAT-UK's FunCube-1 a.k.a. AO-73). The Dnepr is a converted R-36M ICBM now re-tasked to launch satellites instead of nuclear warheads.



The QB50p1 (EO-79) and QB50p2 (EO-80) satellites are shown here just prior to launch. (Courtesy: ISIS Launch Services)

More information about where to send such reception reports, as well as other operational parameters of these two new satellites can be found on their Amateur Radio mission page at: http://www.isispace.nl/HAM/qb50p.html

Later dubbed EO-79 and EO-80 once they successfully achieved orbit and their Amateur transponders were activated, these two satellites each carry a 2m CW (Morse Code) beacon; AX.25 (Packet radio) 1200, 4800 and 9600-baud beacons. QB50p1 also carries a 400 Mw, U/V (Mode B) linear transponder similar to that carried aboard AO-73. QB50p2 carries an FM voice transponder and an FX.25 data downlink transmitter built by AMSAT-Francophone.

At press time (early September 2014) EO-79/80s ground handlers were still performing checkout of the two spacecraft on orbit. They anticipated this activity could take several months, depending on the health of each satellite as it settles into the harsh environment of space. The Amateur transponders will be activated when the main mission(s) are complete.

The team was also asking for reception reports from Radio Amateurs and others from around the world, to include one's name, Amateur call sign, date and time of reception, frequency and mode heard, as well as which of the two satellites you believe you may have been listening to.

UKube-1

UKube-1 was successfully launched and later deployed on Tuesday, July 8, 2014 on a Soyuz-2-1B/Fregat-M launch vehicle as a secondary payload. The launch took place as planned at 15:58 UTC from Baikonur in Kazakhstan. The primary payload was Russia's Meteor-M2 weather satellite and the rocket's upper stage carried a number of other secondary payloads.

UKube-1 is a 3U Cubesat that carries a FUNcube educational beacon (FUNCube-2) and linear transponder similar to AO-73 (FUNcube-1) (see my September 2013 TSM column for information about AO-73). Beacon signals were heard soon after launch by the UKube team at 19:16 UTC.

An artist's drawing of how the UKube-1 satellite might look on orbit. (Courtesy: Clyde Space)

UKube-1 carries a primary telemetry downlink on 2m in either CW (Morse Code) or 1k2 or 9k6 BPSK; a 1k2 BPSK telemetry downlink for the FUNcube-2, a U/V (Mode B) linear transponder; a QPSK, S-Band downlink, and a 70 cm, experimental spread spectrum downlink transmitter.

At press time the UKube-1's ground handlers were still performing checkout of the satellite's various onboard systems. As a result, transponder and data downlink activity will, of necessity, be intermittent during checkout and early operations. Check the AMSAT website (http://www.amsat.org); the AMSAT News Service (ANS), http://funcube.org.uk/; and/or http://amsat-uk.org/ for the most recent updates about UKube-1's on-orbit status.

A SHERPA launcher from Spaceflight Incorporated similar to this one will carry AMSAT-NA'S FOX-1C satellite to orbit. (Courtesy Spaceflight Inc.).

YET MORE GOOD NEWS!

In late July 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 in the third quarter of 2015.

Fox-1C is the third of four FOX-1 series satellites currently under development by AMSAT-NA, with FOX-1A and RadFXsat/FOX-1B launching through the NASA ELANA program. Like its brethren, FOX-1C will carry an FM repeater system for Amateur Radio use by Radio Amateurs and listeners worldwide. Further details on the satellite and launch will be made available as soon as they are released.

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 set an additional fundraising goal of $125,000 to cover these expenses over the next 12 months. That sum will allow AMSAT-NA to continue to "keep Amateur Radio in space" without further drawing down its dwindling strategic reserves. More information about Spaceflight's SHERPA launch system can be found at: http://spaceflightservices.com/launch/deployed-payloads/.

FOX-1A PROGRESS

At press time, AMSAT-NA's experimenters, under the expert guidance of its new Vice-President of Engineering, Jerry Buxton, N0JY, were putting the final touches on the full-up engineering test version of the FOX-1A satellite. Despite a few minor "hiccups" along the way, all was proceeding normally for an anticipated late October 2014 handover to NASA for their subsequent integration of the satellite into an Air Force launch vehicle.

One of the big ground tests of any satellite is to make sure the satellite's transponders are working correctly. Indeed, at AMSAT's booth at this year's Dayton Hamvention, Jerry and his experimenter team had both the FOX-1A transmitter and receiver circuit boards up and running for passersby (on its assigned IARU frequencies of 435.180 MHz uplink and 145.980 MHz downlink) to "talk" through the transponder using their FM handheld radios.

Since that time, Jerry and his able team have been continuing to run tests on the full-up engineering test version of the satellite. Unlike past satellite projects where that work has required a large team of experimenters to gather at a selected venue for an extended period of time, this time around AMSAT has taken full advantage of the very latest collaborative Internet technology to put the test satellite through its paces.

Using AMSAT's "Go To Meeting" collaborative account, Jerry has been running those tests directly from his Dallas, Texas ham shack using his computer and a Web cam. Various FOX-1A experimenters then call in to the ongoing meeting while Jerry conducts the tests on his workbench. Jerry reports that, on occasion, callers have even helped him run these tests by calling out test meter readings on camera as he was unable to see them when he had his test probes plugged into the satellite at the time.

Needless to say, this innovative design, construction, integration and testing approach has saved AMSAT tens of thousands of dollars in travel and lodging expenses over the course of the project, with the added bonus of our experimenters never having to leave the confines of their own home (or an extended period away from work and family). It's been a real "win-win" for everyone.

Once again, stay tuned to the AMSAT website (http://www.amsat.org); the AMSAT News Service Bulletins (ANS); and the AMSAT FOX webpage (http://www.amsat.org/?page_id=1113) for the most recent updates about AMSAT's FOX project.

WRAP UP

I hope you are continuing to enjoy this satellite column as much as I am in bringing it to you every other month. If the column has also helped "whet your appetite" for you to try this absolutely fascinating part of our Amateur Radio hobby, the AMSAT website offers a wealth of practical, "hands on" information (both free or for a small monetary donation) to help fuel your growing interest in the "birds". What's more, because of the publications and discounts on software and other items you receive when you join, a sustaining membership in (and additional supporting donations to) your national, non-profit AMSAT organization is always a good way to keep expanding your knowledge while also helping to ensure new Amateur Radio satellites will continue to be built and launched.

In future columns I'll be exploring some of other aspects of Amateur satellite operation as well as to bring you up-to-date on the very latest additions to the Amateur Radio satellite fleet. See you then!

A Digital Dial for the Kenwood TS-520S Transceiver

Allen Wootton, VE7BQO

I own and use a Kenwood TS-520S transceiver. While it was already a fairly old radio when I purchased it in 1995, I have really appreciated the many fine qualities that still make its use viable and enjoyable today.

A few years ago I built a frequency counter from the design presented in *Experimental Methods in RF Design* (see note 1). It wasn't long before I realized that I could connect this frequency counter to the VFO out jack on the back of the TS-520S and get a digital frequency readout to compliment the radio's analog dial.

Unfortunately, however, on the TS-520S, as the VFO frequency goes down the operating frequency goes up; "0" on the analog dial corresponds to a VFO frequency of 5.5 MHz and from there the VFO frequency goes down (to 4.9 MHz) while the analog dial indication goes up to "600".

To get the correct frequency from my frequency counter I had to subtract the four-digit frequency counter readout from 500.0 kHz. For example, with the bandswitch set to 14 MHz and a readout of 3254, the frequency would be 14 MHz plus (500.0 – 325.4) kHz = 14.1746 MHz. In spite of this sometimes frustrating subtraction process, I found the digital readout useful, particularly for split operation with the TS-520S' RIT control.

When a late night subtraction of 500.0 minus frequency counter readout seemed too much, I finally decided it was time to make a digital frequency readout that read the radio's frequency correctly. The resulting device is shown in Figure 1. Like the analog dial, it works in combination with the radio's band switch.

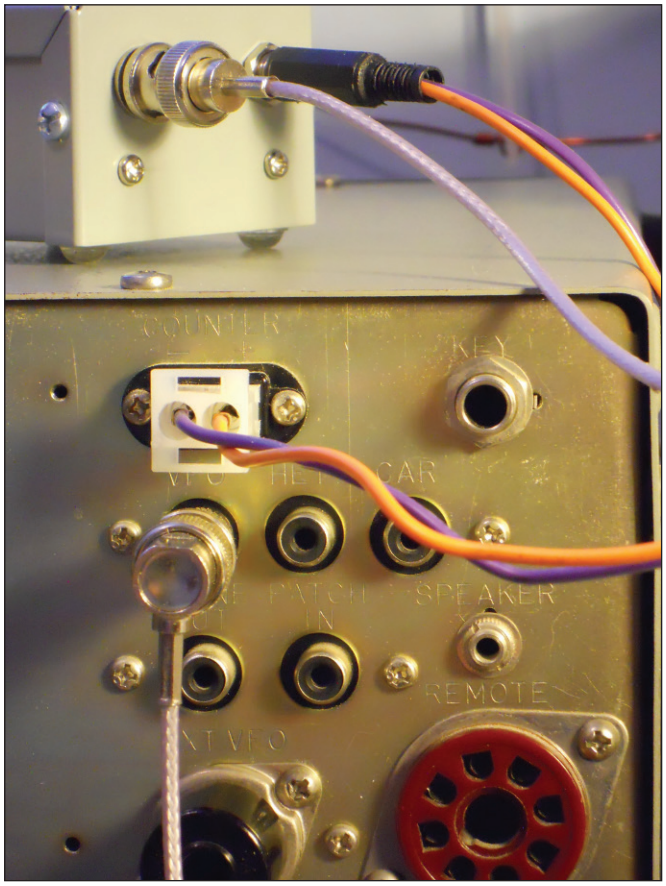
On the TS-520S, the band switch shows 1.8, 3.5, 7, 14, 21, 28, 28.5 and 29.1. The radio's frequency is the band switch value plus that from the analog dial. For example, if the band switch is set to 1.8 MHz and the dial readout is 035, then the frequency is 1.835 MHz. With the band switch set to 7 MHz, this same dial readout would correspond to a frequency of 7.035 MHz.

Note: *This article is based on the article "A Digital Dial for the Kenwood TS-520S Transceiver" by the author that was included in the November 2013 issue of QST.*

Figure 1: The digital dial on top of my TS-520S transceiver. The analog dial shows .036 MHz. The digital dial gives a more precise .0356 MHz.

My digital display supplements this analog measurement while giving one more digit of precision (to 100 Hz).

In addition, unlike the analog dial, it does not need to be recalibrated after each large frequency change.



More elaborate digital displays like the Kenwood DG-5 or the aftermarket AADE DFD2 (see note 2) measure the VFO, heterodyne and carrier frequencies of the radio so, in addition to the 4 digits of my display, they also show the megahertz digits.

In addition, they change frequency with mode to account for the shift from lower to upper sideband or to CW. In practice, I find my simple display perfectly adequate and easy to use.

Figure 2: The TS-520S power and VFO output jacks intended for the Kenwood DG-5 provide the necessary connections for this digital display. I used an RCA to BNC adapter on the VFO output and a salvaged 2-pin connector on the power output jack.

No modifications to the TS-520S are required to use this digital frequency display – jacks on the back of the TS-520S provide the necessary connections (see Figure 2). Power for the unit is available from the 13.8 V DC connector intended for the DG-5 digital display. The VFO out jack, also intended for the DG-5, provides a signal to the display.

An Atmel ATtiny2313A microcontroller set up as a frequency counter is central to the operation of this digital display. All frequency counters require a counter to count pulses and a timer to measure the time interval over which the pulses are counted.

The ATtiny2313 contains two timer/counters that can be used for these purposes. I used one to count the pulses from the VFO and the other to measure a time interval of 1/10th second. This 1/10th second time interval is derived from the microcontroller's crystal controlled 20.48 MHz clock so it is stable and accurate, and the count begins and ends very precisely at the beginning and ending of the interval. For these reasons the VFO's frequency could be measured to greater precision than the 100 Hz display resolution of this digital display.

Initially, the frequency is stored by the microcontroller in binary digital form, that is, as a series of 0s and 1s. This information could be displayed in that form, but it certainly would not make for an easy to decipher frequency readout. With a software routine, however, the binary digits can be converted to the decimal units with which we are most familiar, and then stored in binary coded decimal (BCD) format.

Since only four digits are displayed on the digital frequency display, only the digits corresponding to the hundreds, tens and units of kilohertz, and hundreds of hertz are then selected from the data available. They are subtracted from 5000 and displayed on a four-digit, seven-segment common cathode LED display that is driven by the microcontroller. Each segment of each digit is controlled by one of the microcontroller's pins – and each digit by another – so that the digits are turned on and off sequentially and quickly enough that there is little flicker of the digits.

Because almost all of the operation of the digital frequency display takes place within the microcontroller, the circuitry of the display is quite straightforward as you can see in the schematic on the next page.

In Figure 3 you can see how I constructed most of the circuit on a small perf board. Each segment of the LED display requires a current limiting resistor.

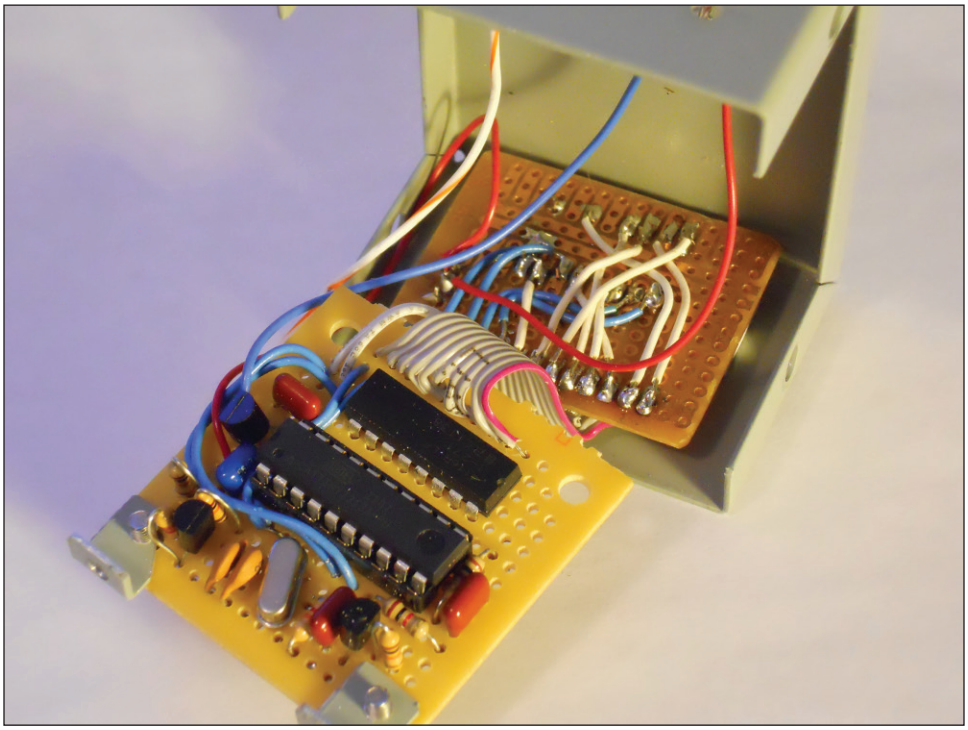


Figure 3: Internal view of the digital display. The LED display and on-off switch are mounted on the smaller perf board inside the box while all the rest of the circuitry shares the microcontroller board.

Individual resistors could be used, but I used a resistor array consisting of eight independent 270 ohm resistors instead. I found it very helpful to align the resistor array close to the microcontroller so that pin 19 on the microcontroller is adjacent to pin 1 on the resistor array. This made connection between the microcontroller and the LED display much easier. In my digital display, the LED display and a small on-off switch are mounted on a separate piece of perf board. I cut a tight friction fit hole for the LED display in the front of the small box I used to house the digital display so that no fasteners were required to hold the LED display and the on-off switch in place.

I adapted the input circuit to the digital display from the frequency counter presented in *Experimental Methods in RF Design*. Initially, I used just one 2N3904 in the same way as was used in that circuit, but I found that I couldn't get enough drive to the microcontroller at the high end of the frequency range for reliable operation. Up to about 5.3 MHz the count was fine, but above that the readings were incorrect. The addition of a second 2N3904 connected in the same manner as the first cured this problem and I found that measurements to slightly more than 7.5 MHz were possible.

This upper limit of frequency is a consequence of the microcontroller's 20.48 MHz clock frequency – the time between transitions on the input to the counter must be somewhat less than half the clock frequency (see note 3).

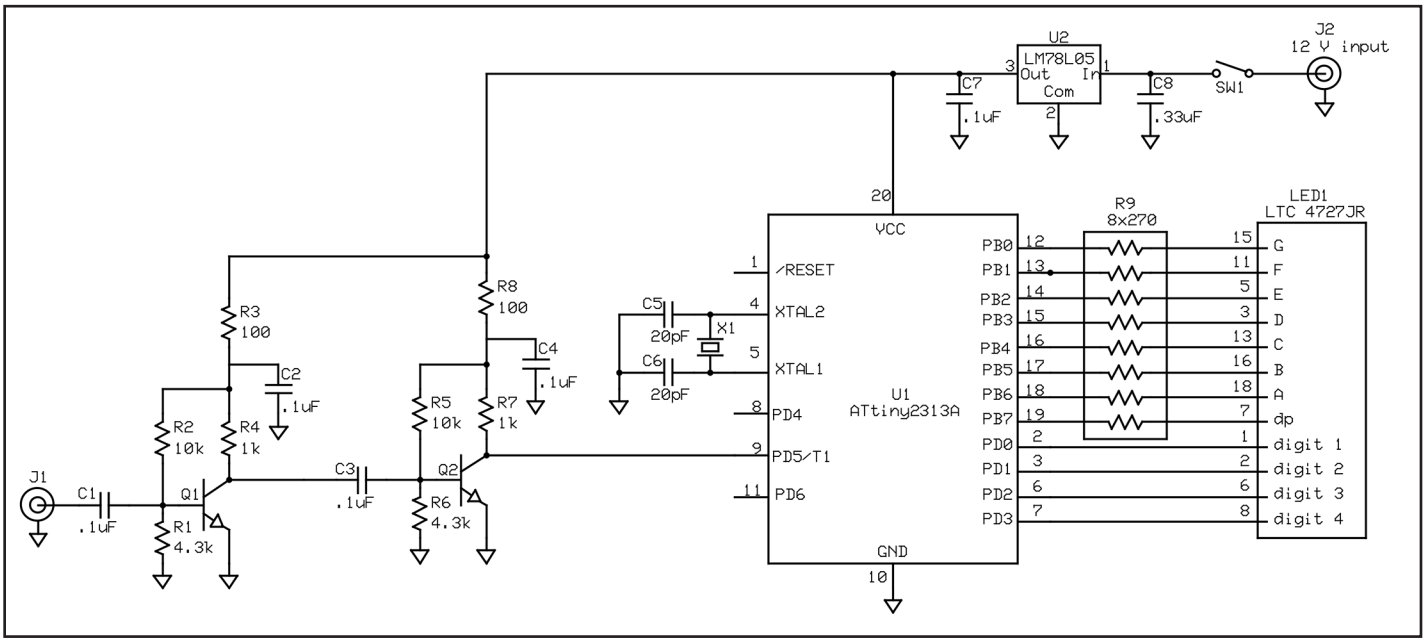
I mounted the ATtiny2313A in a socket. It could be soldered in place, but I like being able to add the microcontroller after checking voltages and ensuring that other parts of the circuit are working properly. In addition, by using a socket it is easy to remove the microcontroller for reprogramming if so desired at a later date.

With the right equipment and software, programming a microcontroller is straightforward. For the digital display, first download and save the digital display program from http://wp.rac.ca/tca-content/. Then download and save the free program Studio 4.19 from the Atmel website (see note 4).

With Studio 4 running, open a new project. The program will ask you for "Project Type". Choose "Atmel AVR Assembler". I used "TS520s_FC" for the project name, but you can use any name you like as long as it is acceptable to the Studio 4 program (periods and spaces are not permitted).

For a "Debug platform" select "AVR Simulator" and for "Device" choose the ATtiny2313A. Now copy and paste the digital display program into the project space. Once you have done this, if you select the assemble and run icon from the toolbar, you will be able to work through the program line by line, if you so desire, by pressing the F11 key (see note 5).

To download the program to the ATtiny2313 microcontroller I use an "AVR Dragon", an economical programming/debugging device made by Atmel (see note 6).



The "Dragon" makes downloading a program to the microcontroller easy, and it also provides simulation and debugging. To use this device to program the microcontroller you need to change the "Debug Platform" from "AVR Simulator" to "AVR Dragon" and the Dragon must be connected as shown in the Studio 4 help. I have found the Dragon indispensable as I've learned to use the Atmel microcontrollers. Except for the cost of a "Dragon", the whole project, including a case, can be built for about $20.

The circuitry and program for this digital display could be adapted quite easily to other radios that use a VFO in the range of frequencies over which the counter functions. With a prescaler the frequency range could be greatly extended. I have annotated the program extensively so that adaptations and changes to it should be relatively easy. As it stands, this digital frequency display is easy to build and to use, and I have found it to be a worthwhile addition to this fine old radio.

NOTES

1) Wes Hayward, W7ZOI, Rick Campbell, KK7B, and Bob Larkin, W7PUA, *Experimental Methods in RF Design*, ARRL first edition, 2003, page 4.30

2) Almost All Digital Electronics (AADE), http://www.aade.com/dfd2.htm

3) Atmel.com, Application Note AVR205: Frequency measurement made easy with Atmel tinyAVR and Atmel megaAVR

4) Since this article was written Atmel has updated Studio 4.19 to Studio 6.2. Both Studio 4.19 and Studio 6.2 will work with the Digital Dial program but the description in the text is specific to Studio 4.19.

5) Further explanation of how to use Studio 4 is provided in "Novice's Guide to AVR Development" which is available online at: http://www.ceid.upatras.gr/faculty/alexiou/ahts/projects/project04/ylikoAskisewn/Evdomada1/B2/Programming%20novice.pdf

6) Atmel Dragon http://www.atmel.com/tools/AVRDRAGON.aspx

TS-520S DIGITAL DISPLAY PARTS LIST

Part	Value	Digi-Key Part Number
C1, C2, C3, C4, C7	.1uF	490-3859-ND
C5, C6	20pF	490-3703-ND
C8	.33uF	399-4299-ND
LED	4-digit LED display	160-1551-5-ND
Q1, Q2	2N3904	2N3904FS-ND
R1, R6	4.3k	4.3KQBK-ND
R2, R5	10k	10KQBK-ND
R3, R8	100	100QBK-ND
R4, R7	1k	1.0KQBK-ND
R9	8x270	4116R-1-271LF-ND
SW1	SPDT slide	CKN10397-ND
U1	ATtiny2313A	ATTINY2313A-PU-ND
U2	LM78L05	LM78L05ACZFS-ND
X1	20.48 MHz	X1039-ND
IC Socket	20 pin DIP	A100208-ND
Enclosure	Hammond 1411B	HM315-ND
J1	BNC jack	A97548-ND
J2	Barrel Connector	CP-5-ND

A few words from the author: *I have had the call sign VE7BQO since 1964 and since that time Amateur Radio has been an important influence on my life. It has been a pastime from which I have learned a great deal and through which I have met many very fine people.*

Presently, I am really enjoying retirement and the increased opportunity to learn and experiment. I especially enjoy CW and QRP portable operation but I also find so many fascinating aspects to Amateur Radio that I know I will never run out of new things with which to experiment.

Visit http://wp.rac.ca/tca-content/ for more information.

