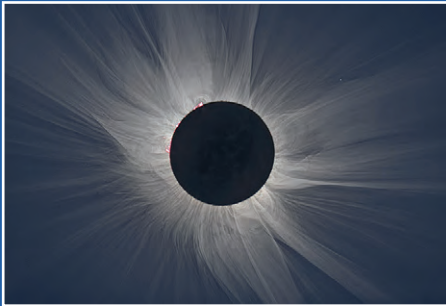


70th Anniversary of Amateur Radio at Eureka – Part 2: The VY0ERC Club Station



Manitoba High Altitude Balloon Flight Day



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Image courtesy of NASA

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The Canadian Amateur

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2017

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“From the beginning, Amateur Radio provided a vital link for the eight-person station staff and, under the station call sign VE8MA, Amateur operations continued for many years. The year 2017 marks the 70th anniversary of the establishment of the station.” – see page 30

“Langruth, a small town on the west side of Lake Manitoba, was the perfect launch site for the Manitoba Association of Physics Teacher’s (MAPT) High Altitude Balloon (HAB) Flight Day on Thursday, May 4.” – see page 18

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The deadlines for the next issues of TCA are July 15 and September 15.

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1867 – 2017: CANADA 150

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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.

VA3JH – John Henderson, of London, ON, at age 91, on March 25, 2017.
VA3JSY – John Yankovich, of London, ON, at age 78, on April 24, 2017.
VA3PGW – Garry Wilcox, of Oil City, ON, at age 84, on March 18, 2017.
VE1AHZ – Charles (Buddy) Meade, of Concession, NS, at age 80, on August 29, 2015.
VE1ALQ – Darrell Ward, of Grand Bay-Westfield, NB, at age 78, on April 11, 2017.
VE1BR – Billy Drillen, of Saint John, NB, on April 4, 2017.
VE1DC – Joseph Doucet, of Fredericton, NB, at age 77, on April 13, 2017.
VE1HMR – Helen MacRae, of Halifax, NS, at age 73, on May 27, 2017.
VE2ESP – Earl Paris, of Montreal, QC, at age 80, on March 27, 2017.
VE2PZA – André Pelletier, of Saint-Hyacinthe, QC, at age 73, on March 6, 2017.
VE3AAS – Bill Barrie, of Almonte, ON, at age 98, on March 13, 2017.
VE3ANU – Bruce Underwood, of Kitchener, ON, at age 94, on April 17, 2017.
VE3ARI – Lloyd Passingham, of Sarnia, ON, at age 91, on April 12, 2017.
VE3BNT – Roy Duxbury, of London, ON, at age 97, on April 29, 2017.
VE3BYM – Ralph Tufts, of Dundas, ON, at age 96, on December 26, 2016.
VE3DBD – Ron Gimbel, of Kitchener, ON, at age 83, on April 1, 2017.
VE3DWO – Ab Ives, of Windsor, ON, at age 92, on March 25, 2017.
VE3DZR – Dwayne Randle, of Thunder Bay, ON, at age 69, on May 5, 2017.
VE3EI – Eric Meth, of Niagara-on-the-Lake, ON, at age 71, on April 4, 2017.
VE3EIC – Brian Milroy, of Belleville, ON, at age 77, on March 9, 2017.
VE3EWH – Ted Holseth, of Thunder Bay, ON, at age 69, on April 2, 2017.
VE3FEJ – Chuck Lawrence, of Almonte, ON, at age 90, on February 13, 2017.
VE3GBG – Gord Burgess, of Brockville, ON, at age 92, on January 20, 2017.
VE3GUP – John Carey, of Windsor, ON, at age 81, on May 24, 2017.
VE3HDT – Harold Dresser, of Windsor, ON, at age 82, on May 12, 2017.
VE3JRX – Ray Charbonneau, of Ottawa, ON, at age 85, on March 13, 2017.
VE4ROG – Roger Carbotte, of Winnipeg, MB, at age 76, on April 28, 2017.
VE4XA – Bob Mitchell, of St. Malo, MB, at age 72, on April 23, 2017.
VE5ED – Ted Pischak, of Warman, SK, at age 89, on March 23, 2017.
VE5FV – Albert Koenderink, of Saskatoon, SK, at age 84, on March 18, 2017.
VE5GY – Greg Barnsley, of Saskatoon, SK, at age 83, on January 2, 2017.
VE5JDR – James Ruchotzke, of Hague, SK, on August 7, 2016.
VE5RVP – Walter Prichard, of Moose Jaw, SK, at age 88, on December 13, 2016.
VE5SZ – John Zyla, of Minton, SK, at age 76, on November 26, 2016.
VE5TAO – Eric Brunner, of Aberdeen, SK, on March 3, 2017.
VE5TAW – Joan Paulson, of Estevan, SK, at age 76, on January 24, 2017.
VE5TYE – Randy Miller, of Moose Jaw, SK, at age 56, on February 8, 2017.
VE5WZ – Al Mireau, of Saskatoon, SK, at age 77, on November 4, 2016.
VE6ED – Ed Burrows, of Grimshaw, AB, at age 95, on April 23, 2017.
VE6JMJ – Joseph Martineau, of Edmonton, AB, at age 77, on February 21, 2017.
VE6LLW – Willy Wilson, of Berwyn, AB, at age 82, on March 19, 2017.
VE6PBS – Phil Brooks, of Red Deer, AB, at age 61, on March 11, 2017.
VE6VA – George Viertelhausen, of Priddis, AB, at age 74, on March 5, 2017.
VE7BOZ – John Sansom, of Salmon Arm, BC, at age 89, on March 28, 2017.
VE7MU – Bob Collins, of Victoria, BC, at age 94, on May 10, 2017.
VE7VK – George McGuire, of Saanich, BC, at age 100, on December 10, 2016.
VE7WK – Edwin Warkentin, of Langley, BC, at age 93, on April 4, 2017.
VE7ZX – Jim Dean, of North Vancouver, BC, at age 88, on November 30, 2016.
VE9AAG – Ernie Blanchard, of Quispamsis, NB, at age 76, on March 4, 2017.
VY2FG – Frank Graham, of Charlottetown, PE, at age 81, on March 21, 2017.