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Michael Aultman, VA3MPR
Gary Badcock, VO1GWC
Dennis Bancesco, VE6ATC
Doug Bannard, VE3SPF
Shawn Barnard, VE3KYQ
David C Barnes, VO1YA
Bill Barrie, VE3AAS
Douglas Barry, VE7WLF
Geoff Bawden, VE4BAW
Michael Bell, VE3NOO
Michael F Belliveau, VE6XZM
Bruce Bernard, VE1TIN
Larry Berta, VE3LXV
Serge Bertuzzo, VA3SB
Brian Biggings, VE3XA
Christian Bisaillion, VE3CBK
Bill Boskwick, VE4BOZ
Terry Bosse, VE6LL
Allan Boyd, VE3AJB
Robert Boyer, VE3XBB
Harold Braun, VE3CD
Patrick Brewer, VE3KJQ
Michael Brickell, VE3TKI
Ronald O Brook, VE4RON
Matthew Eric Brown, VE3EB
O Ernest Brown, VA3OEB
Mike David Brown, VA3GRL
Vern Brownell, VE7MCC
P J Buckway, VY1PJB
Ian Thunder Burgess, VA6EMS
Paul Burggraaf, VO1PRB
Rick Burke, VO1SA
Clarke M Burnett, VE4MB
William J Bush, VE3BXI
Gary Butler, VE7OQ
David Caddell, VA7VVV
John (Jack) Charles Cain, VE7DBK
Fred Cain, VE3JMJ
Ralph Cameron, VE3BBM
Sandy Cameron, VE3AAC
Mark Capewell, VA7MNV
Mary M Card, VE3FEB
Gilles Chevalier, VA2CG
John Christensen, VE3IAO
Hugh D Clark, VE9HC
David G Clarke, VE6LX
Geoff Clarke, VE3JBD
Ken Clarke, VE7BC
John Connor, VE3TG
Guy A Costanzo, VA7GAC
K James Couprie, VE6IG
Donald Courcy, VE1SS
David Coutts, VE3KLX
Robert Cove, VO1REC
Chris Cowx, VA7CWX
Paul C Cragg, VE3AXT
Ron Cross, VA3WWE
William R Cunliffe, VA3WRC
Francois Daigneault, VE2AAY
Renze Dam, VE6DC
Rick Danby, VE3BK
Brian Davies, VE6CKC
Frank Davis, VO1HP
George Davis, VE3OGP
James Dean, VE3IQ
Julio Cesar Diaz, VA3JCL
Richard J Dion, VE3LAD
Grant Dixon, VE3CGV
Tom Dobson, VE3TWD
Ian Drinkwater, VA3UM
George S Duffield, VE3WKJ
Robert Dyer, VE3KTY
David Easingwood, VE7DPE
Tim Ellam, VE6SH
Doug Elliott, VA3DAE
Edward Evanko, VE4EDE
David Evans, VE6DXX
Alan Farmaner, VA3AVF
Russell Farrell, VE3ELL
Thomas Feeney, VE3KTP
Richard Ferch, VE3KI
Terry Finn, VE6TF
James W Fisher, VE1JF
Ken James Fitzgerald, VA3KJF
Tony C Fonseca, VA7TF
James Forsyth, VA7FJE
Bonna-Faye Forsyth, VE7BFF
L C Fowler, VE3NPC
J D Frame, VE3JDF
Richard Francis, VE3OXX
Edward J Frazer, VE7EF
Norm Freidin, VE3CZI
Mario Gasparovic, VE3HVY
David Gerrard, VE3VID
Gordon Gibson, VE3NQK
Ross Gibson, VE4RWG
Paul Giffin, VE7IPM
John Gilje, VE6KJG
Dave Gillis, VE7BX
Bill Gipps, VE7ISV
Thomas Godden, VE3TWG
Michael Goncz, VE3WCQ
Jean-Pierre Goode, VE2BDG
Mitchell Goodjohn, VE6SM
Robert Goodman, VE3ZRG
Stephen Goodwin, VE6SMG
Dave Goodwin, VO1AU
George W Gorsline, VE3YV
Richard Govoni, VE3SHL
Gregory A Grant, VA7GRA
Ron Griese, VE3RJG
Dominic Grosleau, VE3DGZ
Reg Gulliford, VE3AWN
James Ray Gunter, VE6JRG
Tom Haavisto, VE3CX
D A (Sandy) Haggart, VE3HAZ
Colin Haig, VE3MSC
Gordon Hamilton, VE7ON
Don Hamilton, VA7GL
David W Hamilton, VE6DWH
Garry V Hammond, VE3XN
Garry Hammond, VE3GHP
Richard Hanishewski, VE5RH
Martin Hann, VE9PLS
Jean-Guy Hardy, VE3YOS
Brad Harris, VE3MXJ
Sheldon Hartling, VE1GPY
Kevin Hastings, VA3PSL
Derek Hay, VE4HAY
Harm Hazeu, VE4HAZ
Margaret Heaslip, VE3EQE
Peter Hebb, VE1SM
Jean Paul Henault, VE2JHP
Robert Henderson, VE7HBG
Hugh Henderson, VY1HH
Richard Henderson, VA6RIC
Doug Henry, VE4TG
Peter W Henry, VA3PWH
Howard James Hepburn, VE6GT
William Hicks, VA6RQ
Dallas Edward Hinton, VE7FKH
James W Hodgson, VE3HOV
Peter K Hodgson, VA3PKH
G Bruce Hollett, VE1MLW
Henry Charles Hollinger, VA6HBY
John Hood, VE3VJH
Joseph Hopkins, VE7BYF
Clare Hopkins, VE7IBK
David Hopkinson, VA7FTW
Gabor Horvath, VE7DXG
R E Howard, VE3YX
Mark Alexander Humenyk, VE3HMK
Gordon Hungerford, VE6TI
A Graham Ide, VE3BYT
Robert J Ireland, VE9KM
Lorne S Jackson, VE3CXT
Gordon J Jacques, VA3GJJ
Peter W Jago, VA3PJ
Brian Janzen, VE7CTH
Gordon Jewsbury, VE4OK
Doug Johns, VA3DLJ
Dave Johnson, VE7VR
Walter D Johnston, VE3GE
Scott Johnston, VA3CCU
Sam Jones, VE3LCK
Dale Victor Jones, VE7JP
Beckett Jubb, VE6JUB
Janet Jubb, VE6VED
Ernie Jury, VE3EJJ
W J Karle, VE1YY
Eric Kehler, VE7EGK
Thomas V Kennedy, VA3TVK
E Kenward, VE7BYK
Stephen Kern, VE7HSK
Stephen Kerridge, VE9HZ
Kelly Kienleitner, VE7KQW
Melvin Killens, VE3MLK
Robert Neil King, VA7DX
David Kingsland, VE3MDX
Bill Kirby, VO1BB
David Klatt, VE5GN
Walter Kohler, VE7SM
Boris W Kohut, VE4BG
Gordon R Kosmenko, VE6SV
Jerry P Krayco, VE7NX
David LaHay, VE7FVW
Jason Lapierre, VE6TMR
Benoit Laprade, VE2LSF
Harvey A A Larabee, VA3LHA
Doug Leach, VE3XK
John C Lediett, VE3FVC
Syd Lennox, VE3CQO
Barrie Lennox, VE3AOI
Stan Leschinsky, VE3TW
Allan E Lett, VE3TYT
Joel Levis, VE3CJJ
David Liddell, VE7QR
Scott Lightfoot, VE4STL
John Kingsford Lockwood, VE9KC
Gene R Lutes, VE7IMP
Gerald Lutley, VE1GPL
Rand Lutman, VE7HRA
Glenn MacDonell, VE3XRA
Ian MacFarquhar, VE9IM
John MacKay, VE7EEX
R K Mackenzie, VA3RKM
Jim MacKenzie, VE5EIS
Neil Macklem, VE3SST
Daniel Madden, VA3RRJ
Mark Magner, VE3CT
Pierre Mainville, VA3PM
Alan Mallett, VA7AWM
Eric G Manning, VA7DZ
Matthew William Martyn, VA3MWM
Greg Mason, VE4AMN
Martin Matheson, VE6GE
Gabriel Mazzeo, VA3CWT
Philip Alexander McBride, VA3QR
Don McCallan, VA3GFD
Duncan A McCansh, VE3OM
Bernard McCoy, VE6HFD
Arthur McDougall, VE7CFU
David McKinlay, VA3IR
L David McLennon, VO1LM
Malcolm R McLeod, VE5ZG
Chris McMullan, VA3CMJ
Donald McPhee, VE3REO
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RADIO AMATEURS OF CANADA — MAPLE LEAF LEGACY CIRCLE
RADIO AMATEURS OF CANADA — CERCLE DES LÉGATEURS MAPLE LEAF

Your Personal Legacy: Making A Difference for the Future of Amateur Radio

RAC would like to recognize and honour Amateur Radio operators who have made the ultimate gift by voluntarily including Radio Amateurs of Canada in their will or other estate plans by welcoming them into the RAC Maple Leaf Legacy Circle.

One of the most important matters that everyone must manage and establish at some point in life is proper financial due diligence in estate planning for your family and loved ones.

One may also choose to express their gratitude to those organizations that meant the most to you in your life.

RAC is well aware of many testimonials whereby Amateur Radio played a very important role in many people's lives as a fulfilling hobby and for some it even became a stepping stone to their financial success in professional life.

Choosing to enroll in this RAC program is a very thoughtful and generous action we wish to recognize.

RAC Maple Leaf Legacy Circle Benefits:

- Custom-designed RAC Maple Legacy Circle pin with engraved call sign
- RAC automobile window decals and automobile licence plate frame
- Personalized certificate (signed by the RAC President)

Contact RAC for further information /
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Votre Legs Personnel : Assurer pour longtemps un meilleur avenir au radioamateurisme

RAC aimerait rendre hommage aux radioamateurs qui ont décidé de faire de Radio Amateurs of/du Canada un de leurs légataires légaux par l'expression testamentaire de leur volonté ou autrement, et ce en leur souhaitant la bienvenue dans le Cercle des légateurs Maple Leaf de RAC.

Une des choses les plus importantes que chaque personne a à décider et gérer à un moment donné de sa vie est la juste valeur des biens et immeubles qu'il souhaite léguer à sa famille et à ceux qu'il aime.

Vous pouvez aussi choisir d'exprimer votre gratitude envers des organisations qui signifient beaucoup pour vous.

RAC est bien conscient des multiples facteurs qui démontrent le rôle très important que le radioamateurisme joue dans la vie de beaucoup de personnes à titre de hobby principal et, pour plusieurs, jusqu'à devenir une rampe de lancement pour leur succès financier et leur vie professionnelle.

Choisir d'adhérer au programme de RAC est donc une difficile mais généreuse décision. Nous le reconnaissons.

Les bénéfices du Cercle des légateurs Maple Leaf de RAC :

- Épinglette du Cercle des légateurs Maple Leaf gravée à votre indicatif d'appel
- Collants automobile RAC et cadre de plaques autos
- Certificat personnalisé (signé par le président de RAC)

New MLLC member announcement / Nouveau membre CLMM

RAC would like to welcome its first member into the Maple Leaf Legacy Circle. Dave Goodwin, VE3AAQ/VO1AU (former RAC President) is MLLC member #0001. Congratulations and thank you!

RAC souhaite la bienvenue à son premier membre du Cercle des Légateurs Maple Leaf, Dave Goodwin VE3AAQ/VO1AU (ancien président du RAC), il détient numéro de membre #0001. Félicitations et merci!

#1 DXCC HONOUR ROLL ON A DUMMY LOAD

Sound like an oxymoron? Our fellow Amateurs have told us for years that a vertical antenna on HF was a dummy load (or at least the next thing to one).

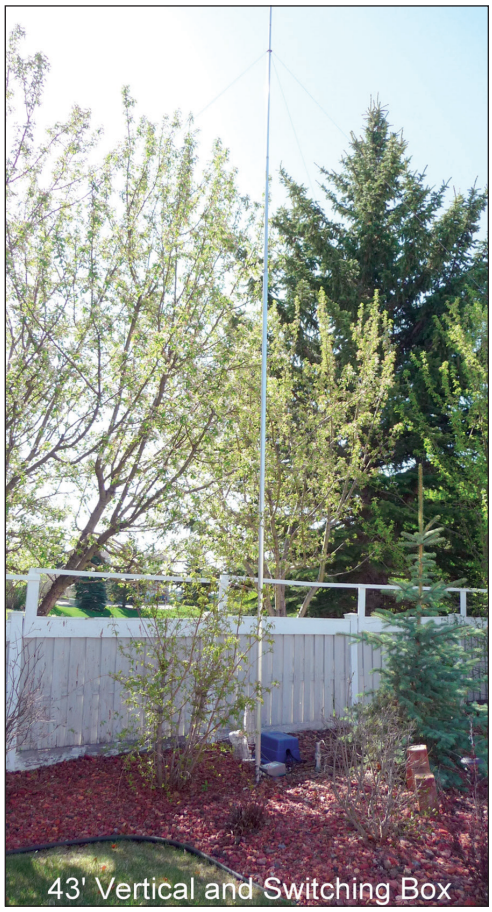
The common comment was “when are you going to get a real antenna”? I didn’t listen and have been using various verticals on a city lot over my ham career at least partially due to the “wife friendliness” of the minimal visual footprint of a vertical. I’ve used trapped verticals, quarter-wave verticals, half-wave verticals, 5/8-wave verticals, so called no radial vertical (like the Cushcraft R-7), a SteppIR vertical with an 80 metre loading coil, and a variety of homemade verticals such as a top loaded inverted L for 160. The bottom line is that every entity I’ve worked has been on some form of vertical antenna. In January 2014, I managed to work my #340 entity, FT5ZM to complete this challenging goal.

Over the years I’ve had many radios all the way from Heathkits to homebrew transmitters and receivers to commercial high end transceivers. I’ve had a variety of linears as well – some commercial and some homebrew – but all of them less than a kW (e.g., a single 3-500 or 2X572Bs).

At present, I run an FTDX-9000D with an AL80A linear to a 43-foot vertical tuned in the shack with an LDG-AT-1000ProII automatic tuner in the shack.

My current vertical began life as a Butternut HF-2V with a 160 base loading coil for use on 80, 40 and 160. It then morphed into a dedicated 160 metre vertical with a bit of length extension and three near top loading wires. At this point I was using a SteppIR with an 80 metre coil for all the other bands. I removed the 80 and 40 metre loading coils, but retained the 160 metre base loading and added a 12-foot section of heavy gauge tubing to the bottom of the old HF-2. I then added a three-foot mobile whip to the top to make up the required 43 feet.

The blue box beside the antenna in the photo on the right contains a couple of vacuum relays to switch the feedpoint to the 160 coil and insert/remove the 4:1 balun (the silver box near to blue one). I find that the balun is only needed in my case on 75/80 metres.



43' Vertical and Switching Box

The 160 loading/feed are the same as was used with the HF-2.

There is a 100pf motor driven (operated from the shack) high power variable in the plastic pop bottle bottom to move the resonance around on 160.

Gerry-VE6LB in His Compact Shack

I’m on a city lot on the edge of a big park. No antennas into the park but I’m well away from adjacent neighbours (a few hundred feet to the nearest) which provides a reasonably quiet receive environment. Our utilities are buried as well. There are about 20 buried radials of varying lengths from 16 to 40 feet. I also add about another 20 radials of varying lengths on the ground for the winter months when there is more DX activity on the low bands.

So, contrary to common beliefs, one can work them all from the black propagation hole of western Canada (and many other black holes) with a near dummy load. I’m sure some would be interested in how this feat was accomplished.

1) An unflinching optimism that it could be done.

2) Learning about propagation and understanding forecasting tools so I could be on the right band at the right time, which was often in the middle of my night. This was critical.

3) Keep up to date on DXpedition plans and schedules.

4) Contests have always been a good source of new ones.

5) Bags and bags of patience. Being the little signal, especially on the high bands (no beam), in a big pileup of big signals, one has to wait for the ideal opportunity to be heard. I found that being either early or late in a path opening served me well. Often when the DX was fading out to just above the noise was when they heard me. One can’t get frustrated when one doesn’t get though. Try, try and try again.

6) One has to think like you’re a QRP station to be successful in working them all. See point 5 above.

7) Most of the entities were worked on CW. Better penetration than SSB in breaking pileups.

8) If you can’t hear them, you can’t work them. Find local noise sources and eliminate them if possible. If you can’t get rid of the noise, try to use the noise reduction tools in your radio and/or use a noise canceller like the MFJ-1026. The key to good noise canceller performance is the right noise antenna(s). Four antennas are used at VE6LB that are oriented to provide a signal that hears the noise but not the wanted signal.

9) Use the DX spot histories to understand the target’s operating habits. Know when the target is being heard in your area and on which bands. A good example is HV0A who is generally only active on Italian weekends.

10) As always, follow the DX Code of Conduct (http://www.dx-code.org/).

It’s definitely been a long and rocky road. I was licensed in the mid ‘50s and have been active much of the time since then.

My interest has always been DXing. The first objective was DXCC and then up through the DX awards. Next was 80 metres singleband DXCC, 5BDXCC and followed by 160 DXCC and the DXCC Challenge.

Today, I have 9 band DXCC, 193 5BWAZ and 2400 entities towards the Challenge.

Good luck and I will look forward to seeing more #1HR DXCCs in the listings. You can do it!

Gerry Hohn, VE6LB/VA6XDX
Calgary, Alberta

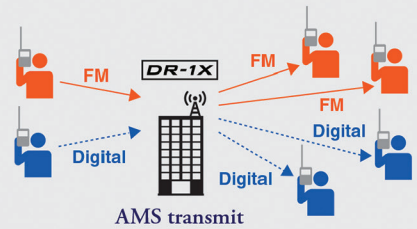
System Fusion

The Best Solution for the Future

System Fusion provides Total Integration of Digital and Conventional FM

FM Friendly Digital & Auto Mode Select (AMS)

System Fusion is designed to enable seamless intercommunication between conventional FM and C4FM Digital using a single unified platform, without manually switching between the communication modes.



AMS transmit

This is made possible in System Fusion by the Auto Mode Select (AMS) function. With AMS, the modulation mode of your station is automatically selected according to the received signal. If a member transmits the conventional FM, the other System Fusion radios automatically select their modulation to conventional FM and permit communication between all members.

The Choice of C4FM Digital & New Attractive Digital Functions

System Fusion - C4FM Digital makes possible **9600 bps data speed** utilizing **12.5 kHz bandwidth**. **9600 bps data transmission speed** enables the high speed data communication and provide the new attractive digital functions to expand your enjoyment of the amateur radio communication.

Digital Group Monitor (GM)

Automatically checks whether members registered to a group are within the communication range, and displays the distance and the direction with each call sign on the screen.

Smart Navigation

Real-time navigation function enables location checking at any time. With the simple touch of a button, you can start navigating to your departure point or any location previously saved. (Backtrack Function)

Snapshot (Image Data Transmission)

Simply connect an optional speaker microphone with camera (MH-85A11U), you can take snapshots and easily send them to other System Fusion radios.

For latest Yaesu news, visit us on the Internet: http://www.yaesu.com

System Fusion Lineup

C4FM Digital Clear Voice
Clear and Crisp Voice Technology

144/430 MHz DUAL BAND
C4FM/FM DIGITAL REPEATER

DR-1X

- Three digital modes and a Conventional FM mode
- Emergency Operation: Supports operation on an emergency battery

Exciting New Amateur Digital Transceiver

C4FM Digital Clear Voice
Clear and Crisp Voice Technology

C4FM FDMA 144/430 MHz DUAL BAND
5W DIGITAL/FM TRANSCEIVER

FT1DR Heavy Duty Package

(1800 mAh Li-Ion Battery FNB-102LI included)

- Three digital modes and a Conventional FM mode
- Automatic Mode Select (AMS) Function
- Snapshot Picture Taking Capability
- Digital Group Monitor Function
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Equipped with advanced touch panel operation and full-color TFT large-scale display

C4FM Digital Clear Voice
Clear and Crisp Voice Technology

C4FM FDMA 144/430 MHz DUAL BAND
50W DIGITAL/FM TRANSCEIVER

FTM-400DR

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- Automatic Mode Select (AMS) Function
- 3.5-inch Full Color Touch Panel Operation
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Advanced VoIP wireless WIRES-X

C4FM Digital Clear Voice
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HRI-200

- Advanced Internet VoIP radio communication is available with C4FM.
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THE ARDUINO MCU: PART UNO

Note: *You may want to read my previous columns about the MCU (microcontroller unit) in the November-December 2012 (PICAXE) and January-February 2013 (BASIC Stamp) issues.*

Microcontrollers are designed to interface with other devices through *sensors* to monitor things and/or through *actuators* to control things.

The Arduino Uno (see Figure 1), it's "offspring" and clones have become ubiquitous because of their availability, versatility, ease of use and low cost. The concept of a simple and inexpensive MCU platform created for non-technical people was developed by artist/designer Hernando Barragon in his master's thesis (2004).

The next year, a development team was created in Italy (Barragon, Massimo Banzi, David Cuartielles, et al) to design and manufacture the hardware built around an Atmel microcontroller with a software IDE (integrated development environment) based on the Processing language (a C/C++ variant) which itself was created for artists/designers and is why all Arduino programs are called "sketches". There's confusion about the name's meaning, but my guess is the Latin phrase "est ardui no uno" or "it [this] is not difficult for [any] one".

Arduino is based on the open source hardware/software concept whereby anyone can freely contribute or use software resources but, more importantly, anyone can develop/sell their own "duino" hardware variants without paying royalties because only the name "Arduino" and logo are trademarked. It's getting "ancient" but the Uno is still the most popular/cloned MCU and compatible with *all* daughterboards or "shields" (Arduino term).

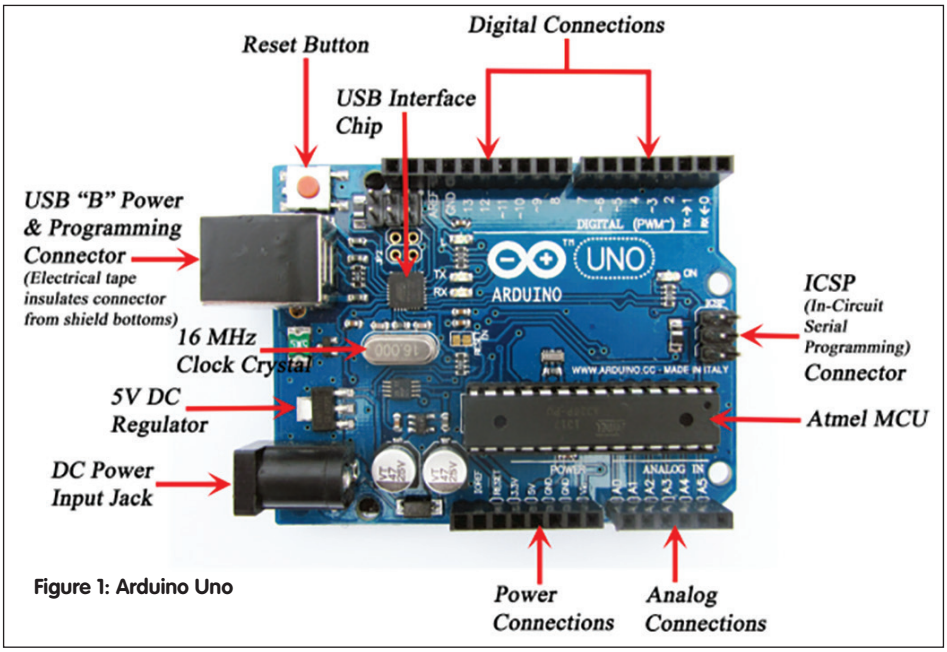


Figure 1: Arduino Uno

DR. L AND LADYADA

Two extraordinary people have blazed trails for others to follow in a very male dominated industry. MIT (Massachusetts Institute of Technology) Media Lab, High-Low Technology research group director Dr. Leah Buechley created the "LilyPad" concept in her PhD dissertation (2005) whereby MCU-based components are sewn into clothing and/or other accessories (electronic textiles or e-Textiles) and two years later, the LilyPad Arduino (see Figure 2) entered the market.

MIT graduate Limor "Ladyada" Fried started Adafruit in her dorm room (2005) and the company designs, manufacture and sells various MCU products/kits, and created a line of e-Textiles products (Figure 2) called "FLORA" and "GEMMA" (2012).

Limor is a driving force in the open source hardware community and she was the first *female* engineer to be featured on the cover of *Wired* magazine (2011).

"If there's one thing I'd like to see from this, it would be for some kids to say to themselves 'I could do that' and start the journey to becoming an engineer and entrepreneur."

GETTING STARTED

1) Highly recommended is *Getting Started with Arduino* (free PDF download).

2) Visit the Arduino website and download the free IDE (Windows, Linux or Apple) and have a look at the help topics and sketch language references.

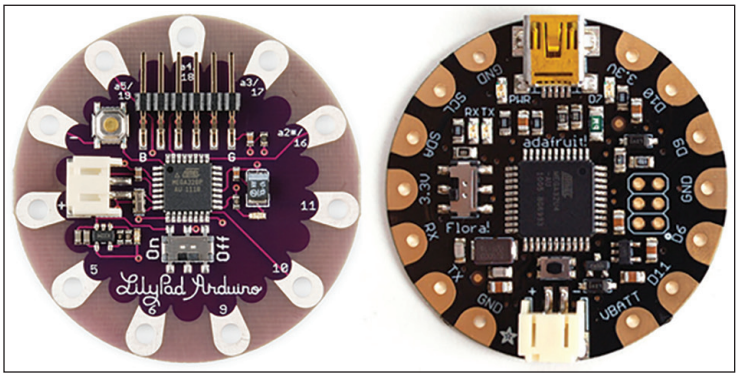


Figure 2: LilyPad & FLORA e-Textiles MCUs. LilyPad (left) and FLORA (right) are small, thin, flexible MCU's stitched to fabric and connected to components using silver/stainless steel wire thread. Courtesy LilyPad and Adafruit websites.

3) If you have a good selection of electronic parts (LEDs, resistors, capacitors, pushbuttons, wires, etc.) you only need the Uno board (or clone), 16x2 LCD (liquid crystal display) with I²C/I2C/IIC (inter-integrated circuit) display driver, a solderless breadboard and assorted #22 jumper wires or DuPont connectors; a mounting plate (metal/acrylic/wood) is optional (see Figure 3).

4) Otherwise, purchase an Arduino starter kit which includes all the basic parts and tutorials/instructions to begin experimenting with MCUs.

When you get an idea for a project (called a "gadget"), sketch (draw) it on paper and write a concise one-line objective sentence. Many "new" Arduino sketches are just modified versions of existing ones with the most commonly used/popular collected into libraries you "include" in your sketch, and you build gadgets using off-the-shelf components. This is a plug 'n play rapid prototyping system designed to be very "Lego-like". If you can think it, you can build it!

THE LED "MIMS EFFECT"

Note: We have to sidetrack to setup the MCU project.

Visible light and radio waves are composed of light-speed discrete bundles (packets) of wave-particle energy called photons (Greek: phos [light]) radiating in the EM (electromagnetic) spectrum (see Figure 4a). At the spectrum's low-end, photons behave more wave-like and exposure is relatively safe (non-ionizing radiation), but when "juiced up" to the extreme UV (ultraviolet) and beyond, they act very particle-like blasting electrons from atoms/molecules and prolonged exposure is deadly (ionizing radiation).

In an LED (light emitting diode), energized electrons (produced by electric current) cross a semi-conductor gap to recombine with electron deficient atoms ("holes") and release kinetic energy as photons (electroluminescence; see Figure 4b). For Trekkies, electrons create photonic "images" of themselves which carry away the same electric/magnetic wave fields (data) while the electronic "originals" remain behind. When photons reach our retinas, they are absorbed by atoms transferring energy (and data) back which energizes electrons producing an electric current in the optic nerve (photoelectric effect). In 1972, Forrest Mims III (*Mims Engineer's Mini-Notebooks*) proved ordinary LEDs detected photons at specific frequencies/wavelengths (colours/temperatures) via the photoelectric effect and could be used to send *and* receive data.

Note: Colour "temperature" means the temperature (in kelvin) something would have to be heated to for it to radiate a specific colour/hue.

Figure 3: My Uno Prototyping Platform.

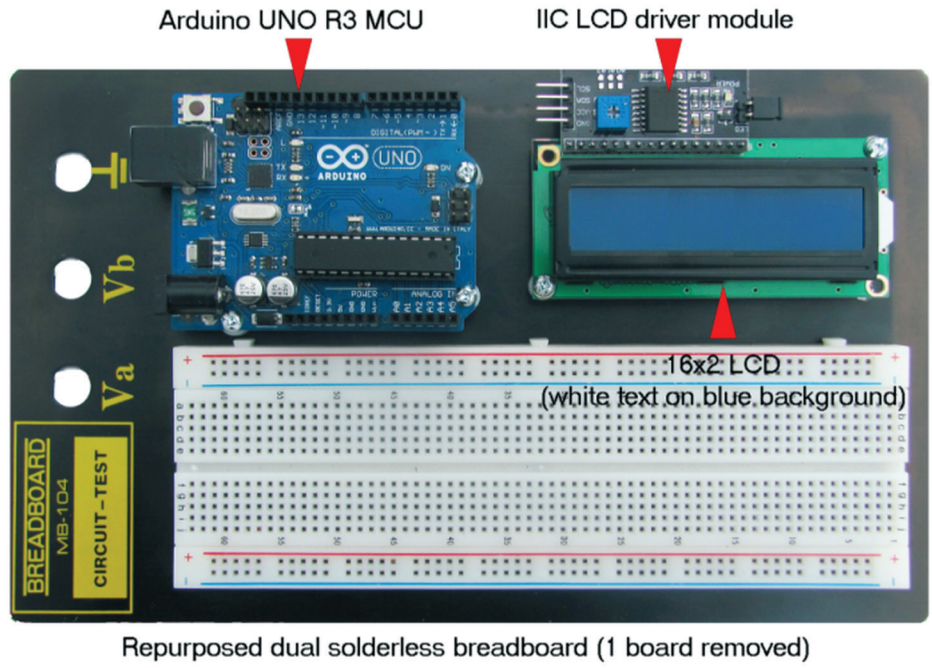


Figure 4a: The EM Spectrum. Courtesy My NASA Data website.

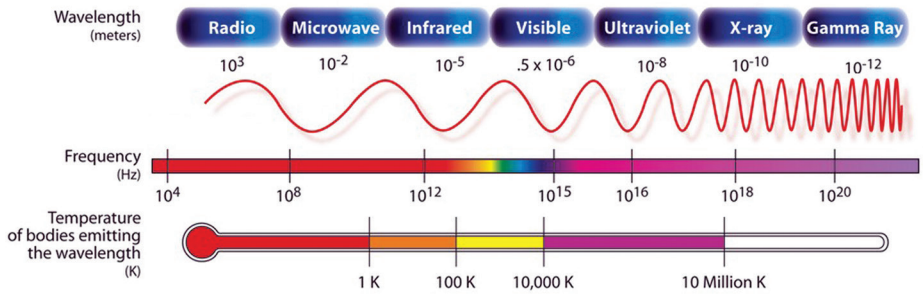


Figure 4b: How the LED Works. Courtesy Wikipedia website.

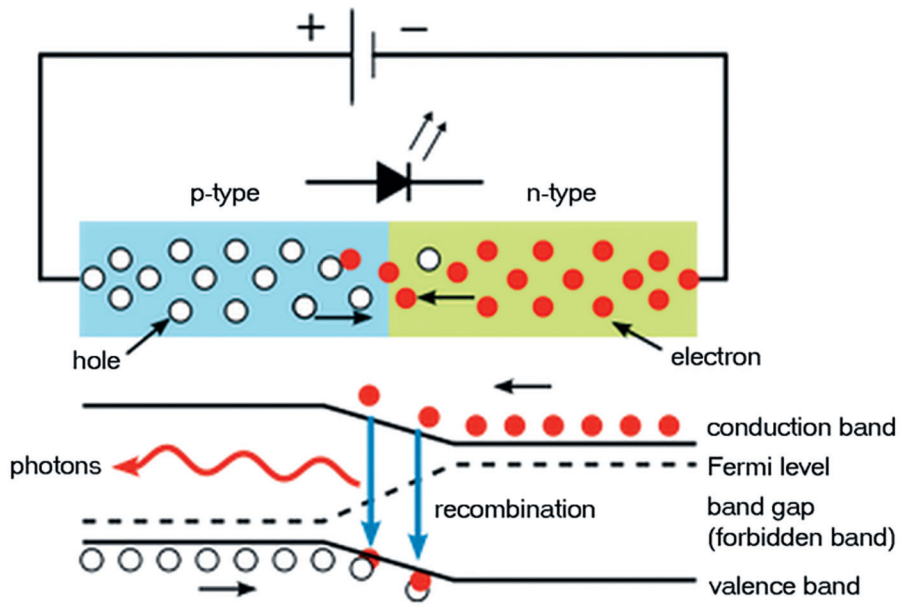
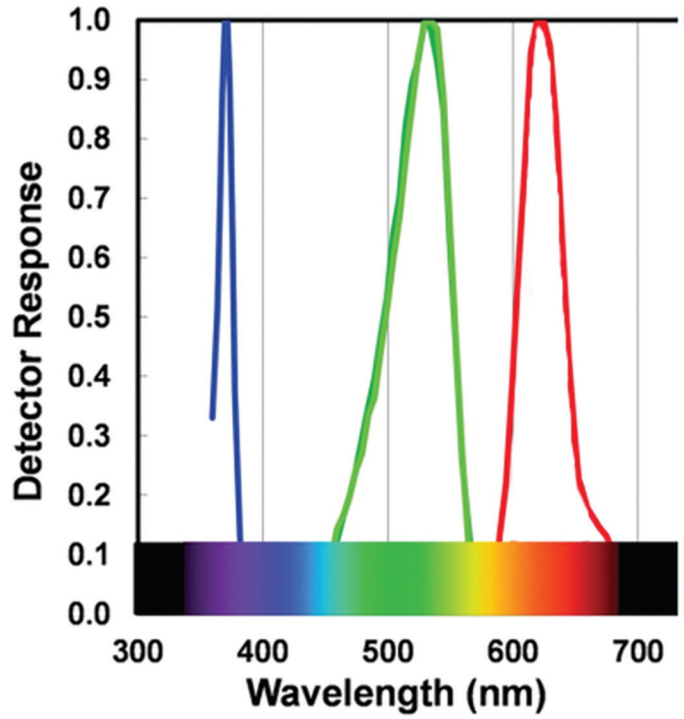


Figure 4c: Visible Light LED Response Curves. Courtesy Makezine website.



A simple reciprocal relationship exists between wavelength and temperature as exists between wavelength and frequency ($\lambda = c / f$ and $f = c / \lambda$).

$$\lambda = 2.9 \times 10^6 / K \text{ and } K = 2.9 \times 10^6 / \lambda$$

Where "λ" (lamda) is wavelength in nanometres (nm), "K" is temperature in kelvin (0K = –273.15 °C or Absolute Zero) and "2.9 x 10^6" (rounded) is "Wien's displacement constant" adjusted for nanometres per kelvin (nm/K). A typical red LED emits/detects photons and peaks around 635nm (4567K) or 474 x 10^{12} Hz = 474 terahertz (THz), green 540nm (5370K) or 568THz and blue 465nm (6237K) or 642THz (see Figure 4c) but this varies (+/- 20nm). Photographers prefer colour temperature while radio users prefer frequency or wavelength.

PROJECT UNO

Objective: Study the LED "Mims Effect" using the Arduino Uno.

Required:

1) Installed/working copy of Arduino IDE.

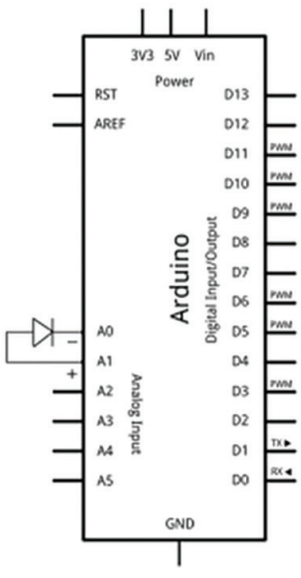
2) Arduino Uno (or clone) and USB power/ programming cable.

3) Green LED (3 or 5mm diameter). Green is in the middle of the visible light spectrum and our eyes evolved to see this colour best.

4) Project sketch, logging spreadsheet and other resource material (download from my website).

Build and Use:

1) Insert LED's negative cathode (shorter lead on "flat" side) into Uno analog input "A0" and insert positive anode (longer lead) into analog input "A1" (see Figure 5a below). You've just built a simple and uncalibrated radiometer gadget which measures the light spectrum at various wavelengths depending on the LED used, and this is the 21st century MCU version of Forrest Mims' original 1990 design.



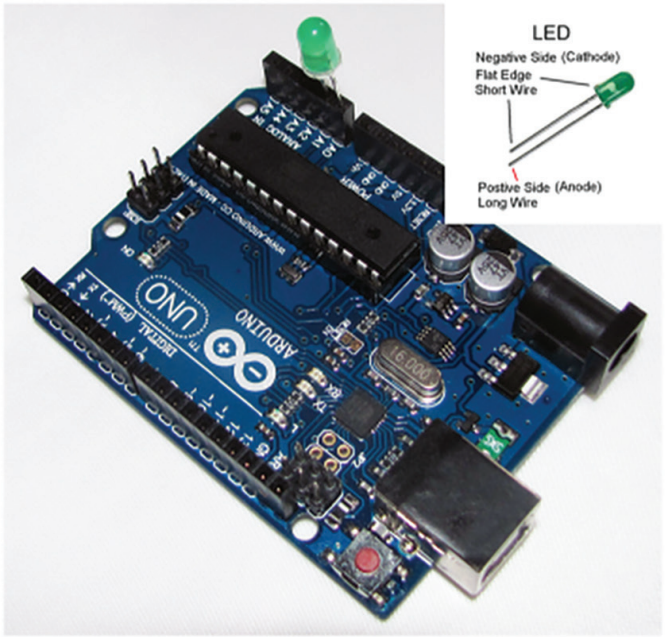
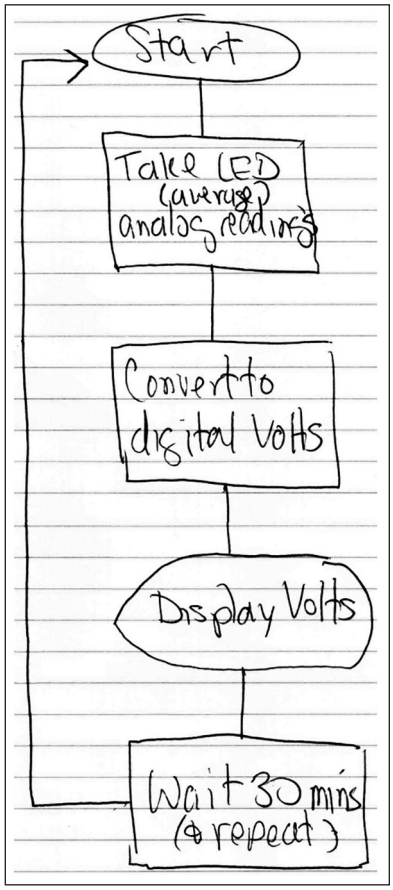


Figure 5a: Gadget Construction.

Figure 5b: Sketch Flowchart.



2) Connect USB power/programming cable, run Arduino IDE, load sketch (see Figure 5b above) and open Serial Monitor window (see Figure 5c on the next page).

3) Put the Uno board/computer in room with indirect/diffuse sunlight during daylight hours and record data with spreadsheet (see Figure 5d on the next page). If used outside, the LED needs to "see" the overhead sky but be shaded from direct sunlight in the shadow of your house or other structure.

Note: For outdoors use, slip a 25mm length of black heat shrink tubing over LED's housing (creates a collimator) to cohere incoming sky photons and block any side or reflected light.

If you have various colours of LEDs, you can try each in sequence after the initial reading: swap one LED out for another, press the Uno board reset button, record the reading and repeat the process. You should notice some very interesting results. On overcast days, the longer red light waves easily penetrate cloud cover and a

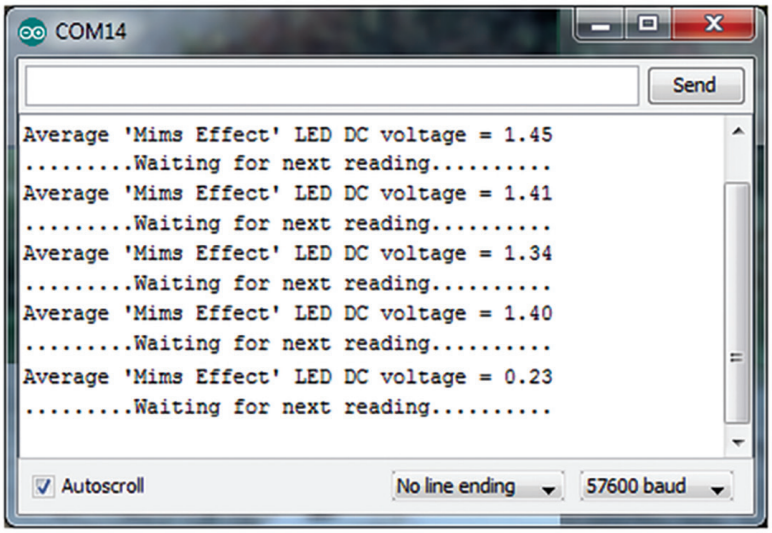
red LED generates a higher Mims Effect voltage while the shorter blue light waves are blocked and a blue LED generates a lower voltage; when the sky is clear, the reverse is true.

The green light spectrum is where we see best, but our eyes are more sensitive to the deeper blue light (near-UV around 440nm) and affected by photo-oxidation (it's what darkens my Transitions eyeglasses) which occurs well before our skin reacts to UV (400nm). In the winter, ground snow reflects the full [white] light spectrum at all angles and can cause photokeratitis or "snow blindness". Interestingly, snowflakes are made up of clear ice crystals and therefore have no colour but appear white because of this [diffuse] reflection.

MY FINAL

In part Duo, we'll enhance the sketch and gadget to build a multichannel photometer with added components and disconnect the computer. – 73

Figure 5c: Serial Monitor Output.



REFERENCES AND RESOURCES

Adafruit FLORA Arduino
http://tinyurl.com/nvdkv9r

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

Arduino (IDE & Information)
http://arduino.cc

Dr. L & Ladyada
http://tinyurl.com/ppghld5
http://tinyurl.com/kqy22mh
http://tinyurl.com/cw5n2e

Forrest Mims III
http://tinyurl.com/3woj7t4
http://tinyurl.com/nvulko5

Getting Started with Arduino (PDF)
http://tinyurl.com/mnudeb9

Light Colour, Frequency and Wavelength
http://tinyurl.com/p7nhwku

LilyPad Arduino
http://lilypadarduino.org

My NASA Data
http://tinyurl.com/mxfohjp

Sample Uno Starter Kits
http://tinyurl.com/4xbnb7v
http://tinyurl.com/ogv8vby

TCA

	A	B	C	D	E	F	G
5		Colour	Latitude	Longitude			Date
6	LED	green	48.3822	-89.2461			September 12, 2014
7	λ (nm)	540	Time Zone	DST	Solar Noon		Sensor Location
8	K	5370	-5	yes	13:53:13		Backyard with LED collimator & 5m USB cable
9	Time	LED	Sun	Sun	Air Mass (m)		Mims Effect LED Voltage @ Ti
10	(hh:mm:ss)	VDC	Azimuth °	Elevation ° (Θ)	1 / sind (Θ)		Sun Elevation (Θ) @ Time G
11	10:00:00	1.31	112.09	23.67	2.49		
12	10:30:00	1.42	118.75	28.16	2.12		
13	11:00:00	1.32	125.92	32.36	1.87		
14	11:30:00	1.29	133.71	36.17	1.69		
15	12:00:00	1.43	142.20	39.50	1.57		
16	12:30:00	1.44	151.42	42.22	1.49		
17	13:00:00	1.42	161.32	44.21	1.43		
18	13:30:00	1.42	171.75	45.36	1.41		
19	14:00:00	1.49	182.42	45.61	1.40		
20	14:30:00	1.47	193.01	44.93	1.42		
21	15:00:00	1.48	203.20	43.38	1.46		
22	15:30:00	1.47	212.82	41.03	1.52		
23	16:00:00	1.41	221.69	38.00	1.62		
24	16:30:00	1.28	229.85	34.43	1.77		
25	17:00:00	1.36	237.33	30.42	1.97		
26	17:30:00	1.25	244.24	26.07	2.28		
27	18:00:00	1.40	250.69	21.47	2.73		
28	Averages	1.39			1.78		

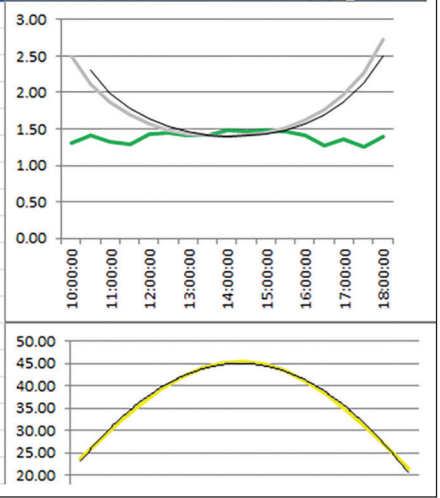


Figure 5d: Green LED Results. The Sun's sky arc (15 degrees/hour) is a 2nd degree polynomial (quadratic equation) but the LED's voltage output is relatively flat (characteristic non-linear behavior). Measuring the green light spectrum shows average lighting conditions versus time.

SPECIAL EVENT STATION VC7SJAM

To commemorate the 200th birthday of our first Prime Minister, Sir John A MacDonald, the Delta Amateur Radio Society will be using the VC7SJAM call sign during the month of January 2015. MacDonald's birthday on January 11 will be the most active day.

All eligible HF bands and modes will be active. Commemorative QSL cards will be available via the bureau only. More information can be found at: http://www.deltaamateurradio.com

Submitted by Gordon Dick, VE7FKY
Delta Amateur Radio Society

"OH, NO! CONTEST SEASON..."

Bill Karle, VE1YY

It's contesting season!

Some hams are rabid, aiming for greater scores. Others are foaming, complaining that the bands are unuseable on contest weekends.

These two "dogs: have been squaring off for as long as I remember and that's a long time. I am not an avid contester; you need to know that up front. I do have opinions why contesting is *good* for ham radio and for my hamming. Maybe it's good for yours, too.

Contesting often is described as radiosport, and that it is for many: the thrill of pitting yourself against yourself, yourself against others; contrasting you and your fellow contesters relative to all-time records; and, the camaraderie among athletes.

Contesting interest groups within ham radio are as valid as DXing, mobiling and similar collectives. Such groups often bring forth benefits for the rest of us.

I participate in the DX-type of contests. I am after entities and this is one way to work them. The whole world is on the air sometime during the 48 hours of contests such as CQ World Wide DX and ARRL International DX. Contest operating partially helped me to earn the entry DX Century Club (DXCC) certificate in several months (after I set my mind to it).

Another reason why I work contests is to evaluate my station's modifications, such as a changed antenna or different software. Why is a contest a good test bed? I get a lot of QSOs over a wide geographic range, in more or less stable propagation conditions, and in a short period of time. It is revealing to compare the current year's performance with that of earlier years. It is not scientific, since there are many variables operating, but I can get a sense whether a change was for the better or the worse.

I was surprised that changing my operating practice improved my contest productivity. I had read about how to search and pounce (S&P) and how to run stations. I found, too, that my productivity was better on 20 metres than on other bands just by looking back in my logs. These contest techniques proved beneficial when applied to my non-contest operating.

Aside from getting DXCC entities, improving one's station and operating methods, what else might contests offer?

Chasing wallpaper is helped by contests. A relatively short time of contest operating can yield enough worked stations to put Worked All Continents, Worked All States, Worked All Zones, and even DXCC "in the bag" (assuming that the QSLs follow!). Then there are the electronic awards from eQSL and ARRL's Logbook of the World where one need not collect paper QSLs.

Although not billed as a contest, Field Day is a ham radio event that allows me to check whether or not I really can operate away from mains power and all the fixed station goodies. It also is an event useful for introducing prospective hams to the hobby. Who can resist the sound of faraway stations amidst the smell of coffee, donuts and a good campfire? Another benefit of doing Field Day that I rediscovered is the challenge of cobbling together a station, assembling the bare minimum to get on the air.

Building a killer contest station is not my cup of "Joe" but some hams form contesting teams that not only operate together but also build the ideal station. I have learned a lot about station engineering by talking to and reading about those who have built such stations. Radio Arcala comes to mind to many contesters. How about VE3FJB, a remotely controlled station, of which the author has some familiarity? My station consists of wire antennas usually excited by 100 watts, but I gradually have automated control and logging based on what I have learned. I still dream, though, of the tall tower!

One of my interests is propagation. Working a contest is a wonderful educational medium for this topic! The book learning is enlivened as I witness one area of the world after another "lighting up" for contacts to/from my QTH. The other side of the coin is to use propagation prediction tables or software to estimate when it will be worth trying to work a particular target. As a long-in-the-tooth HF operator, it always is amazing the surprises that I find on other bands while my focus might be on the usual 20-15-10 metre bands. It gives food for thought about modifying the station to better cover 160-80-40.

You, of course, know that one of the rationales for the Amateur Service is its utility in times of need: when other communications fail and when agencies need added support.

There is no substitute for emergency exercises, let me make that clear. Contesting though, comes a close second behind simulations as to readiness.

Can your equipment last for 12, 24, 36 or 48 hours of intense operation? Can you? Do you know how to coddle your hardware and yourself for such a marathon? Practice proofs the matter.

Well, that's it: my reasons for contesting. I do not try to win. I do try to gain from the experience. I thank all those true contesters for helping me along the road!

The next time you feel that a contest is a waste of bandwidth or a weekend, give the event a try. It might turn out to be your calling. It certainly will be informative. Besides, any hamming time is a good time.

Bill Karle, continuously licensed since 1957, has held calls K8QGT, VE2ECW, briefly 4S7KZG, until recently VE4KZ, and now VE1YY. Bill is a Certified Emergency Coordinator. His Amateur Radio interests include propagation, antennas, digi-modes, and DXing. He is retired following a career in international consulting, university teaching and university administration.

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YL NEWS AND VIEWS

OUR YL PROFILE: GRACE BYRNE, VE7IGB

Well, I was informed by our great editor that this issue is the Christmas Issue. My goodness time sure does fly when one is having fun in the sun. Saskatchewan weather was cold and wet in the spring, wet for a lot of July – and then August came and we got serious heat. As a result, the gardens really didn't do great, my potatoes were slow, and although I got a good crop, it was not as much as I expected. The beet crop was there shall we say, and all I was able to can was six pints. Mind you I had a lovely crop of beet tops, which I used to make beet rolls with rice. Will tell you all about that recipe if you wish to email me for it. It's yummy and as I like to say – positively no calories.

Well this next YL is a good friend of mine, and has been for a number of years. We met because of our hubbies both being in the military. Ladies and Gentlemen, I would like you to meet Grace Byrne, VE7IGB.

Grace was born and raised in Vancouver. Her parents came to Canada from England in 1912, bought a house in Vancouver in 1916 and Grace says she stayed there until she got married in 1957. She is a true Vancouverite. (I think that is the appropriate term).

Grace went to school at William Van Horne for Grades 1-8 and then on to John Oliver High School for Grades 9-12. After school she worked for the Workers' Compensation Board (WCB) for a year in Medical and then she decided to change jobs and joined the Fire Marshal's Office, which is a part of the Provincial Government.

Grace met her second husband Bob in 1972 and they were married in 1973. She then moved to Penhold, Alberta. This was Grace's introduction to moving and that is when she really started travelling. Ok, I must tell you that Bob, VE7EZI, was in the Royal Canadian Air Force (RCAF) and his trade took him to a lot of places. So Grace would be here or there for a couple of years, pack up and move again. It's such a wonderful life and I speak from experience as my OM was also in the RCAF. We met in Cold Lake, Alberta.