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

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*For complete
Section Reports
please see
the Section News
on pages 58-62.*



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A MESSAGE FROM THE PRESIDENT / UN MESSAGE DU PRÉSIDENT



Glenn MacDonell, VE3XRA
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The months of July and August usually signify summer in Canada and I'm sure we're all looking forward to it. In my part of Canada, we

have had a long cool rainy spring so I'm eager for the warmer weather to begin.



At a minimum, I should finally be able to get started with the antenna work to be better equipped for the low HF bands that will be where a lot of the action will be over the next couple of years.

The solar flux in June was roughly the same as it had been in 2006 as an earlier solar cycle headed for its minimum. The flux slowly declined and then grew again to be at the same level at the start of 2011 so we can realistically expect HF conditions over the next few years to be the same as they were from 2006 through 2010.

In most years activities of Radio Amateurs of Canada tend to slow down a bit in July and August. Most of our membership renewals happen in the fall and winter and we have quite a bit fewer over the summer months. In addition, after the period of feverish activity associated with the Dayton Hamvention in mid-May, Field Day in late June and the RAC Canada Day Contest on July 1, a slow-down doesn't seem all that bad. This year, however, I expect a busy summer and fall largely because of the Canada 150 celebrations. While they have so far seemed to be slow to start – especially when compared to what I remember of the Centennial celebrations in 1967 – I expect they will take off with the First of July celebrations and carry on through the rest of the year.

Amateur Radio will play its part in marking Canada's Sesquicentenary. As I mentioned in my last Message (May-June 2017 TCA), we will have a special version of our **Canadaward** for those who work all Canadian provinces and territories in 2017. I also noted that we were considering a **RAC 150 Award** for those who worked RAC stations in all provinces and territories in 2017. I am happy to report that two RAC members from British Columbia – Gabor Horvath, VE7JH and Keith Whitney, VE7KW – are working with Richard Ferch, VE3KI – trustee for the provincial/territorial RAC call signs held by Radio Amateurs of Canada – to implement this special award. Watch the RAC website for more information about these special awards on as events unfold.

Another **Canada 150** project with an interesting Amateur Radio component is **Canada C3**, a 150-day expedition (June 1 to October 28) from Toronto to Victoria via the Northwest Passage (<https://canadac3.ca/>). It will stop every day at a different location and visit 50 coastal communities, 36 Indigenous communities, 13 national parks and 20 Migratory Bird Sanctuaries.