Bob was and still is Grace's Elmer. He has been an Amateur and a good one since 1978. Grace realized, as most of us YLs do, that if you can't beat them, join them. So in 1992 when they moved to Abbotsford, British Columbia from Winnipeg, Manitoba she found that there was a course being held for Amateur Radio.

She decided to take the leap and although there were four other ladies who took the course with her, she is the only one who is still operating. When she passed her course, Bob was thrilled and he bought Grace her first mobile Icom-2A and she says even the cheat sheet was complicated.

She thought it would be better to have a radio in the car when she was travelling to the States to take a porcelain doll class and also ceramics. The trip was to Shelton, Washington on the Olympic Peninsula. She stayed with a friend and they would go to classes in Tacoma. Coverage was great to Bellingham with Bob and from there she was on the Evergreen network so she had complete contact at home while she was travelling.

Grace told me that her best contact on the radio was when she was travelling to Washington on a course, she came in contact with a long-distance trucker who had gotten himself lost from the freeway and she was able to help him get to his location. That was a great feeling. She says that knowing the area really helped.

She later found out that her OM was listening to her give the trucker directions. Bob said it was clear and concise. So she was thrilled that he had been listening.

Grace says that her time spent working for a

police dispatcher also helped her. That is something that most of us don't realize: instructions must be kept clear and simple and straight to the point. Good job Grace.

Grace belongs to the North Okanagan Radio Amateur Club (NORAC) and she is the Treasurer. She says that clubs are getting smaller and members should get on the Executive and make things work.

Everyone is into their own thing, not like when Bob started the hobby. Technology progresses so very fast these days. When Grace first started she worked with Pack Radio in Chilliwack and then again in Abbotsford and that was fun. It took forever to receive a reply, but eventually it would arrive, not like now when you try to go on and you have a "blue screen", yuck.

She was involved with a great group of YLs in the British Columbia Canadian Ladies Amateur Radio Association (BC CLARA). They had many great conventions and although they were only once a year they were lots of fun.

Grace said, "the one in the Shuswap/ Okanagan in Salmon Arm was fantastic. Three of us from the area were in charge and it was the first one to have hands-on to build antennas – now that was great fun. It was so sad to see it close down as there was a lot of work that went into the group, but as people age, priorities change. Good memories as in all my moves with the OM, some better than others but it is always good looking back.

It's been a crazy road, with the OM being military and travelling the western provinces. He has always been a mentor and is still doing it. The young people really don't know what they are missing. Texting is not the same as actually talking to people all over the world. Going down the highway with the rig on and talking to a business man in Japan was great. Things move on, some better, some worse but staying positive is important. Life is too short, and that one we may have no control of, so just enjoy it while you can and help anyway you can."

Thank you Grace. You tell an exciting story.

Well folks as I said at the beginning, this is the Christmas Issue so on behalf of all the YLs out there, and from my house to yours, I wish you all a Very Merry and Blessed Christmas and we will catch you in 2015.

33, 73, 88 or whatever the case may be...
Val, VE5ACJ

TCA

HELP WANTED

Section Bulletin Manager

The Ontario East Section is in need of a **Section Bulletin Manager** as soon as possible. This is a very important service for the entire Section – both for Clubs and ARES groups alike – since this is how the latest news information about Amateur Radio and/or Section announcements are produced and circulated in Ontario. Currently, the Ontario Bulletin Service Manager, Brad, VE3RHJ, needs someone to send bulletin contributions originating from this Section. Most of the other Ontario Sections have their own Section Bulletin Manager in place and we need to have one for this Section.

I need someone who is reliable and available to write the Ontario East Section's weekly bulletin. The bulletin will then be sent to me for approval before being sent to the Ontario Bulletin Manager for inclusion for province-wide circulation. It will then be read over the air each week by club or ARES group nets by all appointed Official Bulletin Service readers.

Successful candidates should have some experience writing media or similar reports and also be an Amateur Radio enthusiast who likes to seek out items that are of interest to all Amateurs. If you would like to be of service in this capacity, please contact me directly and I will be happy to discuss this with you.

In addition, the Ontario East Section Manager is looking for two candidates to become **Assistant Section Managers**: one as the Section **Affiliated Club (Liaison) Coordinator** and one as the Section **Technical Coordinator**.

The **Affiliated Club (Liaison) Coordinator** management role will be to assist clubs with internal administration advice where appropriate and consistent with the Affiliated Club President's Workbook, assist club's with keeping club contact information current on the RAC website, promoting joint club activities and programs across the Section, and encouraging clubs to join RAC as an Affiliated Club. As the Club (liaison) Coordinator you will seek to promote and work with each club liaison person in each club within this Section as each club liaison volunteer is identified and comes on board.

The **Technical Coordinator** management role will be to facilitate club and local Technical Specialist involvement in RAC technical committee activities, to facilitate responses to Industry Canada papers and enquiries, and to assist with questions of spectrum management or interference.

THANK YOU FOR 40 YEARS OF SERVICE!

On September 11, 2014, Ian Snow, VA3QT (representing Ontario South Director Rod Hardman, VE3RHF) presented retiring Allé Brander, VE3CWL, with a Certificate of Appreciation recognizing 40 years of service as the Emergency Coordinator of the Stratford and Perth County ARES group.

From left: Christel Ivanyshyn, Emergency Planning Officer, Perth County; Ian Snow, VA3QT, representing Rod Hardman, VE3RHF, Director Ontario South; Myrna Brander, wife of Ryan Maeck, Disaster Management Coordinator, Stratford Branch, Red Cross; and Allé Brander, VE3CWL.

Photo courtesy of Walter Fuhr, VE3NQM, President, Festival City Amateur Radio Club.

"A VERY MEMORABLE ONTARIO QSO PARTY 2014..."

Igor Slakva, VE3ZF

This year's expedition to Manitoulin Island surprisingly asserted itself above its predecessors as a summit of defiant obstructions and feral in all the elements.

Two weeks before the start of the Ontario QSO Party, I called a friend who lives on Manitoulin Island and discovered that there had been massive snowfalls that buried the region in four feet of snow. He also informed me that the constant wind had dropped the temperature to –14 ° Celsius, and that my usual dedicated area for setting up antennas was impossible to use. The only redeeming news was that there was a tractor at hand, which could be used to clear the path to my cottage. I had my fingers crossed that perhaps a compassionate deity would clear the foul weather by the end of the fortnight, but unfortunately this was not the case during my week-long stay on Manitoulin.

I spent most of the week in snowshoes, which not only become standard footwear but also an extension of my appendages. Failure to embrace this sudden change in lifestyle meant that you would, at least once, put your faith into a particularly solid looking path only to fall straight through, with your lower body suddenly swallowed by several feet of snow.

And so during the course of the week, wearing snowshoes, I was installing phased verticals on 40m and 80m, Inverted Vee on 160m and assembled Spider Beam on high bands. I would like to particularly note that the "half a person worth of snowfall" made the installation of the antenna an incredibly difficult task to accomplish, which I somehow managed with only my own two hands.

Finally, at the end of the week, I was graced with the arrival of my friends Patrick, VE3HZQ and Igor, VE3KAO. With our labour combined, we managed to raise even more antennas – the G5RV multiband antenna, the Cushcraft AP8A, and two beverages 160 metres each – and we erected a Spider Beam antenna at a height of 10 metres.

Looking back, the Ontario QSO Party was great. I especially enjoyed the many hours of EUs and Ws pileups on 40-20-15 metres. Multipliers on the low bands were collected mostly by Patrick, VE3HZQ. The final hour was also remarkable as Igor, VE3KAO, worked a lot of W6s on 10 metres CW.

Despite the miserable weather and the difficulty setting up, we succeeded in making 1,638 QSOs.

Shortly after the Ontario QSO Party ended, Murphy's Law once again demonstrated the degree to which it is a tangible force to be reckoned with, by raising the temperature into the pluses and starting to melt the mounds of snow. It was unfortunate that I had to put up with difficult weather conditions, but having done so I feel a great sense of accomplishment knowing I got the results through my own abilities and willpower.

I would like to offer my thanks to the W6-clubs; their activity was very helpful. I would also like to thank Max, VE3CCN, for his great help in preparing for our expedition. Lastly, I thank everyone who called us during the Ontario QSO Party 2014 and I hope to see you next year!

For more information on our experiences during the Ontario QSO Party please visit our website at: http://www.va3cco.com/oqp/2014ve3zf.htm

Patrick, VE3HZQ, assembling verticals.

Igor, VE3ZF, installing phasing verticals.

Installation of Spider Beam on Saturday morning.

After OnQP 2014: Igor, VE3ZF, Patrick, VE3HZQ and Igor, VE3KAO.

RANDOM THOUGHTS...

Dirk Moraal, VY1NM
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Tagish, YT Y0B 1T0

Welcome to Hell (Hellschreiber that is)...

I was often told while growing up, that I was headed that way. (My Godfather, an exasperated Archbishop, once thundered that I was probably guilty of every sin but murder. But I assure you, gentle reader, he was wholly mistaken, except on one point.)

With a comical name like Hell, this mode seems useful for giving odd directions to people during a QSO while still remaining courteous without overstepping the bounds of proper Amateur Radio behaviour and procedure.

Amateur Radio has lots to offer – even more so now with the freedom to use digital modes – so I sometimes fear I won't be able to dabble in everything I want to before my own batteries become exhausted.

I am of course, on another quest to find out where I belong in Amateur Radio, and after SSB, SSTV, DX mobile radio all modes, contesting, ragchewing (a favourite), QRP-DX, a baker's dozen of digital modes, not to mention all the busy work tinkering with things that can and should be tinkered with (and avoiding some which should not), I find myself liking the old and the oddball of the hobby.

Hellschreiber was developed by Rudolf Hell, way back in the 1920s. It was used by the German army for field communications during WWII, and that is probably where Feld Hell, the most popular form, may have got its name. I gather it was still in use up to 1988 for land commercial communications. I can remember paper tapes glued to telegram forms. Maybe those were transmitted by Hellschreiber.

I am surprised at the paucity of Canadian Amateurs on this mode. It may be that propagation up my way is not good at times, something I contend with often in the Yukon, but Hell is usually quiet up here. Maybe this will change in the near future as my fellow hams line up to call me and send me QSL cards.

Operating in Hell is simplicity itself. Once your interface is talking to your computer, select the Hellschreiber calling frequency – for example, on 20m, 14063 USB (to 14065 where Hell is), and also 14077 (to 14082 where I found no Hell). Later, you and your buddy can set up skeds on the other bands. You can select a font, such as "feld hell" but you may prefer "fat14" because the thicker darker letters may show up better if the signals are weak. It worked for me.

Your screen should show some wide grey bars filling the space from left to right and bottom to top. Now and then they fail to continue painting, but that is normal. If there is a suitable carrier or activity, it will automatically start again or you might want to adjust sound card RX audio instead. Since there are few Amateurs working Hell, you should call, and call again many times. My strategy is to alternate between monitor and call, which gives me time in between to read a page or three of the latest TCA magazine, until I hear the characteristically pleasant raspy CW-like sounds of Hell. If no words are printing we just slowly turn the radio frequency dial back and forth a bit, to move the cursor over the signal on the FFT until a signal prints. Monitoring includes some roaming, but it is no major chore. It is quite obvious when you are tuned to the signal. It is when the print appears sharpest and darkest.

You could, I suppose, use macros for some functions, such as CQ calls, but Hell is much more interesting and personal using the keyboard. It deserves better than becoming just another BPSK type computer to computer exchange method so try to avoid it. Besides, Hell is not a "real" digital mode, it is more like Facsimile. My Feld Hell software does not keep a record of the transmission so I keep a pad and pencil handy because I cannot go back and review what was typed, a feature I like about Feld Hell. One can distance oneself from the automated and largely meaningless communications of so many of today's digital QSOs. Lately, there has been increased opposition to the use of macros on the digital bands, as we become more experienced. I believe it is all part of the evolution of the hobby.

The easiest setup I have seen and used so far is with Fldigi software (free off the Internet) and a Signalink USB interface (the price is quite reasonable but you do have to buy this one!). The pair have worked so well for me that I think I have never had to adjust much, just the three little knobs on the interface itself. Once the two cables have been connected between radio, interface, and computer, set up the interface. There are 10 graduations around the little Signalink knobs. I begin with the TX at 15, the RX at 25, and DLY (Delay) at half, or 50. The delay is very important because this is the "hang time" for the signal. Without it you will probably just be transmitting vertical bars. It also quiets the clickety clack of the interface which is your warning to adjust hang time, (i.e., Delay). Listen in, and fine tune as needed.

With my rig, the radio itself would normally be set to full power, with SWR adjusted for the lowest I can get with the transmatch (ATU). Call up the ALC adjust function for your particular radio (the Automatic Level Control that governs the audio drive levels). Start with the interface TX knob set to 0 (zero) and transmit some text preferably into a dummy load as you slowly increase TX gain with the interface TX knob, until you get an ALC indication. Then back off till you observe no ALC indication at all. This should show the maximum output power you can get with those settings.

Reducing the interface TX level even more lowers the output power, as you can see if your SWR and power meter is set to PEP. This also works when setting output power for BPSK and other narrow digital modes, which do not require much power. We must remember that excess power tends to wipe out adjacent transmissions. Keep in mind that some brands of radio can go non-linear after only 50% output level so they need to be adjusted accordingly.

Some, hopefully friendly, on air assistance is a big help. With my rig, a Yaesu, the interface controls the signal output power so having the radio set to full RF power is not a problem. The interface sets the power as we lower ALC indication. All neat and simple. However, don't trust everything I say. All his applies to my setup, but yours is probably different.

Hell requires some degree of power at least if you listen to some US stations. One distant station running 800 watts on a coast to coast QSO printed good clear text, while another station, much closer to me, was fainter with 100 watts. This almost had me believing I could never operate in Hell with my low power and QRP rigs. However, I have made contacts with 50 watts to stations in Newark, New Jersey and Columbus, Ohio, and Virginia, (I think her name was) – 4600, 4200 and 4650 kilometres away from my QTH – and all stations and myself were running barefoot. All four of us used modest antennas and felt no need to buy shares in the local Hydro Company. Significantly, CONDX WR GD.

How do we maximize our chances of success with low power? I found a few simple steps that seem to help. Get that SWR all the way down. Adjust the ALC so it doesn't show. I tune both the radio and the waterfall to exactly the same frequency in use. I dunno why. It seemed to help. Select the time of day to make calls. For example, as I wrote this column, 20m was best in the Yukon from 1800Z to 2200Z. Then improve the antenna system. I don't mean go out and buy a huge beam, though that would surely do the trick, just clean up what you have. Check solder joints and connections for corrosion, replace the old RG-58 coax with RG-213 or similar size coax. Clean up any common mode problems with coiled coax chokes. My own rigs at present are humble, Yaesu 897/p, 857/m, a very attractively made Yaesu ATAS 120 tuneable mobile antenna, plus an equally well made Comet CHV-5X sub-compact dipole at 12m. It is only four metres long from tip to tip, and so far has been very good but not always as good as a full size two-element singleband antenna at the same height.

A vertical can have the ground improved (see ON4UN's *Low Band DXing*, chapter 9, section 2.1) by ensuring that the far tips of the 0.25 λ radials are no more than 0.015 λ apart. The circumference of a 20 metre 0.25 λ radius circle is 2 x π x 0.25 = 1.57 λ. 1.57 λ divided by the 0.015 λ spacing is 104 radials. Just lay down enough radials to meet these criteria and you will be within 0.1 dB of maximum gain.

If we use half fewer radials and space the tips 0.03 λ apart, we still only lose an insignficant half a dB, assuming average ground. Or consider four tuned elevated radials. This might not apply in desert terrain. There you may be better off with a Yagi. If you use a wire dipole, consider running a parallel wire behind it as a reflector. This might more than double your forward power. Best of all it costs maybe nothing.

Purely as a starting point, try a wire separation of about 0.1 λ apart (2.1 metres (7 feet) apart at 20m), with the reflector about 15% longer than the driven element. This is an experimenter's hobby after all. Use a choke coil made of eight turns of 2.44 metres (8 feet) of coax placed at the antenna feedpoint. No secret here as to why you should get much better RX and TX from your rig. You have just made a 2-element Yagi-Uda (wire beam) antenna.

These improvements should make a difference. Of course, the better the antenna the better the performance.

So what is next for me? My next goal is going to be Hell on QRP.

You might care to look up the Feld Hell Club on the Internet, if you have access to it. They have a section on Hellschreiber history and interesting information. And they will welcome you as a member!

I hope to see you there. HI!

TCA

An Arduino-based knob box for SDR

Michael A. Stott, VE3EBR

BACKGROUND

I had been out of Amateur Radio for over 25 years but I had developed a professional interest in Software Defined Radio (SDR). This led to a resurrection of interest in ham radio and the purchase of a Flex-5000 SDR as a "place to start". The Flex-5000 works great and I got immediately hooked on the panadapter and the excellent digital filters. I set up a complete software suite including many digital modes programs such as BPSK31, JT65A and the impressive DXLab suite of programs.

I rapidly discovered that:

1) I needed lots of screen "real estate" to accommodate all of the resulting windows. This required at least two monitors for an extended desktop.

2) I needed a software equivalent of a wiring diagram to keep track of which package was talking to which and so on.

3) Software Defined Radio introduces a "latency" delay in the TX or RX paths, the amount of which depends on your CPU speed, filter sharpness settings etc. When using SSB and monitoring your own transmission in the headphones, the delayed copy of one's own voice can reduce one to talking gibberish if the delay gets more than ~50 to 100 msec so some means of switching off the monitor would be conducive to verbal coherence.

As a result of setting up the multi-monitor display I then discovered that while I could control all of the functions of the SDR with the mouse, when I was in a hurry I could never seem to find the mouse pointer hiding in all those windows! This led to lots of frustration when trying to do something simple like changing the audio volume quickly. I wanted some knobs which would always be in the same physical location so I could access them easily.

I had purchased a companion tuning knob to go with the Flex-5000 and it had an extremely smooth and free motion. So smooth and free in fact that the slightest accidental touch would disturb the radio tuning with bad results – especially in digital modes. I therefore wanted a tuning knob with a nice "feel" but with positive detents so I could feel how much I was tuning the radio and it wouldn't move accidentally.

Figure 1: The exterior of the VE3EBR SDR Knob Box.

I then discovered that the DXLab suite could send a steering command to my Yaesu G-800DXA rotator based on the call sign of the station I wanted to work. However, the interface box (GS-232A/B) required to connect from the computer to the rotator control unit seemed jaw-droppingly expensive.

Thankfully, I discovered an article by K3NG which describes an Arduino-based interface/controller for the rotator and I decided to use this design as the basis for adaptation to my task.

CONSTRUCTION

Eventually I got spurred into action and I decided to build a box on a zero-cost basis, i.e., designing around parts which I already had. I rummaged around in my junkbox and discovered a die-cast aluminum box about 4¼" x 2¼" x 1" which happened to have eight ¼" holes already drilled in it.

Coincidentally, it was about the right size to house an Arduino board, provided it is the type with a mini-USB connector such as the OSEPP version.

I also found three small potentiometers, a couple of toggle switches (all with ¼" mountings) and a rotary shaft encoder with 24 detents with a nice silky "feel" to it (Panasonic EVQ-VBMF0124B/ Digikey P80685-ND).

I allocated the three potentiometers to Audio gain, RF Gain (AGC-T on my Flex 5000) and RF drive level and arranged them vertically to correspond to the control positions on the Flex-5000 "panel".

One of the toggle switches had a centre-OFF position so I allocated it to TX/RX/Tuneup and the regular switch to monitor on/off. I allocated the mechanical shaft encoder to RF tuning frequency and I made the potentiometer knobs from 3/8 diameter aluminum rod drilled to 1/8 and with 4-40 grubscrews.

This filled six of the eight holes in my box so I decided to fill the remainder with red and green LEDs to show which direction the rotator was turning and I mounted these in the box panel using rubber grommets. The selection of type and number of controls is pretty arbitrary and one could accommodate almost any combination within the limits of the Arduino (six analog inputs, eight digital I/O, six digital I/O/PWM_analog_ output).

Photographs of the unit are shown in Figure 1 and Figure 2 and the schematic is shown in Figure 3 on the next page.

From the photographs you can see that the construction is what can politely be described as "ugly but functional".

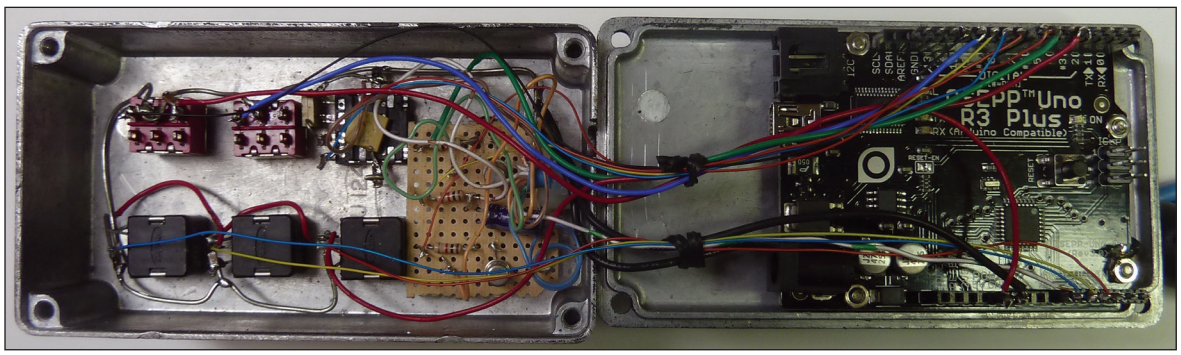


Figure 2: The interior of the VE3EBR SDR Knob Box.

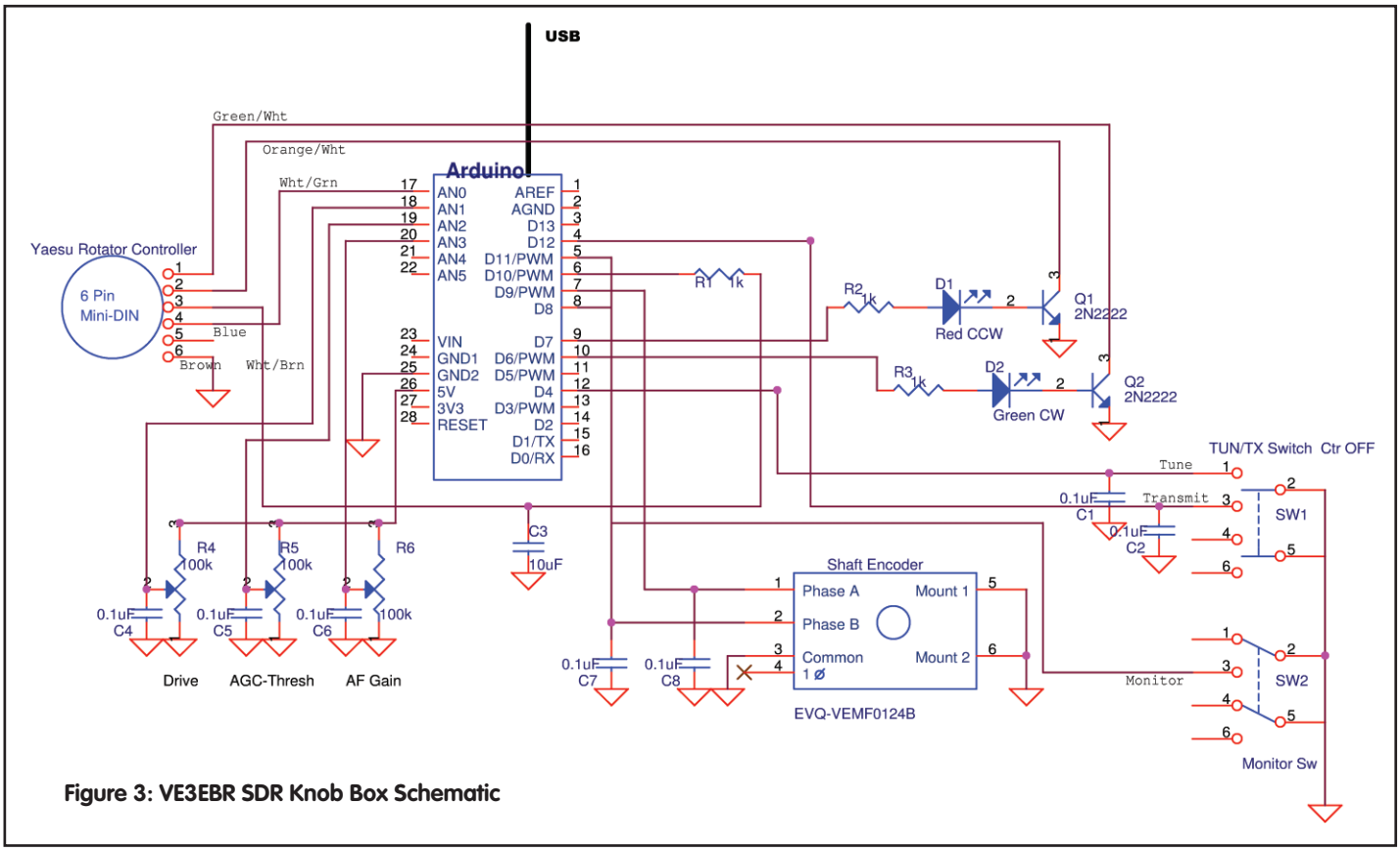


Figure 3: VE3EBR SDR Knob Box Schematic

The rotator driver transistors and other discrete parts are mounted on a scrap piece of perf-board and the wiring is just soldered in place. Loose header pins are used to connect to the Arduino. If I were doing it again I'd make a proper circuit board to mount the discrete parts and a nice wiring harness. The labels were made by laser-printing the text in a white font on top of a black surrounding box. The labels/backgrounds were then overlaid with clear scotch tape and carefully trimmed to size with sharp scissors. The trimmed labels were attached to the unit with UHU glue stick.

A few comments on the schematic are in order.

1) The rotator controller portion using 2N2222 driver transistors and variable speed control is lifted straight from the K3NG design. If you don't have a remote-enabled rotator control unit, you could instead use an Arduino relay board (or "shield" in Arduino-speak). These can be purchased on the Internet for a few dollars and will switch higher currents. This would enable an enterprising Amateur to control a slightly modified standard (i.e., local control only) rotator control box.

2) I put red and green LEDs to indicate which direction the rotator is moving. I later found I never actually looked at them so you could easily omit them but I had two holes to fill!

3) The whole unit is powered from the Arduino USB connection.

SOFTWARE

The software for the unit was created by grafting on the code for responding to the potentiometers, switches etc onto the K3NG rotator controller code. Figure 4 on the next page shows a flow diagram for the knobs portion only.

When the unit is switched on, the program stored in the onboard flash memory of the Arduino loads automatically and executes. It runs all the setup functions once and then begins a continuous looping process as shown.

The functionality is quite simple. The Arduino reads the status of the various knobs and switches and compares the most recent state to the previous state. If something changed it outputs a command to the SDR via the virtual serial link, otherwise it does nothing and continues looping around.

The "C" Language code for the knob portion of the box and the complete integrated combo unit with rotator controller can be obtained from the RAC website at http://wp.rac.ca/tca-content/. The code is compiled using the free Arduino software suite which is downloadable from arduino.cc.

Potentiometers can be a bit "scratchy" and A/D converter readings can "dither" a little around an average value. In order to compensate for these factors I found it necessary to smooth the potentiometer analog outputs by means of smoothing capacitors to ground (0.1 µF) and to put a little software "dead band" into the "has it changed" decision. In other words, the A/D converter output has to change by more than two counts in order to register as a change and the generation of a message to the SDR. Similar issues pertain to the toggle switches which I found to be occasionally scratchy while switching. Again a 0.1 µF capacitor to ground seems to do the trick.

There are many samples of Arduino code on the Internet which claim to track the output of shaft encoders. Most of them are quite susceptible to contact bounce and scratchiness as the control is rotated. I found it necessary to: (a) smooth the shaft encoder outputs with 0.1µF capacitors; and (b) utilize a state machine conversion from the shaft encoder signals to a tune up / tune down command.

The state machine code was borrowed from Buxton (http://www.buxtronix.net/2011/10/rotary-encoders-done-properly.html) which, by the way, contains a typo in the code which is corrected by a commenter ("Adrian", August 4, 2012).

The code stored on the RAC website has had the typo corrected. One other point regarding the shaft encoder is that the state machine can be set up to track complete cycles of change (i.e., a complete detent cycle) or to produce an up/down output at the half cycle points. I preferred the half cycle mode. I output a 50Hz up/down command every half-detent and so, when the shaft encoder is at a detent point, the tune frequency is at a multiple of 100 Hz. I found this adequate for SSB and digital modes although it might be a bit coarse for very narrow-band CW.

STATION INTEGRATION

The issue of integration of the Arduino knob box with the rest of the SDR station software was surprisingly tricky. When I first started using SDR I discovered that the SDR software communicates with external programs such as BPSK31, FT65 and so on by means of virtual COM ports and Virtual Audio Cables.

I found it quite challenging to keep a mental track of what connected to what so I drew up a station software "wiring" diagram as shown in Figure 5 on page 48. When using an SDR such as the Flex-5000, a must-have piece of software is DDUtil, currently at V3.x. This free software provides a host of interfacing facilities between equipment such as Linear Amplifiers, rotators and digital modes software and the Flex-5000 CAT computer control port, Com4 (a virtual port) in my case.

The "wiring" diagram is surprisingly complex given that all the software modules shown reside in the same computer!

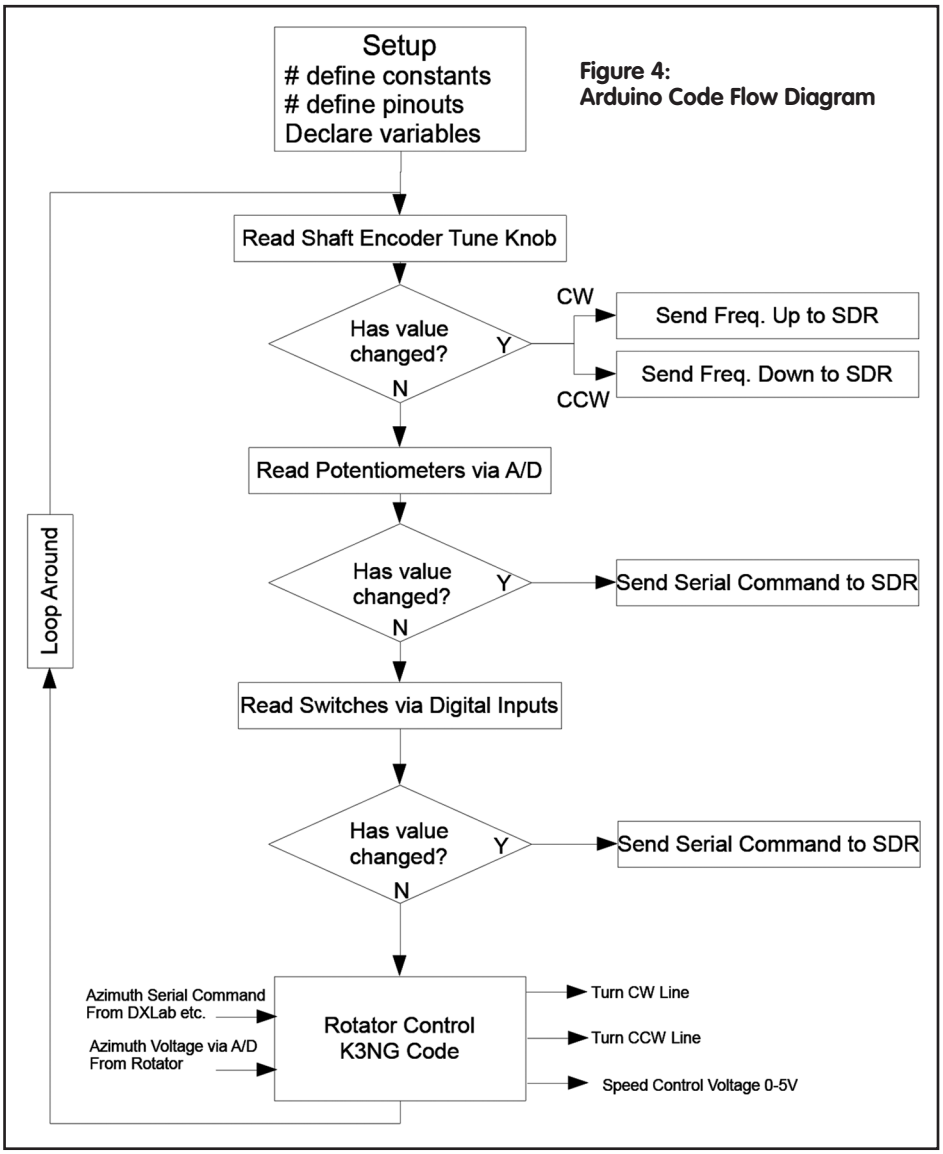


Figure 4: Arduino Code Flow Diagram

The connections to the Arduino knob/rotator box are shown at the lower right of Figure 5. Beam steering commands come out of the DX Lab Suite (DX_View module) and emerge via a (virtual) COM port, in my case COM14. They are created within DX_View to conform to Yaesu command set which can then be interpreted by the K3NG rotator code.

In my setup COM14 is one end of COM port Pair4 set up with Com0Com (downloadable from com0com.sourceforge.net). The other end of this pair (Com15) is connected to a companion module, hub4com which is downloadable from the same URL as Com0Com.

Hub4com acts as a kind of virtual box which houses a number of Com ports and it can be set up to pass serial data to/from just about any combination of them. Having said that, the documentation can best be described as arcane and it took quite a lot of trial and error to come up with code for the configuration shown. The beam steering commands come in on Com14 and exit on Com20.

The Arduino is connected to COM20, a virtual port at the end of its USB connection cable. This port is also used to load the Arduino software from the Arduino compiler which temporarily uses COM20 for this purpose.

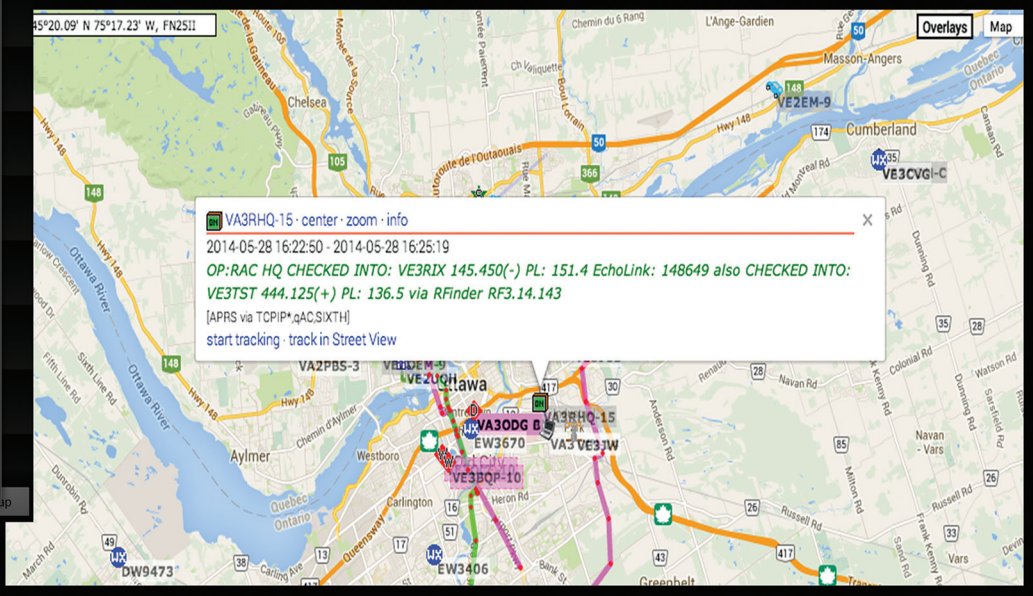
In operation the Arduino generates commands destined for the SDR and these emerge from COM20, the same virtual Com port which is used to feed in the beam heading commands. This outgoing data however needs to be sent to the SDR and not to DX_View, which is where the beam heading commands came from.

The Hub4com is therefore set up so that traffic coming in on Com15 comes out on Com20, whereas traffic coming in on Com20 comes out on Com22.

RAC's repeater directory now Social on Apple and Android! QSY your CAT enabled radio using RFinderPi! The features keep coming. Look for Blackberry this fall...Get RFinder on your Apple or Android today!

RFinder - The Official Repeater Directory of RAC. Support RAC by choosing RFinder as your repeater directory.

Find RFinder in Google Play, the Apple App Store on your iPhone/iPad/iPod Touch or on the web at www.rfinder.net for only $9.99[usd]. Use RFinder in your favourite radio programmer such as RT Systems or CHIRP or access it at http://web.rfinder.net. New Social functions let you post your postion and repeater you are monitoring to APRS. Your net control will love it! Finding hams monitoring machines has never been easier!



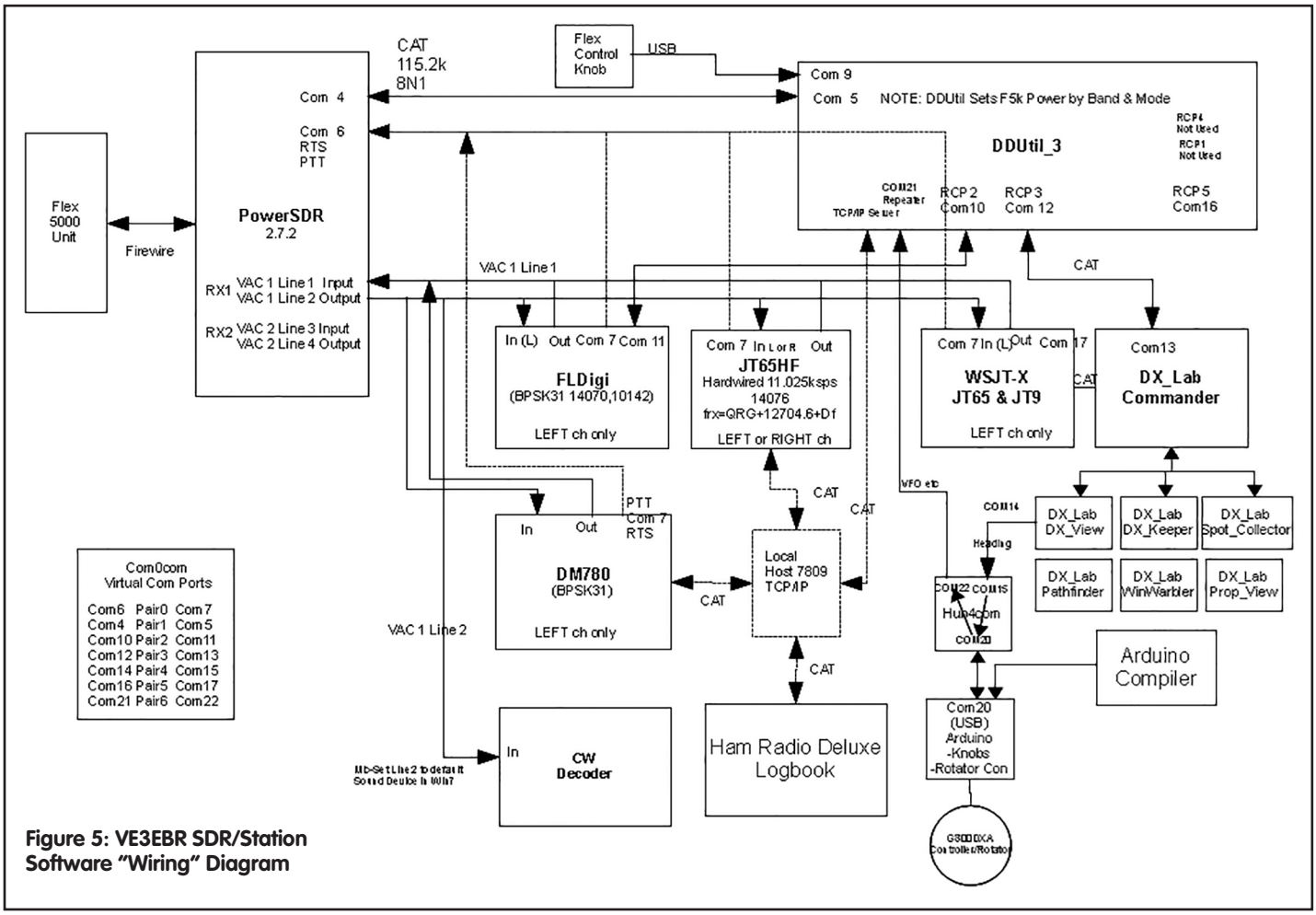


Figure 5: VE3EBR SDR/Station Software "Wiring" Diagram

A DOS batch file (hub4com.bat) is used to set this up and the batch code required is as follows:

hub4com --baud=9600 --route=1:0 --route=0:2 --octs=off \\.\COM20 \\.\COM15 \\.\COM22

The SDR commands coming from the Arduino knobs and switches therefore follow the following path:

Arduino-Com20-Hub4com-Com22-ComPair6-Com21.

Com21 is set up in DDUtil_3 as a simple direct repeater and it then passes the SDR commands to the SDR via the SDR CAT port, Com4.

SUMMARY

I have found the knob box to be a great operating convenience with my Flex-5000. I use it all the time.

I do coarse tuning by clicking the mouse on the panadapter display and finetuning with the knob-box tuning knob.

Similarly, I use the three gain control knobs virtually exclusively – not because I'm an oldtimer longing for a knob to twiddle but because it's easier to find them.

I could have used more shaft encoders rather than potentiometers but I preferred the "absolute" nature of the potentiometer output rather than the relative or incremental output of an encoder.

Note: *Go to http://wp.rac.ca/tca-content/ for the "C" Language Code.*

Michael Stott was first licensed in the United Kingdom as G3MJU in 1958. He came to Canada in 1969 to be involved in the early days of the Canadian space program, initially at Telesat and later as a founder of Canadian Astronautics Ltd. (CAL Corp).

He has been involved in many Canadian and World "Firsts" in space, radar, communications and radio.

He was licensed as VE3EBR in 1969 and is mainly active on the HF bands using SSB and digital modes.

Mike is an inveterate builder, developer and experimenter.

He enjoys messing with antennas, SDR and software development.

His other interests include flying his plane and sailing his boat.

TCA

RAC CANADA WINTER CONTEST 2014 / CONCOURS D'HIVER DU CANADA RAC 2014

In December each year, Radio Amateurs of Canada (RAC) sponsors the Canada Winter Contest. Amateurs all over the world are invited to participate.

Contest Period: 0000 UTC to 2359 UTC December 27, 2014.
Next year the contest will be held on December 19, 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 points 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 *** – Pending new sponsor
- 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 Winter Contest a special trophy is awarded for the highest Single Operator (no power classification) Foreign Entrant – **Russ Coleston VK4XA Memorial by Alan Goodacre, VE3HX**.

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

En décembre de chaque année, Radio Amateurs du Canada parraine le concours d'hiver du Canada. Les amateurs du monde entier sont invités à y participer.

Durée du concours: 0000 UTC à 2359 UTC le 27 décembre 2014.
L'année prochaine, le concours aura lieu le 19 décembre 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 points QSO de toutes les bandes, multiplié par le nombre total de multiplicateurs provenant de 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 *** – En attente d'un nouveau commanditaire
- 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 Russ Coleston VK4XA 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 **January 31, 2015**. Electronic entries will be confirmed by return email. Send email entries to: **canadawinter@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 Sam Ferris: ve5sf@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: Ils 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 janvier 2015**. Les soummissions électroniques seront confirmées par courriel. Envoyez vos inscriptions par courriel à : **canadawinter@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 Sam Ferris : ve5sf@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!

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

FRESH ON THE AIR

– ADVENTURES FOR THE NEW AND BEGINNING HAM

Choosing a call sign is probably the best part...

You might think that the most satisfactory part of getting your Amateur Radio ticket is passing the test and knowing that you are finally a Radio Amateur. But really, when you think about it, you're not *officially* an Amateur until you have your call sign. So choosing your call is probably the best part of working hard towards your ticket. And why would this be? Well, many of us in the hobby choose our call signs to represent something about us.

Being a new Amateur, you want other operators to remember your call, as your call sign is synonymous to your name in our hobby. In fact, most operators will recognize and remember your call before they will your name. It's just human nature and the way it works in Amateur Radio. Your call is your moniker, your personality, so choose it wisely.

Many new Amateurs like to choose their call sign to represent their name. For instance, Janice Anne Walawitsky may find that VE5JAW* is available for a call. Peter Bennet Sr. may want VY0PBS. Martin Leiberman may want VA3MRL to represent himself and his wife Rachel. Or Wilber Miller may want VE1TBK because his friends refer to him as "The Big Kahuna".

You may want your own call to represent your occupation or another hobby. A call such as VA6DIG could mean you are either into digital communications or that you might be a construction worker. A police officer might want the call VO2COP. A dairy or cattle farmer may find VE8MOO amusing. VA4CFT might be the call sign of someone who does crafts.

I love classical music, especially Baroque, and my favourite composer of all time is Johann Sebastian Bach. So, for my call sign, I chose VE3BOC, with BOC pronounced "bawk". I know, I'm flirting with the realm of personalized licence plates that really stretch the letters to represent words. But it was the best I could come up with.

Remember that you can only select your call from available ones not already assigned to someone. The call signs used as examples in this column are unassigned at the time of writing. With many call signs still available, you should have good success in finding a call sign that expresses your personality and makes you memorable in the minds of other Amateur Radio operators.

SF20 LOW PROFILE HT DUAL-BAND ANTENNA

Many new Amateurs, and even long-timers like myself, don't like the long stock antennas that are becoming more common on modern HTs and want a low-profile antenna that works rather well. I've recently been experimenting with a new handheld antenna for my VX-6R HT that I actually kind of like, as it gives the best balance between efficiency and low profile.

The SF20, which I believe is an alternate model number for the Nagoya NA-810 though other manufacturers have been listed for it as well, is a dual-band 144/440 MHz handheld antenna only 7.5 cm (2.95 inches) long. This makes it much shorter than a stock antenna but slightly longer than many single and dual-band micro-stubby handheld antennas. Gain is rated from several sellers and sources to be anywhere from unity to 2.15 dB and handles up to 10 watts of power.

The design is quite different over many other similar antennas in that it is extremely soft and flexible. This means that whether wearing your radio on a belt, carrying it in a pocket, or using it in a rough and physically demanding outdoor environment, the antenna seems to be able to take a good deal of abuse being banged or bent repeatedly. You'd think being this soft, the antenna would be as worthwhile to use as a dummy load. Not so. Transmit and receive performance is nowhere near as good as the stock antenna, or a single-band short or normal stubby design. Having a short design profile does reduce performance quite noticeably. However, when compared to many other micro-stubby dual-band HT antennas, the SF20 outperforms them all.

The city I live in has one club repeater in the northern area of town and several local repeaters located on a hill northeast of the city. More distant repeaters are located in areas south of the city. With my stock VX-6R antenna, I can hit all these repeaters well. With two dual-band micro-stubby antennas, specifically a Diamond RH-3 and a generic cheap dual micro-stubby, I can only hit my local repeater and my signal is weak going in. Neither micro-stubby performs well at all.

The SF20 lets me hit my city repeater, all but two of the repeaters northeast, and two of the repeaters to the south with a rather decent input signal. This isn't bad at all and allows me to do my routine communications on the two repeaters I use without a longer antenna that is cumbersome and seeming to always get in the way.

For emergency or longer-distance communications, you will be best to use the stock or a higher-gain antenna. But for local repeaters, you should be able to hit them with the SF20 without any problem.

Not only does the SF20 come in black, grey, blue and red colours, but it is also available in BNC, SMA female and SMA male connectors to fit most of today's Amateur handheld radios.

Transmission Tidbit:

"Never underestimate the power of the dark side of an electromagnetic force." – Dart Baker, Dark Lord of the Sssssssss.

What unique features do you like and use on your radio? What bells and whistles do you wish Amateur Radio manufacturers would put on rigs? If you could have the ultimate Amateur Radio handheld unit, what would it look like, how would it work, what fantastic things would it have and do? I'd like to know your thoughts on this topic. Write me via the magazine; email me at phillipjboucher@gmail.com or via my website at www.phillipjboucher.com. It's here! It's here! "The Almost Complete Guide to Yaesu's VX-6R" is now available in PDF for $14.95. Visit http://www.phillipjboucher.com to order. It's also available in Epub at Amazon Kindle.

TCA

MY MOBILE/PORTABLE VERSION OF A RADIO SHACK

"I could call this unit a 'Ready Box', a 'Toy Box', or certainly a 'Fun Box'. In any case, it is my mobile/portable version of a radio shack." – Maurice-André Vigneault, VE3VIG/VA2MA

Since I'm limited at home in putting up antennas, I do most of my operating while mobile, on expedition or deployment, or doing special events.

I have been experimenting with different configurations for a mobile setup and when I saw Alain's Ready Box on the Manotick Amateur Radio Group website (http://www.ve3rix.com/), I thought that would be the ideal of a setup for me.

Alain's box is a rather large box and it houses many radios and peripherals. It is a box manufactured by SKB Cases (http://www.skbcases.com/) who specialize in sturdy cases to house musicians' amplifiers and sound control units in 19-inch wide racks.

I only needed room for two radios and an antenna tuner but weight was a major consideration. Alain's box was a six-rack unit with the possibility of mounting six 19-inch racks, with each rack space a little less than two inches high and a depth of 17 inches. For my purposes I needed something smaller.

After scouring the Internet in search of the ideal box, I finally picked an SKB case with only four racks, a height of 10 inches and a depth of only 10 inches – enough to fit the steel shelves. It had to have a front opening and a rear access panel. Instead of ordering my case from the US where SKB Cases are located, I got a better deal by ordering from Production Cases in Stittsville, Ontario. The store name for the case is the SKB 4U Shallow X-rack case.

I ordered two metal shelves, the Raxxess Universal Component Rack Shelf, from Guitar Centre in the US. I also ordered the RigRunner 4005 from Radioworld, and it can deliver up to 40 amps total through five outlets and is available with top mounted Anderson Powerpole connectors. I also needed several Powerpole cables and I ordered them ready-made from Powerwerx. My friend Joe built two extensions for me.