Les mois de juillet et août signifient l'été au Canada et je suis sûr que nous sommes tous impatients de le voir arrivé. Dans ma partie du Canada, nous avons eu un printemps pluvieux et je suis maintenant désireux de connaître du temps chaud.

Pour le moins, j'espère pouvoir commencer à travailler sur mon antenne afin d'être mieux équipé pour la réception des basses bandes HF. Le gros de l'activité solaire propre à leur réception aura lieu au cours des deux prochaines années. Le flux solaire en juin était à peu près le même qu'en 2006, comme au cycle solaire précédent à son minimum.

Le flux avait lentement diminué pour ensuite augmenter à nouveau au même niveau qu'au début de 2011 de sorte que nous pouvons espérer que les conditions du HF, au cours des prochaines années, soient les mêmes qu'au cours de la période de 2006 à 2010.

Au cours de la majorité des années, les activités de Radio Amateurs du Canada ont tendance à ralentir un peu en juillet et en août. La plupart de nos renouvellements d'adhésion se produisent à l'automne et à l'hiver et nous avons un peu moins d'activités au cours des mois d'été. Cependant, après la période d'activité intense associée au Hamvention de Dayton à la mi-mai, la journée sur le terrain (Field Day) à la fin de juin puis le concours de la Journée du Canada de RAC, le 1^{er} juillet, un ralentissement n'est pas véritablement inquiétant. Cette année, cependant, je m'attends à un été et à un automne plus occupés en raison principalement des célébrations du Canada 150. Bien que les activités jusqu'ici aient été lentes à démarrer comparées à celles dont je me souviens au moment du centenaire de 1967, je m'attends à ce qu'elles débutent véritablement avec les célébrations du 1^{er} juillet et se poursuivent le reste de l'année.

Le radioamateurisme jouera un rôle notable dans les célébrations du 150^e du Canada. Comme je l'ai mentionné dans mon dernier message (TCA de mai-juin 2017), nous aurons une version spéciale de notre "**Canadaaward**" pour les amateurs qui travaillent dans toutes les provinces et tous les territoires du Canada en 2017. Je vous fais également remarquer que nous envisageons un **prix RAC 150** pour ceux qui ont travaillé dans les stations de RAC dans toutes les provinces ou territoires en 2017. Je suis heureux de signaler que deux membres de RAC de la Colombie-Britannique – Gabor Horvath, VE7JH et Keith Whitney, VE7KW – travaillent avec Richard Ferch, VE3KI – initiateur des indicatifs d'appel territoriaux de RAC détenus par Radio Amateurs du Canada – pour mettre en œuvre ce prix spécial. Surveillez le site web de RAC pour plus d'informations à propos de ces récompenses spéciales. Elles seront affichées au fur et à mesure que les événements se dérouleront.

Canada C3 est un autre projet de **Canada 150** qui possède une composante radioamateur intéressante. Le projet consiste en une expédition de 150 jours (du 1^{er} juin au 28 octobre) de Toronto à Victoria par le passage du Nord-Ouest (<https://canadac3.ca/>). L'expédition s'arrêtera tous les jours à un endroit différent et visitera 50 communautés côtières, 36 communautés autochtones, 13 parcs nationaux et 20 sanctuaires d'oiseaux migrateurs. Un groupe enthousiaste dirigé par un membre de RAC, Barrie Crampton, VE3BSB, a installé une balise WSPR sur le bateau opérant sur les 20m, 30m et 40m. Cela donnera l'occasion d'observer la propagation des ondes radio à partir d'endroits situés le long du chemin suivi par le bateau, y compris la région arctique du Canada. RAC a pour but d'aider à la

A group of enthusiasts led by RAC member Barrie Crampton, VE3BSB, has installed a WSPR beacon on the vessel operating on 20m, 30m and 40m. This will provide an opportunity to observe radio propagation from locations along the vessel's path including Canada's High Arctic. RAC is helping to promote the WSPR component of the event so stay tuned to TCA, the RAC website and social media for more information as the ship makes its way from coast to coast to coast.