Assembly started with the bottom shelf. Although this case was meant to be powered by my two 32Ah batteries in the back of the Jeep, I had enough room to house an Alinco 30 amp switching power supply for when AC power would be available through a generator. In the centre, I placed a mini paddle with a magnetic base from PalmPaddle.

An LDG AT-100Pro Autotuner was fitted at the right of the shelf. At the rear, I had room for the RigRunner 4005 DC distribution.

On the top shelf, I incorporated a D-Star Icom ID-880H for digital voice and FM repeaters. In the middle, I installed a Signal Link for digi modes, and to the right I mounted an Icom IC-7000 all-band, all-mode radio.

At the rear of the Signal Link, I put in a speaker from MFJ Enterprises (http://www.mfjenterprises.com/), which happen to be the right size. All items were fastened with nuts and bolts using the units support brackets or Velcro.

I then built a panel with a voltmeter, three switches, and two mono audio jacks.

The switches are used to select the meter On/Off, the #1 or #2 radio, and the speaker or the earphones.

The voltmeter was ordered from ADAFruit (http://www.adafruit.com/) in New York and I was very pleased with the excellent service this company provides.

Upon installing the meter and testing it, I found that the readings were erratic. I immediately called the supplier, explaining exactly what the situation was. Without any argument, they shipped a new meter, free of charge as they knew what the problem was from the way I explained it to them.

To complete the box, I purchased a set of MFJ earphones and an MFJ dual 24-hour clock from Durham Radio in Oshawa (http://www.durhamradio.com/).

I am now in the process of installing two small computer fans to insure proper ventilation.

For operation at night, I installed two LED lamps, one for the dials and one for the log.

This new unit was used on deployment to a friend's house during a contest weekend.

My tuner accommodates two antennas and we had a Windom up in the trees and a Cushcraft R7 vertical on the side of the house. We gave it a good run and it proved to be very efficient and practical.

I entered my "Ready Box" in the Ottawa Valley Mobile Radio Club's Homebrew night in April and I was pleasantly surprised when it won First Prize despite what I thought were some excellent presentations.

In the photo at the top left you can see the station fully deployed and in operation – ready for fun. On the top of the box, you can see my Tablet Nexus 7 launched for PSK31 operation using Droid PSK. At the right is an additional monitor for the IC-7000 small window display. It can be remote for monitoring at a distance.

If you hear VE3VIG/VA2MA Mobile on the bands, please stop by and say hello. Thanks to Alain, VE2AAR, for some good tips, and to Joe, VE3EUS, for the extension cables.

TCA

Bob Nash, VE3KZ
5260 14th Sideroad, RR6
Milton, ON L9T 2Y1
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Email: ve3kz@rac.ca

THE SPORTS PAGE

— THE CANADIAN CONTEST SCENE

SPORTS PAGE INFO:

The contest results provided in this column are courtesy of the Maritime Contest Club team:

Gary Bartlett, VE1RGB
Scott Nichols, VE1OP

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.

Golden Years of DXing

This may be a little "off-topic", as they say on the "Reflectors", but it is certainly true that the chase after DX had a major influence on Contesting, particularly on the "Big DX Contests". These were the days of Danny Weil, VP2VB, Gus Browning, W4BPD, Lloyd Colvin, W6KG and wife Iris, W6QL, Don Miller, W9WNV and Chuck Swain, K7LMU. These are the people that populated DXers logs in the 1950s, 1960s and 1970s.

Danny Weil, with his sailboat *Yasme*, started a trend in 1954 that was followed in large part by all the others mentioned above. VP2VB and K7LMU were both sailors and moved continuously from one rare spot to another. After starting with an activation of all those brand new VP2 countries, Danny finished sailing around the world in 1963. Chuck was not so lucky and was lost at sea in 1966 after teaming with W9WNV on a historic operation through South-East Asia. Gus, W4BPD, was famous for his central Asia treks to Bhutan, Nepal and Tibet. The Colvins visited over 200 countries over three decades. You might want to Google those stellar DXpedition pioneers for more complete histories of their exploits. I had the pleasure of meeting all of these people, with the exception of Danny Weil. It was meeting Don and Chuck that will always stick in my memory.

Don Miller was an exceptional operator and often operated in contests from whichever of the 50 or so countries he happened to be in. In the late 1960s, he and Chuck were invited to meet with the Toronto DX Club, the group behind CanaDX, a popular Canadian DX and contest newsletter of the time. I was then working in Ottawa, living there and commuting back to Toronto every few weeks to the homestead. My good friend, Barry Garret, VE3CDX, was looking after the Toronto house. On the weekend that I was coming back to Toronto I called my house to let Barry know I was on my way. I was rather surprised to hear a strange voice answer the phone, yet somehow familiar. It was Don Miller. Barry had invited Don and Chuck to stay there at my house while they were in Toronto!

BARRY GARRET, VE3CDX/KC7DX (SK)

The news that Barry had passed away this year prompted the recollections of the previous paragraphs.

I met Barry through my work at Collins Radio and Phil Wharton, VE3RE, the Amateur Radio salesman. Barry was living at home with his parents and was already an expert Yagi designer. His passion was collecting Oblasts in the USSR on 20m CW. His QSL exchanges with these operators earned him a visit from the RCMP at one point! He also told me about his ground radial system. One weekend when his parents were away he took up all the sod around the house and laid hundreds of feet of radial wires, then replaced the lawn sod. He was always looking for that extra dB.

Many of you will recall Barry as the Chief Operator in the 1988 Canada / USSR Trans Polar Ski Trek Expedition operating as VE8CDX and 4K0DX. He was a true character and joked about the time his ice island QTH broke apart. My last contact with Barry was some time ago from his KC7DX QTH in Nevada. I believe it was on 6m, a nice surprise. Thank you for your technical expertise, your spirit of adventure and for just making Amateur Radio more interesting, Barry!

100 MILLION POINTS

Contest Club Ontario (CCO), when first established, set up a perpetual contest points accumulation scheme for all its members. A set of some 30 contests was selected which had adequate Ontario activity to make it interesting. The top score of each was awarded 1 million "sCCOre" points with the other participants proportionately less. When 5 million points was reached, a plaque was awarded that had six endorsement spaces where 10, 20, 35, 50, 75 and 100 million points could be displayed.

To the end of 2013, 69 such plaques have been presented to CCO members. For the first time two of the members have succeeded in filling up their plaques, Yuri, VE3DZ and John, VE3EJ. Congratulations from all of us who are still in the hunt!

For more information on this award visit: http://www.va3cco.com/sccore/sccore.htm.

Enjoy the coming months of activity and keep praying for those sunspots!

73, Bob, VE3KZ

TCA

ARRL SWEEPSTAKES CW

Call	QSOs	Mult	Score	Class
VE7CC	1,274	83	211,484	B
VY1EI	1,271	83	210,986	M
VE6EX	1,133	83	188,078	UL
VE3KI	1,079	83	179,114	U
VE5MX	1,018	83	168,988	U
VE4GV	989	83	164,174	A
VE3OI	918	81	148,716	B
VA7ST	882	83	146,412	A
VO1MP	884	81	143,208	B
VE4EA	841	82	137,924	ML
VE3CX	800	82	131,200	U
VE9AA	780	83	129,480	U
VE3MM	743	83	123,338	U
VE2AWR	740	83	122,840	A
VE7XF	730	83	121,180	U
VE1RGB	697	83	115,702	A
VE3TG	690	83	114,540	A
VE5SF	676	83	112,216	A
VE7YU	655	83	108,730	A
VA3EC	616	83	102,256	A
VY1JA	634	79	100,172	B
VE3RZ	609	82	99,876	U
VE3MGY	609	81	98,658	UL
VE3ZI	605	81	98,010	B
VE3GFN	597	81	96,714	A
VE3SMA	545	83	90,470	A
VE3RCN	494	82	81,016	A
VA3MN	459	81	74,358	ML
VE3TA	391	83	64,906	U
VA3SB	391	83	64,906	Q
VE2FK	400	81	64,800	U
VE4VT	366	82	60,024	U
VE9HF	350	81	56,700	Q
VA3KAI	349	79	55,142	A
VE6BMX	344	76	52,288	Q
VE3TW	301	78	46,956	A
VE3EY	303	70	42,420	A
VE3RX	269	76	40,888	A
VE4YU	283	72	40,752	A
VE5AAD	275	74	40,700	A
VE3HEU	247	77	38,038	UL
VE6BIR	233	73	34,018	Q
VO1BQ	235	70	32,900	A
VE3RSA	219	74	32,412	Q
VA3DX	202	80	32,320	A
VE6SQ	230	68	31,280	A
VE7NI	205	71	29,110	Q
VA2ES	218	62	27,032	UL
VE3XAT	159	81	25,758	UL
VE3EJ	175	69	24,150	A
VA7MM	180	62	22,320	A
VE3KQN	179	60	21,480	Q
VE3HG	157	61	19,154	Q
VE4XT	144	64	18,432	A
VA3FN	139	60	16,680	A
VE3CWU	105	73	15,330	ML
VE1ZAC	98	65	12,740	B
VO1HP	115	46	10,580	A
VE9OA	81	51	8,262	A
VE4AKF	88	32	5,632	A
VE2QV	69	37	5,106	A
VE3EP	59	39	4,602	UL
VE7BGP	61	37	4,514	A
VA7HZ	43	38	3,268	U
VE2BWL	48	32	3,072	UL
VA7XB	40	29	2,320	UL
VE3SB	38	20	1,520	A
VE3DTI	25	20	1,000	Q
VE7IO	19	18	684	U
VA7AD	17	16	544	Q
VE3IGJ	19	14	532	Q
VY2LI	13	13	338	A
VE3DQN	11	11	242	Q
VE2GGY	11	9	198	A
VE3CQH	6	5	60	Q
VA3RKM	4	4	32	Q

UKRAINIAN DX CONTEST

Call	QSOs	Mult	Score	Class
VA2WA	306	123	190,281	SO AB HP CW
VA1CHP	311	96	120,288	SO AB LP CW
VE2FK	169	92	74,520	SO AB HP CW
VE9HF	228	55	45,265	SO 20M MIXED
VE3KAO	126	73	42,194	SO AB LP CW
VO1HP	128	61	40,016	SO AB HP CW
VE9AA	140	42	27,762	SO AB HP CW
VE3FJ	116	51	24,072	SO AB HP CW
VE2AWR	82	51	14,892	SO AB LP MIXED
VE9ML	42	31	10,478	SO AB LP MIXED
VE3XAT	42	35	7,980	SO AB HP CW
VE3FH	46	40	7,720	SO AB LP CW
VE2HIT	60	36	7,056	SO AB LP SSB
VE2KOT	30	28	4,116	SO AB LP CW
VE9PLS	18	18	1,638	SO AB HP SSB

WAE DX RTTY

Call	Score	Class
VA2UP	2,486,848	SINGLE-OP HIGH
VE7CC	1,175,254	SINGLE-OP HIGH
VE2FK	1,118,410	SINGLE-OP HIGH
VE3KI	870,224	SINGLE-OP HIGH
VE2AXO	800,492	SINGLE-OP LOW
VE3NZ	615,384	SINGLE-OP HIGH
VA3XH	525,389	SINGLE-OP HIGH
VE9AA	385,985	SINGLE-OP LOW
VE5MX	293,235	SINGLE-OP HIGH
VE3KAO	252,255	SINGLE-OP LOW
VE2SG	228,096	SINGLE-OP HIGH
VY2LI	202,130	SINGLE-OP HIGH
VE2NMB	180,873	SINGLE-OP HIGH
VE4EAR	171,052	SINGLE-OP HIGH
VA7ST	152,061	SINGLE-OP LOW
VE2EBK	144,755	SINGLE-OP LOW
VY2MP	132,374	SINGLE-OP LOW
VE3AJ	121,968	SINGLE-OP LOW
VE3MGY	110,385	SINGLE-OP LOW
VE3CX	104,544	SINGLE-OP HIGH
VE7IO	104,157	SINGLE-OP HIGH
VE1ZD	71,610	SINGLE-OP LOW
VE2LX	54,510	SINGLE-OP LOW
VA7AM	36,406	SINGLE-OP LOW
VE3RCN	36,210	SINGLE-OP LOW
VE6SQ	36,166	SINGLE-OP LOW
VE2FFE	32,589	SINGLE-OP LOW
VE6QO	28,199	SINGLE-OP LOW
VE1BZI	17,544	SINGLE-OP LOW
VA7AQD	14,592	SINGLE-OP LOW
VE9HF	13,680	SINGLE-OP HIGH
VE3MCF	12,728	SINGLE-OP LOW
VA3FN	12,625	SINGLE-OP LOW
VE6AO	8,000	SINGLE-OP HIGH
VE2KOT	5,986	SINGLE-OP LOW
VA7AD	3,168	SINGLE-OP LOW
VE7BGP	880	SINGLE-OP LOW
VO1OR	448	SINGLE-OP LOW
VY1XY	288	SINGLE-OP LOW

LZ DX CONTEST

Call	QSOs	Mult	Score	Class
VE1RGB	497	113	209,502	SOAB LP CW
VE1OP	373	71	92,442	SOAB HP CW
VE3KAO	131	53	26,765	SOAB LP CW
VE2AWR	163	43	24,295	SOAB LP MIX
VE2FK	124	39	19,695	SOAB HP CW
VE9ML	151	25	16,900	SO 40M MIX
VE3FJ	91	35	9,800	SOAB HP CW
VE2KOT	71	33	9,273	SOAB LP CW
VE9HF	117	15	5,355	SO 20M MIX
VA3ATT	40	19	3,192	SOAB LP CW
VA3RKM	40	15	1,845	SO AB MIX QRP
VA3FN	8	7	189	SO 20M MIX
VE9BWK	11	5	115	SOAB LP SSB

ARRL NOVEMBER SWEEPSTAKES SSB

Call	QSOs	Mult	Score	Class
VY2ZM	2,180	83	361,880	B
VE4GV	1,607	83	266,762	UL
VY2TT	1,575	83	261,450	U
VE7CC	1,461	83	242,526	B
VE4VT	1,443	83	239,538	B
VE8EV	1,420	83	235,720	U
VE6EX	1,364	83	226,424	UL
VA7AAA	1,215	83	201,690	B
VE5RI	1,206	83	200,196	M
VE3CX	1,143	83	189,738	U
VE4EA	1,095	83	181,770	UL
VY1EI	1,087	80	173,920	UL
VE3RZ	1,026	83	170,316	U
VA7ST	989	83	164,174	B
VE3MGY	855	80	136,800	UL
VA3ZV	731	83	121,346	M
VE5SF	715	83	118,690	A
VE3KI	670	83	111,220	U
VA3SWG	667	83	110,722	A
VA7JW	708	77	109,032	B
VE2HIT	656	83	108,896	A
VE3TW	619	83	102,754	A
VA2EN	582	83	96,612	U
VO1KVT	571	83	94,786	U
VE2AWR	568	82	93,152	A
VA3SK	547	83	90,802	M
VE9OA	508	82	83,312	ML
VE9AA	493	83	81,838	U
VE9HF	501	81	81,162	B
VE3RX	426	82	69,864	A
VA6UK	408	82	66,912	B
VE4YU	379	82	62,156	A
VA3TIC	345	80	55,200	A
VE3YT	340	78	53,040	B
VE3SGB	330	80	52,800	M
VE3RCN	305	81	49,410	A
VA3RAC	340	70	47,600	A
VE6TN	304	75	45,600	A
VO1BQ	235	68	31,960	A
VE2TSM	201	74	29,748	A
VE2SVF	198	75	29,700	A
VE6SQ	212	69	29,256	A
VE3DVY	195	71	27,690	A
VA3NW	185	70	25,900	A
VA3ZLT	155	76	23,560	A
VE3UZ	179	62	22,196	ML
VE2QV	165	64	21,120	A
VE3VSM	182	55	20,020	UL
VE8GER	150	65	19,500	A
VE7CKZ	142	67	19,028	A
VE2EZD	151	63	19,026	B
VA3MTT	121	78	18,876	B
VE7SAR	148	59	17,464	ML
VE6RFM	119	72	17,136	U
VE7NA	136	61	16,592	ML
VE2SG	128	64	16,384	B
VE3EEU	144	55	15,840	A
VA3XH	118	67	15,812	B
VE3CR	119	65	15,470	B
VA3EEB	119	64	15,232	A
VE5GC	170	43	14,620	A
VE9UNB	125	52	13,000	S
VE5AAD	120	52	12,480	A
VE3FCT	96	63	12,096	Q
VE2PDT	105	56	11,760	A
VE7URN	114	49	11,172	UL
VE9ACL	92	58	10,672	UL
VA3PAW	90	49	8,820	A
VA3RKM	85	48	8,160	Q
VE3EP	82	49	8,036	A
VE3AD	99	39	7,722	A
VE3OIL	83	44	7,304	Q
VE7CLX	77	46	7,084	A
VA3JLF	79	44	6,952	A
VA7AM	55	56	6,160	A
VE6GD	76	40	6,080	B
VE2EBK	89	34	6,052	A
VA4CQD	77	39	6,006	A
VA7AQD	71	39	5,538	A
VE3HEU	64	39	4,992	UL
VA7MPG	53	37	3,922	A
VE3PQ	53	34	3,604	A
VA2IC	44	34	2,992	A
VE4RON	30	24	1,440	A
VE7GM	31	19	1,178	A
VY2LI	27	19	1,026	B
VE3KJQ	15	14	420	Q
VA7IR	9	9	162	Q
VE3AJ	5	5	50	A

ARRL 160 METRE

Call	QSOs	Mult	Score	Class
VY2ZM	1,684	136	670,480	C
VE3EJ	1,505	124	433,504	C
VA2EW	1,440	117	400,842	C
VE2OJ	1,234	107	286,011	D
VE3RZ	1,154	105	257,565	D
VA2WA	996	109	250,264	C
VE3CX	985	99	202,158	C
VE3PN	829	90	164,610	C
VE3MM	695	84	119,364	D
VE6BBP	686	85	117,555	C
VE3KZ	650	84	109,452	C
VA3DX	576	90	109,440	D
VE3MGY	703	77	108,493	E
VE3TA	497	91	98,553	D
VE3OSZ	445	75	68,100	B
VE5UF	408	82	67,896	C
VE3CV	354	76	55,404	E
VA3EC	396	59	46,256	B
VE3ADQ	326	67	44,488	B
VE3TG	417	53	43,990	B
VE7JKZ	309	65	43,810	C
VE3FAS	262	74	42,846	C
VA3ATT	386	52	39,988	B
VE3FU	233	75	39,675	D
VE9AA	305	62	39,618	C
VE3SB	332	58	38,338	B
VE3OI	206	68	29,308	C
VE7CA	250	55	27,995	E
VE3YT	254	55	27,665	C
VA3KAI	259	53	27,242	B
VE5ZX	202	63	25,011	B
VE7VV	169	59	19,765	A
VA7ND	167	59	19,647	B
VE1ZAC	187	51	19,482	C
VE9ML	203	47	19,270	E
VE3MMQ	164	50	19,000	D
VE3CWU	200	47	18,518	E
VE3XL	197	44	17,248	B
VE3BW	150	53	16,483	B
VO1HP	117	46	15,732	D
VE3UZ	166	43	14,190	B
VE3GTC	165	40	13,200	A
VE3RCN	164	39	12,714	B
VE7CV	138	44	12,320	B
VE7CC	106	54	11,826	C
VE2AWR	139	39	10,686	B
VE3WZ	103	42	8,736	A
VA3RKM	104	35	7,210	A
VE3EY	96	37	7,030	C
VE4YU	85	39	6,552	B
VE3FJ	92	36	6,552	C
VE3XAT	86	37	6,512	E
VE1OP	67	42	6,510	D
VE4XC	69	38	4,940	B
VE3HG	73	35	4,900	B
VA3DBT	66	30	3,960	B
VA2NB	69	28	3,808	A
VA3FN	61	31	3,782	B
VA7MM	46	37	3,256	B
VA2EU	39	28	1,988	B
VE3IGJ	35	21	1,428	B
VE2FK	25	17	850	E
VE4AKF	27	13	702	B
VA7ST	24	12	576	B

ARRL 10 METRE

Call	QSOs	Mult	Score	Class	Power
VY2TT	3,081	261	2,459,142	A	C
VE9AA	2,711	265	2,173,000	D	C
VE1OP	1,983	228	1,626,096	D	C
VE5MX	1,607	217	1,203,482	D	C
VE3CX	1,493	256	1,134,080	D	C
VE4GV	1,821	224	1,075,648	E	B
VE7JH	1,797	141	1,007,304	C	C
VE3KZ	1,194	241	890,736	A	C
VA3DDX	998	244	814,472	D	C
VA2WA	1,128	184	781,264	D	C
VE5UF	1,418	137	768,296	C	C
VE3DZ	1,306	147	765,576	C	B
VE3MMQ	986	209	706,002	D	C
VE4EA	1,171	187	630,938	A	B
VE6WQ	1,326	119	626,416	C	B
VA7BEC	1,167	189	600,264	E	B
VA5DX	2,300	124	566,432	B	C
VE1ZA	1,123	173	496,856	A	B
VE4VT (VE4EAR, op)	943	202	475,104	A	C
VE5ZX	872	121	413,820	C	B
VE3NZ	720	137	389,080	D	C
VE3BW	674	204	376,176	A	C
VE2AWR	599	174	353,916	A	B
VE3OI	801	111	351,648	C	C
VE4YU	596	165	313,170	A	B
VE3EY	713	109	308,252	C	C
VE3PN	604	126	298,368	C	C
VE6EX	847	102	295,800	A	A
VE3EJ	680	110	294,360	C	C
VO1QU	728	101	290,476	C	B
VA7DZ	729	92	264,224	E	B
VE2SG	901	128	260,864	D	C
VE3MIS	730	162	260,496	D	C
VA3DX	456	144	258,624	D	C
VE3JM	364	190	247,760	D	C
VY1EI	1,103	107	240,964	A	B
VA7OM	688	85	232,220	C	C
VE7AX	543	129	230,652	A	C
VE3FGU	461	120	218,880	D	C
VE3GFN	499	106	211,152	C	B
VE5UO	571	103	175,718	E	B
VE7CA	517	85	173,740	E	B
VE3FH	421	133	173,698	A	B
VA7AM	961	84	160,776	B	B
VE3FJ	369	107	157,504	C	B
VO1KVT	761	104	157,248	B	B
VA3KA	504	149	149,894	D	C
VE7JKZ	485	77	148,456	C	B
VE3TW	350	137	144,946	A	B
VA3ATT	381	94	142,128	C	B
VE3XAT	264	154	141,988	E	B
VA3KAI	344	124	140,616	A	B
VE5VA	409	85	138,380	C	A
VY2OX	331	102	133,824	C	A
VE9ML	319	105	133,140	E	B
VE1RSM	354	92	129,168	C	B
VE3KI	322	99	127,512	E	B
VE8GER	829	76	125,856	A	B
VE2HIT	561	110	123,200	B	B
VE5GC	469	63	114,408	C	B
VA3EC	322	87	110,316	C	B
VE7IO	407	68	109,344	C	C
VE3CWU	306	120	108,720	E	B
VE3RZ	250	122	107,116	D	C
VE2GSO	710	76	106,552	B	C
VE2BWL	274	120	105,360	A	B
VE3GTC	303	86	103,544	C	A
VA7ST	379	69	103,500	C	B
VA7MM	326	67	84,956	C	B
VA7EU	318	67	84,152	C	B
VE3JI	260	106	76,108	A	B
VE5AAD	466	59	73,632	A	B
VE2AXO	225	101	73,528	E	B
VE2EBK	258	105	69,090	A	B
VE3MM	198	86	67,768	E	B
VE3TU	387	85	64,600	B	B
VE3YT	231	71	61,912	A	C
VE9ZZ	312	100	61,800	B	B
VO1BQ	249	62	61,256	C	B
VE6FI	557	55	60,610	B	C
VE1ZD	349	85	58,990	B	B
FG8NY	203	67	52,528	C	B
VO2NS	395	62	48,856	A	B
VE1JS	206	95	47,500	A	C
VE3KAO	176	67	46,632	E	B
VE3KKQ	253	88	43,648	B	B
VE3JDF	195	98	43,316	E	B
VA3RKM	168	73	42,924	A	A
VE6CMV	264	81	42,606	B	C
VE3VSM	172	74	38,924	A	B
VE6SQ	179	58	37,700	A	B
VE3RCN	168	70	36,680	A	B
VA1MM	130	65	33,280	C	A
VA3GD	226	73	32,996	B	B
VE3HEU	139	70	32,200	E	B
VA2QR	213	75	31,800	B	C
VE5BCS	244	54	26,244	E	B
VA5LF	113	64	25,344	A	B
VE3FCT	188	61	22,936	B	B
VE6AX	181	61	22,570	E	B
VE2KOT	120	45	21,600	C	B
VE7EMI	178	61	21,594	B	B
VA3TIC	181	59	20,650	A	B
VE5SF	117	43	19,952	C	B
VA7KH	98	47	18,424	C	A
VE3IQZ	160	55	17,380	B	B
VA3FN	106	41	17,220	C	B
VE3EDY	119	70	16,660	B	C
VA3XH	141	58	16,124	B	C
VE3HG	102	40	15,680	C	B
VE7XDT	99	39	15,288	C	B
VA3NW	138	54	14,580	B	B
VA2IC	133	55	14,300	B	B
VE7VR	102	33	13,332	C	B
VE7FO	108	31	13,268	D	C
VE3DTI	84	36	11,952	E	A
VA3VF	123	46	11,316	B	A
VE2EVN	97	58	11,020	E	B
VE2FK	69	39	10,764	D	C
VE2QV	69	38	10,336	C	B
FG1PP	59	44	9,240	A	B
VE3MEW	97	42	8,064	B	B
VE3LJQ	84	43	7,224	B	B
VE3IAE	65	28	6,944	C	B
VE3DQN	62	33	6,336	C	A
VE7GNR	90	37	6,290	B	A
VE7TJF	78	38	5,928	B	C
VE7VAW	84	33	5,478	B	B
VA3RJ	38	34	5,168	C	B
VA2RIO	64	39	4,992	A	B
VE9BWK	50	26	4,784	E	B
VA7AQD	77	30	4,620	B	B
VE7KA	73	31	4,464	B	A
VE2JM	62	35	4,340	B	C
VE4RA	67	35	4,270	B	B
VE4DRK	63	35	4,200	B	B
VA7AD	44	21	3,528	C	A
VE3QEE	52	28	2,856	B	B
VE7BGP	37	26	2,808	A	B
VE3NLE	50	23	2,300	B	B
VA7GAP	52	21	2,184	B	B
VE3BKM	53	21	2,184	B	A
VE3CKG	38	27	2,052	A	B
VE3KJQ	47	21	1,932	B	A
VE3NQM	39	20	1,520	B	B
VE5WD	19	19	684	B	B
VE3AJ	22	10	440	B	B
VE3IGJ	6	5	120	C	A
VE3TZF	8	6	84	B	B
VE9EX	1	1	2	E	B

CQ WW DX CW

Call	QSOs	Zones	Countries	Score	Class
VE3EJ	9,049	197	736	21,652,131	MULTI-TWO
VE7UF	6,830	177	548	11,718,900	MULTI-MULTI
VY2TT	6,592	147	487	10,565,610	SO HP ALL
CJ3T	5,471	153	495	9,073,944	SO HP ALL
VE3JM	5,066	143	450	7,874,447	SO HP ALL
VA2WA	4,031	156	563	7,375,502	SA HP ALL
VC2R	5,091	139	425	6,967,656	SO HP ALL
VE7GL	4,052	167	525	6,721,396	MULTI-ONE
VE3RZ	3,488	161	571	6,383,040	MULTI-TWO
VE3BZ	2,995	141	527	5,116,880	SO HP ALL
VE3OI	3,728	140	381	4,903,652	SO HP ALL
VY2ZM	3,008	130	422	4,478,376	SO HP ALL
VE9ML	2,491	132	500	4,169,304	MULTI-TWO
VE1OP	2,669	135	485	4,023,180	SA HP ALL
VE6RST	2,177	171	495	3,555,774	SA HP ALL
VE3YAA	2,149	143	479	3,427,842	MULTI-TWO
VE3MIS	2,497	105	326	2,652,374	SO HP ALL
VE3BR	2,067	119	330	2,298,431	SO LP ALL
VE3MMQ	1,305	133	493	2,083,954	SA HP ALL
VA2III	2,080	97	310	1,989,416	SA HP ALL
VE3KI	1,593	105	332	1,759,362	SO HP ALL
VE5ZX	1,355	129	408	1,750,083	SA HP ALL
VA7ST	2,054	118	245	1,739,496	SO HP ALL
VE7IO	1,758	126	314	1,732,720	MULTI-TWO
VY2SS	1,858	94	282	1,677,336	SO HP ALL
VY1EI	2,327	98	200	1,510,264	MULTI-ONE
VE3KZ	1,226	109	326	1,432,890	SO LP ALL
VE2BWL	1,221	108	327	1,330,230	SA LP ALL
VE2AWR	1,364	85	272	1,222,368	SO LP ALL
VA7KO	1,418	114	263	1,206,023	SO HP ALL
VE7XF	1,080	137	300	1,191,262	SO HP ALL
VE6JY	2,377	40	157	1,162,694	SA HP 15M
VA2AM	804	117	442	1,120,795	SA HP ALL
VE3CWU	881	112	307	952,387	SA LP ALL
VE3GFN	1,054	94	260	947,304	SO LP ALL
VE1RSM	1,007	102	265	878,231	SO LP ALL
N2WQ/VE3	1,628	38	151	832,545	SA HP 15M
VE6WQ	1,880	39	138	831,723	SA HP 40M
VE9AA	1,808	33	144	821,811	SA HP 10M
VX7SV	1,862	38	142	820,440	SA HP 40M
VE3FU	2,036	35	115	789,900	SO HP 40M
VE7CA	1,088	103	198	785,610	SA LP ALL
VE7VR	1,196	90	174	728,376	SO HP ALL
VA3ATT	877	87	248	721,590	SO LP ALL
VX7SZ	2,028	37	112	718,627	SO HP 15M
VB7A	1,075	93	190	673,823	MULTI-ONE
VE4VT	579	122	308	648,440	SA HP ALL
VE6BBP	835	103	216	624,283	SA HP ALL
VE4GV	634	100	298	610,134	SA LP ALL
VE3VN	715	83	237	602,880	SO QRP ALL
VE3TW	685	90	244	597,526	SO LP ALL
VA2EU	571	91	316	580,382	SO LP ALL
VE3XAT	513	103	304	561,660	SA LP ALL
VE3FH	633	87	237	529,416	SO LP ALL
VE2EZD	693	72	209	502,709	SA HP ALL
VE7WO	1,548	35	99	500,758	SO HP 20M
VE3RSA	575	89	222	484,538	SO LP ALL
VA7OM	1,105	37	131	459,984	SA HP 20M
VA7ZT	553	100	235	449,905	MULTI-ONE
VE6LB	506	117	260	449,007	SA HP ALL
VE7BZR	639	96	192	447,840	SO HP ALL
VE6TN	476	104	249	437,367	SA LP ALL
VE9HF	809	56	150	414,472	SO HP ALL
VE5KS	529	98	215	387,807	SA LP ALL
VA7CRZ	627	90	177	384,480	SA LP ALL
VE3OM	461	79	214	372,110	SO LP ALL
VE6EX	996	31	96	282,194	SA LP 20M
VA1CHP	642	30	135	271,755	SA LP 10M
VE7AX	517	77	135	269,664	SO HP ALL
VE4YU	409	76	166	251,438	SO LP ALL
VE4EA	715	33	117	250,500	SA LP 15M
VE2LX	507	69	212	249,247	SO LP ALL
VA2BBW	327	69	208	247,638	SA LP ALL
VE7CT	536	38	125	228,689	SA HP 20M
VE3CX	872	29	90	222,173	SA HP 80M
VE7XDT	422	88	135	210,958	SA LP ALL
VE3YT	412	61	165	204,530	SO HP ALL
VE5SF	507	53	114	200,901	SO LP ALL
VE5UF	615	31	110	200,220	SA HP 10M
VE1ZAC	375	61	165	199,106	SO HP ALL
VE7SQ	279	98	195	196,603	SA HP ALL
VE3CR	502	31	116	196,392	SO HP 10M
VE6BF	420	88	174	195,976	SO LP ALL
VA3SB	332	47	154	192,759	SO QRP ALL
VE3KAO	316	65	167	191,632	SA LP ALL
VE1RGB	569	27	93	175,440	SO LP 40M
VE6WZ	738	27	77	172,952	SA HP 80M
VA2ES	326	67	157	170,016	SA LP ALL
VE3RX	298	76	142	166,116	SO LP ALL
VE2KOT	329	46	132	161,446	SO LP ALL
VE1JBC	297	35	125	137,600	SO HP ALL
VA7ND	320	58	116	135,198	SO LP ALL
VE6BMX	543	28	79	128,721	SA QRP 15M
VE3IAE	426	30	97	128,270	SA LP 20M
VE1DX	341	32	106	124,476	SA HP 20M
VE3IQ	236	50	153	115,913	SA HP ALL
VE3SB	262	61	122	112,728	SO LP ALL
VA3DX	241	42	152	111,550	SA HP ALL
VE9OA	232	51	129	109,620	SO LP ALL
VE3OTL	309	63	119	104,468	SO LP ALL
VE2QY	277	49	117	102,256	SO LP ALL
VE3TG	352	21	81	102,204	SO LP 10M
VE3ZI	552	18	67	99,535	SO HP 160M
VE7CV	301	31	90	97,042	SO LP 15M
VE3XD	287	26	83	83,930	SA QRP 15M
VO1QU	216	47	102	81,652	SO LP ALL
VA7XB	199	45	104	78,970	MULTI-ONE
VY2LI	372	25	67	78,200	SO LP 10M
VE3DTI	222	47	98	72,790	SO QRP ALL
VE5VA	158	56	110	70,882	SA QRP ALL
VA7DXC	258	46	62	66,852	SA LP ALL
VE3FJ	234	24	76	65,600	SO LP 10M
VE6HPT	230	58	75	65,303	SO LP ALL
VE3OSZ	285	14	66	57,520	SO LP 80M
VE3PN	447	16	46	54,622	SO HP 160M
VE3CV	139	58	102	52,800	SA QRP ALL
VA3RKM	181	42	83	50,000	SO QRP ALL
VE3HG	151	21	81	43,044	SO QRP ALL
VE2HB	203	31	66	42,389	SA HP ALL
VE3NR	166	22	69	40,586	SA LP 40M
VE3RIA	171	40	74	40,242	SO LP ALL
VE3RCN	149	42	68	39,160	SO LP ALL
VO1HP	109	26	105	37,204	SA LP 15M
VA3DBT	139	37	58	30,020	SO LP ALL
VE5GC	373	16	28	29,876	SO LP 10M
VE7BQO	180	38	36	28,342	SO QRP ALL
VA3FN	133	34	54	27,280	SO LP ALL
VE7BC	107	41	50	24,843	SA LP ALL
VE4AKF	164	23	54	24,024	SO HP 20M
VE3MGY	478	6	18	21,576	SA LP 160M
VE2FK	97	25	42	16,348	SO HP ALL
VE2EBK	77	31	50	15,552	SA LP ALL
VE5AAD	104	20	50	15,190	SO LP 15M
VE3GTC	80	12	39	11,526	SO QRP 10M
VA1MM	103	11	37	11,040	SO QRP 40M
VE7BGP	73	38	34	10,368	SO LP ALL
VA7MM	82	31	29	8,700	SO LP ALL
VE6SQ	75	27	30	7,581	SO LP ALL
VE4SN	56	22	37	6,018	SO LP ALL
VE3WZ	48	19	40	5,428	SO QRP ALL
VE9BWK	61	11	22	4,686	SA QRP 40M
VA3JLF	40	22	26	4,080	SA LP ALL
VE2JR	38	18	19	1,998	SO HP ALL
VA7AD	34	14	14	1,764	SO QRP ALL
VE3EXW	21	11	14	1,500	SO LP ALL
VE3DQN	25	15	20	1,190	SO QRP ALL
VE3IGJ	31	7	6	715	SO QRP 20M
VA3EF	13	6	12	702	SA HP 160M
VA7ZM	7	5	4	135	SO LP ALL
VO1NA	10	5	5	130	SO QRP 160M

OK/OM DX CW

Call	QSOs	Mults	Score	Class
VE9HF	445	300	400,500	SO AB LP
VE9ML	372	268	299,088	M1
VE1RGB	175	153	80,325	SO AB LP
VE3FH	70	67	14,070	SO AB LP
VE9AA	66	55	10,890	10M HP
VE2AWR	58	56	9,744	SO AB LP
VE3FJ	35	31	3,255	15M LP
VE9OA	95	82	2,337	SO AB LP

CONTEST CALENDAR FOR NOVEMBER, DECEMBER AND EARLY JANUARY 2015

Contest Name	Start	End	Web Address
Ukrainian DX Contest	1200z Nov 1	1200z Nov 2	http://www.ucc.zp.ua/
ARRL Sweepstakes CW	2100z Nov 1	0300z Nov 3	http://www.arrl.org/sweepstakes
High Speed CW (Part 1)	0900z Nov 2	1100z Nov 2	http://hsc.lima-city.de/en/contests.html
High Speed CW (Part 2)	1500z Nov 2	1700z Nov 2	http://hsc.lima-city.de/en/contests.html
Japan Int. DX SSB	0700z Nov 8	1300z Nov 9	http://jidx.org/jidxrule-e.html
WAE DX RTTY	0000z Nov 8	2359z Nov 9	http://waedc.de/
OK/OM DX CW	1200z Nov 8	1200z Nov 9	http://okomdx.crk.cz/
Kentucky QSO Party	1400z Nov 8	0200z Nov 9	http://www.wkdxa.com/mainsite/
ARRL Sweepstakes SSB	2100z Nov 17	0300z Nov 18	http://www.arrl.org/sweepstakes
NAQCC Sprint	0130z Nov 20	0300z Nov 20	http://naqcc.info/
LZ DX Contest	1200z Nov 22	1200z Nov 23	http://lzdx.bfra.org/
ARCI QRP Topband Sprint	0000z Nov 27	0600z Nov 27	http://www.qrparci.org/
CQWW DX Contest CW	0000z Nov 29	2359z Nov 30	http://cqww.com/
ARRL 160m Contest	2200z Dec 5	1600z Dec 7	http://www.arrl.org/160-meter
TARA RTTY Melee	0000z Dec 6	2359z Dec 6	http://www.n2ty.org/
NAQCC Sprint	0130z Dec 10	0300z Dec 10	http://naqcc.info/
ARRL 10m Contest	0000z Dec 13	2359z Dec 14	http://www.arrl.org/10-meter
ARCI Holiday Spirits HB Sprint	2000z Dec 14	2359z Dec 14	http://www.qrparci.org/
OK DX RTTY	0000z Dec 20	2359z Dec 20	http://www.crk.cz/ENG/DXCONTE#OKRTTY
Croatian CW Contest	1400z Dec 20	1400z Dec 21	http://www.9acw.org/
WW Iron Ham Contest	1200z Dec 27	1159z Dec 28	http://www.ironham.com.br/
RAC Winter Contest	0000z Dec 27	2359z Dec 27	http://www.rac.ca/en/rac/programmes/contests/
Stew Perry Topband Challenge	1500z Dec 27	1500z Dec 28	http://www.kkn.net/stew/
SARTG New Year's RTTY	0800z Jan 1	1100z Jan 1	http://www.sartg.com/
ARRL RTTY Roundup	1800z Jan 3	2359z Jan 4	http://www.arrl.org/rtty-roundup
NA QSO Party CW	1800z Jan 10	0600z Jan 11	http://www.ncjweb.com/

Note: In the above chart an * indicates Local Times

TARA RTTY MELEE

Call	QSOs	Mult	Score	Class
VE7CC	787	94	73,978	SOH
VA3XH	349	79	27,571	SOH
VE2NMB	206	68	14,008	SOH
VE2EBK	150	60	9,000	SOL
VE9AA	105	49	5,145	SOL
CK9JBU	103	38	3,914	SOL
VE3KAO	82	43	3,526	SOL
VA7ST	78	36	2,736	SOL
VE2SG	76	34	2,584	SOL
VE6AX	60	32	1,920	SOL
VE2FFE	60	30	1,800	SOL
VE6QO	50	30	1,500	SOL
VE7FCO	45	25	1,305	SOL
VE2KOT	48	27	1,296	SOL
VA3AD/qrp	20	13	260	SOQRP
VA3FN	17	12	204	SOL

OK DX RTTY

Call	QSOs	DXCC	Score	Class
VA2UP	677	206	390,988	SOAB HP
VA3XH	305	117	96,291	SOAB HP
VE3FH	246	103	61,388	SOAB LP
VE2EBK	245	81	54,675	SOAB LP
VE2NMB	206	65	27,430	SOAB HP
VE2AXO	158	51	20,145	SOAB LP
VA7ST	258	40	14,760	SOAB HP
VE2FK	149	34	13,634	SOAB HP
VA7RY	204	36	11,592	SOAB LP
VE3MGY	198	34	11,390	SOAB LP
VE3XAT	95	44	6,864	SOAB LP
VA3DDX	40	21	3,591	SOAB LP
VE3RCN	68	20	3,020	SOAB LP
VE9AA	71	20	2,140	SO20
VA7ZM	77	9	1,053	SO15

CROATIAN CW

Call	QSOs	Multies	Score	Category
VY2SS	361	111	113,109	SOAB
VE1OP	230	85	57,460	SOAB HP
VE9HF	152	73	44,968	SOAB HP
VE2AWR	157	62	36,146	SOAB LP
VA2WA	152	59	27,317	SOAB LP
VE1RGB	110	44	18,832	SOAB LP
VE1ZA	95	52	16,172	SOAB LP
VE9AA	145	37	13,875	SO10 HP
VA3RKM	48	26	5,018	SOAB QRP
VA3ATT	44	18	3,132	SOAB LP
VE3TW	23	14	1,092	SOAB LP
VA7ST	15	7	714	SO40 HP
VE9BWK	14	5	420	SO40 LP
VA3FN	10	5	360	SO40 LP

KY QSO Party

Call	Score
VE3HED	820
VE3UKS	740
VE2AWR	200
VA3RKM	98
VE9AA	50
VE6BMX	6

Stew Perry Topband
Not released at press time

The RAC Store: http://www.cafepress.ca/rac_radio

SECTION NEWS THE RAC FIELD ORGANIZATION FORUM

BRITISH COLUMBIA/YUKON:

SM Paul Giffin, VA7MPG
A/SM Ron McFadyen, VY1RM
A/SM Neil King, VA7DX
STM Al Ross, VE7WJ
SEC Fred Orsetti, VE7IO
SEC Terry Maher, VYIAK (Yukon)
OBM Bill Foster, VE7WWW
OOC: Dennis Wight, VE7IJJ
ACC: Karla Wakefield, VA7KJW
Website: www.va7mpg.ca

JULY-AUGUST SM REPORT:

Amateurs from Sidney to Courtenay on Vancouver Island converged on Nanaimo, British Columbia from July 17 to 20 to form a communications team for the BC Summer Games. For more information please see the article on page 61.

The Burnaby Amateur Radio Club participated in the Edmonds City Fair on July 20 and 21. They had a perfect spot to set up between the RCMP and the City Emergency Program. For more information and some photos please visit: http://ve7bar.org/2014/07/barc-edmonds-city-fair/

The Kelowna EOC and the Central Okanagen Regional District (CORD) EOC Comms Team stood down after working the Smith Creek fire near Westbank. The units were stood down at 1900 hours on Sunday, July 20. For more information go to: www.cordeoc.ca

On August 2, the Vancouver Emergency Community Telecommunications Organization (VECTOR) had over 30 Amateurs at work in downtown Vancouver assisting other emergency groups during the third and final night of the Honda Celebration of Lights. This event goes over a period of three nights. There were over 100,000 people in and around English Bay and over 500 boats anchored to watch the fireworks. VECTOR assists with this and several other events in the City of Vancouver over the course of the year. Thanks VECTOR for your efforts.

William Nangle, VE3CLQ, took a trip out west this summer. Interesting report in that he says he travelled across BC and never made a 2m contact. Can't say that's happened to me. If you would like to see more of his travels and his lighthouse activation at Point Atkinson go to http://ve3clq.blogspot.ca

My duties as Section Manager came to an end on November 1. I would like to thank all those who served on the Section secretariat during my terms as Section Manager. Thanks also to those who contributed to both TCA and the Section website.

RAC SECTION MANAGER ELECTION NOTICE: ONTARIO NORTH AND SOUTH

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:

Second Notice to all RAC members in the Ontario North and Ontario South 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 ***Ontario North and Ontario South Sections***, 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 January 16, 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 February 13, 2015. Return of ballots by 1600E March 6, 2015 and will be counted after March 9, 2015.

A Section Manager elected thus take office immediately to serve a two-year term until October 31, 2016. If no valid petition is received, the Section will be resolicited in The Canadian Amateur.

I would also be remiss not to thank the Editor of TCA. Alan's efforts on behalf of RAC and its members are very, very much under-appreciated. Thank you Alan. Finally I would like to wish my successor all the best. – *73, Paul*

Public Service Honour Roll
July:
VE7GN 175, VE7RB 143, VE7WJ 86, VE7WWW 110 VE7XLH 115 and VA7MPG 320.
August:
VE7GN 175, VE7RB 76, VE7WJ 98, VE7WWW 101, VE7XLH 130 and VA7MPG 165.

Bulletins:
July 61
August 29

– *73, Paul, VA7MPG*

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

JULY-AUGUST SM REPORT:

The International Hamfest was held at the Peace Gardens on July 12.

The MARM Hamfest was held at the Manitoba Agricultural Museum grounds in Austin, Manitoba on August 16 and 17. The event was well attended with lots of good stuff to buy at the fleamarket. This year was the 20th anniversary of the event thanks to the dedication and hard work of the Brandon Amateur Radio Club.

The group has called an end to the event and unless another group takes over there won't be a MARM Hamfest next year. The event also hosts the Manitoba Repeater Society semi-annual meeting to discuss the operations of the UHF and VHF repeaters across the province.

Winnipeg Amateur Radio Club's Chief Instructor, Vera Koladubsky, VA4VMM, reports that a Basic Short Course 8 will begin at Shaftesbury High School so by my next report we may have 20 or so new Amateurs in our ranks.

Winnipeg ARES
Jeff Dovyak, VE4MBQ

Overall, the summer has been fairly quiet for Winnipeg ARES except for the Alert Net that was held in the mid-afternoon on Saturday, July 5 during a Tornado Warning for Winnipeg. Our Telephone Fan-Out was activated and 14 Winnipeg ARES members or affiliates checked in. Fortunately there was no severe damage in Winnipeg.

Thanks to Rosi Napady, VE4YYL, for getting the phoning started while I was on the way to VE4WWO. The following Amateurs participated in the Alert Net: VA4sz; AHG & RWT; VE4s: YYL, HK, RDO, VD, VZ, DLA, SIG, ACX, GWN, GMB, EIH and MBQ.

Our August General Meeting featured representatives from the WFPS Tactical Emergency Medical Support (TEMS) unit that provides EMS support to the WPS Tactical Unit. TEMS Paramedics are trained and equipped to work with police tactical officers inside the inner perimeter. Speakers were: P/SGT Shane Cooke, Medical Supervisor David Johnston and Advanced Care Paramedic Don Narine. Thanks to Randy Hull for facilitating the presentation.

Heavy rainfall accompanied by strong winds in Western and Southern Manitoba impacted a number of municipalities necessitating local action, States of Local Emergency (SoLEs), and deployment of some Provincial resources in support.

Impacts were greatest in but not limited to Western/Southwestern Manitoba where municipalities, roads (both provincial and municipal), and agricultural operations were affected. A number of Provincial park campgrounds were affected by flooding. Eventually a provincial SoLE was declared for very specific areas.

Beyond trying to maintain Situational Awareness (SA) there was no actual ARES operations at any municipal or the provincial level. The first Manitoba EMO SITREP was issued on June 29 and the last was issued on July 21. As Acting SEC (and a participant of the Manitoba EMO Interagency Emergency Preparedness Committee) I received the SITREPs and shared them with Manitoba ARES Executive and the VE4EMO Team (I had asked VE4EMO Team members to log into WebEOC periodically both to maintain SA and ensure that they had continued access to WebEOC).

WebEOC is the emergency management software package used in the provinjcial EOC and an increasing number of municipal EOCs. VE4EMO team members have personalized access allowing them to log into WebEOC in the ECC-ARES position.

On July 4, ARES ECs were asked to poll their members over the weekend and report how many were available for deployment to other districts in case of a provincial request. Unfortunately, only four ARES members came forward: Andrew Johnson, VE4APJ, Derek Hay, VE4HAY, Kent Haase, VE4KEH and Garry Frankel, VE4VD.

As already mentioned, there were no municipal or provincial taskings for ARES so there were no deployments at all. One scenario that was considered was the establishment of an Amateur Station as a backup in the temporary provincial Command Post that was established in a particular community. The local ARES group indicated that while they could establish the station if requested, only one member was available to be on standby to staff in case regular communications failed and only available for about a week since inter-provincial travel was booked. Fortunately, Manitoba EMO declined when I inquired as SEC if they wanted an Amateur Station established as a backup. Andrew, Garry, Kent and Derek were advised on July 17 that operations had begun to wind down and that they could go back to enjoying their summer.

Traffic Totals
July: 2
August: 6

– Jan Schippers, VE4JS

ONTARIO NORTH:

SM: Al Boyd, VE3AJB
Email: ve3ajb@vianet.ca
STM: Pat Dopson, VE3HZQ
Email: dopsonp@vianet.ca
SEC: Dave Hayes, VE3JX
Email: ve3jx@bell.net
OBM: Paul Caccamo VA3PC
Email: va3pc@ciinet.org
Website: http://ontario.racares.ca

JULY-AUGUST SM REPORT:

SEC Dave Hayes reports:

As I write this, summer is over and we are now looking towards the ARES Simulated Emergency Test. The suggested date is Saturday, October 4. Holding the SET on that date allows coordination with other ARES groups nearby, in the province, and across country. It may not always be convenient for local ARES groups to follow the suggested scheduled date so they may choose to have their SET at another time. However, the important thing is to have it and not let it pass.

A suggestion for all our groups is to include text communications capabilities in your EmComm planning. There are many ways to do this using such tools as Winlink 2K, packet radio, Fldigi, D-RATS, HS MESH and so on. Please let us know how these modes worked for you with your SET.

Stiig Larsen, VE3LBX (DEC for the Killarney District) and Jim McLean, VE3LJM (EC for Manitoulin Island & North Shore) report:

Members of the Manitoulin ARC gathered at Little Current for the annual picnic and this year we had Amateurs from Sault Saint Marie in the west, to London in the south attending. One new member was added to the roster of the ARES group here on Manitoulin.

August was a busy month for members of the Manitoulin ARES team, from marshalling two parades, helping out with a fundraising fishing derby to assisting the Coast Guard with a stranded sailboat as well as accepting awards.

On Sunday August 3, members Al Boyd, VE3AJB, John Enns, VE3BB, Jim Hastings, VA3AUC, (Jim's wife Mary Hastings), Marshall Maciuk, VE3NOD, Mike Maciuk, VE3UKI, Jim McLean, VE3LJM, Lorraine McLean, VE3LMJ, Dave Montgomery, VA3DYM, Sharon Montgomery, VE3SMM, Brenda Playter, VA3TKH and Bob Playter, VE3TKH, assisted the local Lions Club with their

BC SUMMER GAMES 2014 IN NANAIMO

The BC Summer Games 2014 were held in Nanaimo on Vancouver Island, from July 17 to July 20. Members of the Coast Emergency Communications Association along with other Amateur operators manned the radios in the Security Operations Centre.

The Games involved 3,000 volunteers, over 3,000 youth, over 500 coaches, over 400 officials, and an unknown number of parents and friends of participants. Special flights from around British Columbia brought participants to Nanaimo, and additional sailings were added by BC Ferries to ensure everyone made it to the Games.

Planning had been ongoing for months in preparation for the Games. Over 14 directorates were created to look after security, food services, results and registration, marketing, digital media and photography to name a few. Large scale opening and closing ceremonies were held with all the appropriate dignitaries. Multiple competition venues from Duncan to Parksville were utilized. Multiple schools housed the participants, coaches and officials. Food services alone served over 30,000 meals during the Games and a huge number of medals were awarded over the weekend. The bus schedule covering arrival, departure, transfers to venues etc was over 50 pages. In addition there was a shuttle service for officials and other VIPs.

The radio room went operational on Tuesday, July 16 at 8 am and ran continuously until 5 am on Monday, July 21. The Security Operations Centre handled calls involving lost or misplaced identification badges, lost or misplaced kids/coaches, lost luggage or just about anything else you can think of when you have over 3,000 kids visiting your city. Security patrols, both static and roving, were monitored and assisted when necessary. Did I mention there was also a dance on the Friday and Saturday nights? All incidents had to be documented and a report prepared for the Directors' meeting at 7 am each day.

This was an excellent event for ARES folks to participate in and practise their skills. Radio operators came from Sidney, Nanaimo and Comox to participate. Planning was required. Procedures, documentation and response procedures had to be developed, reviewed with radio operators and put into practice. Overall the event went off without a serious incident and the kids were, for the most part, well behaved. Like any event of this nature there were moments!

I would like to thank all those who participated in the radio operations during the Games. Feedback has been very complimentary on your professionalism, efficiency and overall performance. This event generated a very positive public display of the abilities of Amateur Radio operators.

Submitted by Paul Giffin, VA7MPG
British Columbia / Yukon Section Manager

annual "Haweaters Parade" in Little Current.

On Friday, August 15, members Jim McLean, VE3LJM, Mike Coomes, VA3MIG and Susie De Kuyper, VE3ASY, aided in a situation where a 37-foot sailboat went aground east of Maple Point near Manitoulin Island. The vessel operator had difficulty in reaching the Coast Guard from his location so ARES members assisted by relaying the distress call for them and maintaining contact with both parties for approximately 18 hours until a rescue was complete.

On Sunday, August 16, members Al Boyd, VE3AJB, Jim Hastings, VA3AUC, Marshall Maciuk, VA3NOD, Mike Maciuk, VE3UKI, Dave Montgomery, VA3DYM and Sharon Montgomery, VE3SMM, assisted with marshalling the annual Providence Bay Fair parade.

On Saturday, August 23, members Evelyn MacDonald, VA3EVY, Jim McLean, VE3LJM, Lorraine McLean, VE3LMJ, Ken Niles, VE3YYK, Bob Playter, VE3TKH, and Brenda Playter, VA3TKH, assisted with a fundraising fishing derby at Providence Bay Marina. A portion of the funds raised went towards the new replacement ARES repeater for (VE3RMI) in Little Current.

On Saturday, August 23, Manitoulin ARC team members Igor Slakva, VE3ZF, Pat Dopson, VE3HZQ, and Igor Mordick, VE3KAO, attended the 14th Annual Contest Club Ontario (CCO) Barbecue and awards party. Team VE3ZF operated in the Ontario QSO Party 2014 from Twilight Isle on Manitoulin Island and was awarded Overall High Score: First Place Overall – Multi-2 Category, First in Northern Region and First in Manitoulin District. Congratulations to all who participated. Job well done! For more information see the cover article on page 41.

Fred Lesnick, VE3FAL, DEC for Amethyst District reports:

We have had a number of good storms pelt the region, but no real issues other than washed out roads. Even the fire season is quiet (that is good). With SATERN we had one conference call to make some future plans and introduce new members.

The Thunder Bay Triathlon took place on July 27 at Boulevard Lake with a number of the club members assisting along the routes.

Davis Sutherland, VE3SUT, EC for Elliot Lake, reported that there were six operators out for their Field Day operation.

Paul Caccamo, VA3PC, DEC for Magnetawan, reported on North Bay's "Summer in the Park" event. He says the event uses rented commercial equipment due to the number of unlicensed participants. There was a 5 frequency net in effect: Command Channel, Medical, Festival Services, Operations, and an Emergency Channel reserved for use. Paid security had their own equipment and channel. Bruce, VA3BDR, Chris, VA3CMX and Paul VA3PC, provided communications support to the City of North Bay, North Bay Summer in the Park Committee and Volunteers and St. John's Ambulance.

Christopher May, VA3CMX, North Bay ARES Member, reported on the "North Bay to Mattawa Canoe Race", a 64 kilometre canoe race. Apparently, this was the 39 year of the race. Communications support was provided for the North Bay Mattawa Conservation Authority. by VA3BDR, VARLOR, VA3PC, VE3MAF and VA3CMX. They passed 200 messages, spent 90 person-hours and drove a total of 520 kilometres.

– Allan Boyd, VE3AJB

DECs reporting:
VA3s: PC
VE3s: LBX and FAL

ECs reporting:
VA3s: AJV and SPT.
VE3s: LJM, SUT, RQR and MXJ.

ONTARIO EAST:

SM: Michael Hickey, VE3IPC
Email: ve3ipc@gmail.com
SEC: Vacant
STM: Vacant
OBM: Brad Rodriguez, VE3RJH
Email: ve3rhj@rac.ca
Website: http://ontario.racares.ca

JULY-AUGUST SM REPORT:

Well here we are starting November and December with the annual SET and Goblin Patrol just behind us and I expect to see several reports in both regards coming in.

I hope that all of your antenna projects are done as there is just a bit more time left to finalize the outdoor work before it gets too cold. You never know if your station will be needed to relay important or even emergency messages from one area to another. It is always best to have the ability of having your home base station(s) able to operate on the air for a long period of time when the hydro and or phone lines are down. It is not only a very good advantage for you, but your station may be needed to serve in times of a declared emergency in or near your area, so it is always best to have your entire station(s) in a good state of readiness now.

I am in need of a Section Emergency Coordinator (SEC) for this Section. If you think you have the necessary experience needed to coordinate with and provide support to all ARES and EmComm groups in this Section, and write up a monthly report that will be published in TCA, please do not hesitate to contact me at your earliest convenience. I will be happy to discuss the matter with you and answer any questions you may have.

I am also in need of someone who can take on the position of Bulletin Manager for this Section as all or most Sections have their own. I will need someone on board by December to be able to start in January. For more information on these positions please read the complete Help Wanted ad provided above and on page 40.

Eastern Ontario ARES District group reports
Submitted by AEC Norm, VE3VY

The Lanark/North Leeds ARES Group Coordinator VE3BSB and the Westport crew installed a new 440 repeater, VE3WPO, at the Westport digital site, 442.400, linked to our entire existing repeater network. It will be used to cover dead spots in and around Westport.

VA3DOY and VE3GXW built and tested a portable WL2K, 2 metre portable digital station for use at the Rideau Lakes Township EOC location in Elgin.

The group provided a written report to provide radio service to Legion Branch #542 in Westport, in their application for funding for a standby generator to be used if their facility is required for evacuation.

Several Ottawa Amateurs have been identified who have cottages in the Westport area, and plans are underway to include them in our activities. VE3SOP and VE3MKP are among them.

The Lanark/North Leeds ARES Group performed the usual weekly nets on Wednesdays at 8 pm local time throughout August.

A meeting was called in late August by Group Coordinator Barrie, VE3BSB, to discuss continued access to our various repeater sites, some of which are now operated by new owners. Our ability to have continued access is contingent in most cases on our being incorporated and having liability insurance. The outcome of the meeting saw approval being given to proceed with incorporation and apply for RAC insurance to cover our repeater sites. Art, VE3CGD, provided information on the RAC program. Grant, VE3CGV, volunteered to look into incorporation and report back.

On the digital side we saw a number of positive things occur. VE3PUX and VE3BSB, both in Perth, became activated. VE3BSB also installed a temporary digipeater (VE3LCA) southwest of Perth, which provides access to the VE3REX-7 KA-node in Westport for VE3PUX and others who may join the activity. The signal is being heard in the Almonte area and it is hoped we may eventually have a link into that area. The temporary digipeater is expected to be upgraded to permanent status.

Doug, VE3OJC, is completing a portable RMSE station at this time. George, VE3GXW and Dennis, VA3DOY, finished building an RMSE/VHF Go Kit, which can be used throughout the Rideau Lakes/Westport area, linked to VE3REX-7 KA-node, or used peer-to-peer, as well as voice.

Dennis replaced the sandbags on the roof of our trailer with rubber tires. He also made his first ever

HELP WANTED

Section Leadership Management Positions Available

Section Emergency Coordinator (SEC): The Ontario East Section Manager (SM) is looking for someone with previous experience as a District Emergency Coordinator (DEC). The ideal candidate will be someone who has been a DEC and was also a Group Coordinator (GC) or Emergency Coordinator (EC) before that with several years of experience. Consideration will also be given to an experienced and dedicated ARES GC or EC who understands the bigger picture of ARES and lives within this Section.

This position requires someone with leadership skills and who is self-motivated, personable and is at ease with contacting the DECs and ECs by phone and/or by email from time to time as required. This position requires some administration and organizational abilities and the need to be able to provide ARES Section coordination as needed. As the new ARES SEC you will benefit from the SM's support and guidance having years of ARES management experience. Some of the groundwork has been done, but more work is needed. Interested applicants regarding this responsible ARES leadership position should contact the Section Manager directly at 613-679-4474 or ve3ipc@gmail.com.

– Michael Hickey, VE3IPC, Ontario East Section Manager

HF/SSB contacts with European stations.

Breakfasts continue Saturday mornings in Perth at Michael's Restaurant on Gore Street. There is also a coffee get-together in Westport at the Station Motel Restaurant, on Wednesdays at 10:30 am. Come and join us.

Ottawa ARES/EMRG Group
Submitted by AEC Mike, VE3FFK for VE3UNW EMRG Team Leader / Ottawa ARES EC

The Ottawa ARES/EMRG Group had another quiet month, with the only activity being the repeater test, moved from July 2 to 9 due to thunderstorm activity on the scheduled date. Whether due to the change of date or the general mid-summer lack of activity, there were only two checkins. Dave, VE3KMV, ran the tests with Tim, VA3PYC and Mike, VE3FFK, who also reported the digital systems and repeater VE2CRA were working normally.

The Ottawa ARES/EMRG Group, spearheaded by Dave, VE3KMV, ran the repeater tests on August 6, with Ron, VA3ACZ, Arthur, VA3BIT, Tim, VA3PYC and Mike, VE3FFK, The digital systems and repeater VE2CRA were working normally.

On August 9 and 10, Ron, VA3ACZ, Arthur, VA3BIT and Mike, VE3FFK (do you see a pattern developing here?) assisted in the MS Bike Tour between Metcalfe and Cornwall. This event has run for many years, but this was the first year they used Amateur Radio. Despite being too few in number, the organizers were glad to have us there. It was also a good opportunity to interact with our counterparts from the Cornwall area: Stan, VA3JSF, Joe, VE3ADB, Art, VE3AIH, Doug, VE3HTR and Earle, VE3IMP. It was a good exercise for those of us from Ottawa as we had to go to a location we didn't know, to try to establish communications on a repeater we hadn't used before, mostly with people we hadn't worked with before, and to pass traffic we hadn't dealt with before. Just figuring out what to pack (and what to leave out) is always a challenging exercise.

Prescott-Russell-ARES Group
Submitted by Group Coordinator Lance, VA3LP

The Prescott-Russell ARES Group's big July community support effort on Canada Day was a resounding success. The group provides eyes and ears for the City of Clarence-Rockland at the fireworks site. With the site surrounded by fences, it is easy to keep the accidental fence climbers away from the fireworks. As usual, Chuck Seguin (Fireworks by Seguin) provided a wonderful display for the people of Clarence-Rockland. Thanks to Ron, VA3RRZ, Norm, VA3NPL, Chris, VA3NKE, Allen, VA3ONN and his wife Suzanne, Jim, VA3KV and Group Coordinator Lance, VA3LP, for their support on Canada Day 2014.

The Prescott-Russell ARES Group spent the month of August building and testing HF dipole antennas in anticipation of installing a permanent HF antenna at the Chamberlain Centre site in Rockland. This will give us a base of operations that would include capabilities for HF voice and packet out of our area and into other areas like Toronto. Now the group must focus on acquiring authorization to install the antenna from the City.

Districts reporting:
ECs (GCs) reporting:
VE3VY, VE3FFK, VE3YX, VA3LP, VE3IMP and VE3IEH.

DECs reporting: VA3LP.

OBS reporting: VE3YX, VE3KII, VE3VY, VE3ZJS and VE3IQZ.

– 73, Michael Hickey, VE3IPC

ONTARIO GTA SECTION REPORT

SM: George Duffield, VE3WKJ
ASM: Vic Henderson, VE3FOX
ASM: James King, VE3ETZ
SEC: Rick Harrison, VA3NV
STM: James Davidson, VE3TPZ
SBM: Brad Rodriguez, VE3RHJ
Website: http://ontario.racares.ca

JULY-AUGUST SM REPORT:

After a summer that was viewed quite differently by almost everyone – too cold, just right, too much rain or almost perfect – autumn is upon us. September, the month that for most clubs is the beginning of a new year, has had Membership Chairs busy, Club Presidents and Executive committees planning for the coming months, and ARES Group Coordinators setting plans in motion for events such as the SET, JOTA and other community based events that occur in the fall.

The Section Staff is also into its planning and development processes. There is much work being done on the development of a Mesh/HSMM network that will link all parts of the GTA via a backbone system with eventual links to parts of the Ontario South Section. The most important aspect of this challenge is to develop working applications that will clearly demonstrate the capabilities of the GTA ARES groups. At this point, there is much work still to do. But there are some very talented Amateurs working on the projects so we are looking forward to positive results.

The GTA Section is also pleased to let amateurs in the Durham Region know that an ARES/EmComm initiative is underway under the leadership of Walker Kang, VA3WYC, the President of the South Pickering ARC and Alison Honsberger, VE3GRL, who has undertaken the role as Group Coordinator. They need your support and participation.

As you will read in the reports from the GTA frontline leaders, a great deal is happening in the Section.

SEC Rick Harrison, VA3NV:

The summer months have had an effect both on ARES activities and EC reports. The fall season will bring people back from vacations and the resumption of public service activities should see our ARES teams becoming busy once more.

Despite this, several ARES nets continued to operate in the GTA during the summer and experimentation continues with MESH and FL DIGI.

Toronto ARES continues to build a strong relationship with the Toronto Red Cross. Indeed, they have convinced the Red Cross to take an active role in the Simulated Emergency Test.

The South Halton ARES group continues to be quite active, renovating a trailer for use as a mobile communications centre, exploring Fldigi and MESH, and updating their SOPs and documentation.

Overall, GTA ARES groups continue to be a valuable resource to the GTA communities.

Toronto
DEC Malcolm Kendall, VE3BGD

Our monthly meeting was held at the Red Cross HQ in August. More training is taking place in regards to the Simulated Emergency Test and Fldigi. The SET will be a joint exercise here in Toronto with the Red Cross opening a small shelter at the Edith Vale Community Centre.

Durham Region
Alison Honsberger, VE3GRL

Any Amateurs, whether or not club or RAC members, who have an interest in community service are encouraged to contact me to become involved. I can be contacted through the South Pickering ARC website. Of particular interest are those Amateurs who have experience in ARES operations, but all are welcome.

Brampton / Caledon ARES
EC Richard Upfield, VA3RMU

Our ARES meetings continue through the summer months. Currently, we are experimenting with MESH and attempting to set up a network in our area. We are looking into applications that can be associated with the MESH system.

Halton ARC/Georgetown ARES
Lyle Winfield EC, VA3VI

Both VHF (VE3OD) and UHF (VE3HR) repeaters were operational throughout the summer, with 100% uptime. The VE3PKG packet node was also operational.

South Halton ARES
George Davis EC, VE3OGP

South Halton ARES set up an information and recruitment table at the Burlington ARC / Milton Hamfest. The Hamfest was very well attended. We met many new and old friends and we were able to sign up four new members.

At the July meeting plans were made to start the first phase of the trailer rebuild. On August 9, the trailer committee gathered at the rebuild location and gutted the interior, removing the appliances, cabinets and washroom.

At the end of the month we returned to tear down the ceiling and walls so that we have access to the frame. Some minor repairs are in order and will be started at our next session in September. At the conclusion of both sessions we had a BBQ lunch.

Many members have already donated supplies and time for this project. Thanks to: VA3NV, VA3CQC, VA3EGG, VA3IPC, VA3PRE, VA3RHH, VE3DDL, VE3OKZ and VE3OXP.

Peter, VA3PRE and George, VE3OGP, attended the GTA section meeting held at the Toronto Red Cross.

At our meeting in August we discussed plans for the upcoming SET in October, our Fldigi training and net controller training for the September meeting and exploring incorporation of the group. The standard operating procedures, (SOP), first edition draft has been released to some members for review. We expect to present a final version by October.

The weekly nets continue to have good check in numbers and the SHARES radio channel control table aid for NCS operators is nearing completion.

York Region ARES
EC Russell Walter, VA3WTR

York ARES/EmComm continues to move forward in its rebuilding and upgrading.

DECs reporting: VE3BGD

ECs reporting: VA3RMU, VA3TMB, VA3VI, VA3WTR, VE3BGD, VE3GRL, VE3OPG and VE3VXY.

OBS reporting:
VE3JUZ, VE3SHM

– George Duffield, VE3WKJ

NEWFOUNDLAND AND LABRADOR:

SM: Vacant

JULY-AUGUST SM REPORT:

July was an exceptionally nice month in NL but Mother Nature evened it out in August or should I say Fogust. There is a saying in St. John's that summer's over after Regatta Day, the first Wednesday in August; that belief sure held true this year. One got the fall feeling creeping into the weather – especially the temperatures. Then again, September is always a reprieve, as it is this year, with nice days and fall colours in to the landscape.

In July, along with Dave McLennan, VO1LM, I had the pleasure of presenting the first Amateur Radio scholarship during an awards evening at the Engineering Department at Memorial University of Newfoundland (MUN) to a deserving student, Gary Corcoran. The late Nate Penney, VO1NP, set up this scholarship with a monetary bequest to MUN, the investment interest to form the basis of the scholarship.

Further donations from Amateurs or their families are welcomed. Inquiries should be directed to the Scholarship Committee at MUN.

This is a great way of leaving a legacy as this scholarship will be presented annually for perpetuity. For more information please see the article in the right column.

Our good friend, Keith Perry, VO1FZ, is presently a patient at a Halifax hospital receiving a bone marrow transplant in his fight with leukemia. He was fortunate enough to get a donor that matched him medically 10/10. He is presently in isolation and doing well in his recovery with minimal side effects. Keep strong there Keith and hopefully soon you'll be back to normal; trading insults as per usual at the Saturday breakfasts.

My thanks go to the two students hired to promote Amateur Radio at Cabot Tower in St. John's and Admiralty House in Mount Pearl. Both locations are steeped in the history of communications in the province.

During Lighthouse and Lightship Weekend, August 16-17, the Myrick Wireless Interpretation Centre at Cape Race, VO1MCE, was a hub of activity organized by Cape Race/Portugal Cove South Heritage Inc. The event was attended by the Lieutenant Governor of Newfoundland and Labrador, Frank Fagan and his wife, along with many dignitaries. Mr. Fagan is an Amateur, VO1FFF, and he pursued a career in the communication field before being appointed Lieutenant Governor.

A fine time was had by all, with entertainment provided by a band of Amateurs: Dave Myrick, VO1VCE, Cal Tucker, VO1NY, Frank Davis, VO1HP, Ira Stacey, VO1IRA, Vince O'Keefe, VO1SO, and my XYL Cathy. Dave McLennan, VO1LM, and another West Coast Amateur also operated during the Lighthouse weekend at the lighthouse in Woody Point, a well-visited site in Gros Morne National Park.

During the past few years there hasn't been much Amateur activity in the Corner Brook/West Coast area and it is nice to see these signs of activity.

As this report covers July and August, the next report will cover the Hamfest we had in Gander September 6-7. Suffice it to say that it was well organized, well attended and great fun; thanks to Ira, VO1IRA, and his committee.

The latest Net reports are provided below thanks to Ira.

Charlie Marsh, VO1VZ
NL Section Bulletin Editor

Cod Jigger
July 258
June 271

Evening
July 584
August 656

TCA

On the evening of July 24, 2014, Dave McLennan, VO1LM, and I had the pleasure of representing the Penney Family, the Society of Newfoundland Radio Amateurs (SONRA) radio club and by extension all VO1 and VO2 Amateurs in presenting the Society of Newfoundland Radio Amateurs Electrical Engineering Scholarship to Mr. Gary Corcoran, an Academic Term Seven student in the Engineering Faculty of Memorial University of Newfoundland and Labrador.

This scholarship was established in memory of deceased members who cherished the Amateur Radio hobby and experienced its fellowship and camaraderie. It was founded by a gift from the Estate of Nathan G. Penney, VO1NP. The scholarship value is set at a portion of the income from the investment and will be awarded annually to a senior undergraduate student enrolled in the Electrical Engineering Program.

This year's award had a value of $2,012. The recipient must meet the academic requirements for a scholarship as defined by Memorial University of Newfoundland (MUN) with preference given to a student who has the financial need and is not already in receipt of scholarship funding.

A lasting memorial to all Silent Keys by Nate Penney, VO1NP, a great Amateur and friend to us all.

Submitted by Charles Marsh, VO1VZ

RAC FIELD ORGANIZATION REPORTS

National Traffic System (NTS) Net Reports

Net (Manager)	Sessions	QNI	QTC
July 2014:			
BCEN (VE7XLH)	31	336	31
BCYTN (VE7WJ)	31	503	27
CECA (VE7GN)	4	45	12
MEPN (VE4LB)	31	515	1
MMWXN (VA4GD)	31	591	1
MRS (VE4HK)	9	272	0
MSMN (VE4AEW)	23	620	0
OPN (VE3XRC)	31	67	20
August 2014:			
BCEN (VE7XLH)	31	302	29
BCYTN (VE7WJ)	31	499	57
CECA (VE7GN)	4	72	10
MEPN (VE4LB)	31	581	2
MMWXN (VA4GD)	31	265	1
MRS (VE4HK)	9	289	0
MSMN (VE4AEW)	21	520	0
OPN (VE3XRC)	31	80	27

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Andy Chesnokov, UA3AB
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Jerry Rosalius, WB9Z
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Jerry – WB9Z

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Neil – ZS6/VA7DX

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Nodir – EY8MM

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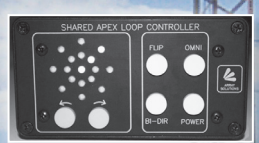

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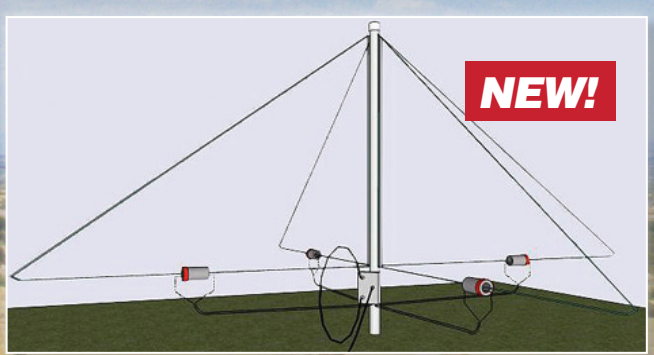

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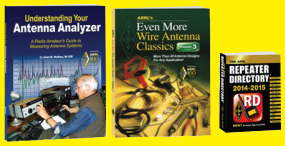

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