In his article, "Why Canada may be the Best Place to Experience the Solar Eclipse when you are an Amateur!", in this issue of TCA, Alex Schwarz, VE7DXW, describes the upcoming solar eclipse and invites Radio Amateurs to make contacts during that time to provide information on changes in the ionosphere during the eclipse (see page 35). This activity and the WSPR beacon on the C3 voyage through the Northwest Passage illustrate how Radio Amateurs, in their typical activities of making contacts and observing signals, can make valuable scientific contributions to the understanding of radio propagation.

RAC concluded another successful participation in the Dayton Hamvention in mid-May. As in previous years we had many great discussions with RAC members from across Canada who were attracted to this "Mecca" for Radio Amateurs. The RAC booth was located near other national Amateur Radio organizations making it easy to meet and share experiences with leaders of national Amateur Radio organizations around the world. Hamvention was held at a new location this year and although there were a few issues on the first day – see Richard Ferch's article on page 17 – the consensus is that the new location provided both immediate advantages and opportunities to grow for future Hamventions.

In my last Message, I also highlighted some of RAC's activities, such as our Youth Education Program, which are designed to generate interest in Amateur Radio among young people and two articles in this issue of TCA explore this further.

Daniel Dion, VE5DLD, describes the Regina Amateur Radio Association's participation in STEAM 2017 – the Science Technology Engineering Arts and Mathematics Festival – held in conjunction with the Canada-Wide Science Fair in Regina, Saskatchewan in May (see page 13). RAC provided financial assistance and material that could be used to inform participants about Amateur Radio. The top 500 Science Fair competitors from regional Science Fairs presented their projects and more than 2,000 students and their families participated in the STEAM Festival. We look forward to working with other affiliated clubs to promote Amateur Radio at similar events in the future.

Rob Striemer, VE4SHS, describes the Manitoba Association of Physics Teacher's High Altitude Balloon (HAB) Flight Day on Thursday, May 4 in which eight teams launched HABs from rural schools (see page 18). Most teams include students and teachers who are certified Amateur Radio operators. RAC has provided support to HAB projects for several years – in particular, the Shaftesbury High Altitude Robotics Project (SHARP) at Shaftesbury High School in Winnipeg – through its Scholarship and Grant Program.

Programs like RAC's Youth Education Program, our Scholarship Program and the Defence of Amateur Radio Fund (DARF) are funded through donations from RAC members and affiliated clubs. Your membership dues pay for RAC's day-to-day operations including TCA magazine, the RAC website, member services such as the incoming and outgoing QSL bureaus, and our contests and awards programs. Your donations allow us not only to reach out to young people, but also to defend Amateur Radio in Canada and internationally.

promotion de la composante WSPR de l'événement laquelle permettra de rester à l'écoute de TCA, du site web de RAC et des médias sociaux pour plus d'informations, car le bateau suivra un tracé d'un océan à l'autre.

Dans son article, « Pourquoi le Canada peut être le meilleur endroit pour surveiller les éclipses solaires lorsque vous êtes amateur! », publié dans le présent numéro de TCA, Alex Schwarz, VE7DXW, décrit l'éclipse solaire à venir et invite les radioamateurs à faire des contacts pendant l'éclipse pour fournir de l'information sur les changements ionosphériques (voir la page 35). Cette activité et la balise WSPR du voyage C3 à travers le passage du Nord-Ouest illustrent comment les radioamateurs, dans leurs activités typiques de contacts et de signaux d'observation, peuvent apporter des contributions scientifiques précieuses à la compréhension de la propagation des ondes radio.

RAC a connu beaucoup de succès à sa dernière participation à la Hamvention de Dayton à la mi-mai. Comme par les années précédentes, nous avons eu de nombreuses discussions avec les membres de RAC de partout au Canada, attirés par cette « mecque » des radioamateurs. Le kiosque de RAC était situé à proximité de ceux d'autres organisations nationales radioamateurs, ce qui a facilité la rencontre et le partage d'expériences avec les dirigeants des organisations nationales radioamateurs à travers le monde. La Hamvention s'est tenue dans un nouvel endroit cette année et, bien qu'il y ait eu quelques problèmes le premier jour – voir l'article de Richard Ferch à la page 17 – le consensus s'est établi à l'effet que le nouvel emplacement offre à la fois des avantages immédiats ainsi que des possibilités de croissance pour les futures Hamventions.

Dans mon dernier message, j'ai également souligné certaines activités de RAC – telles que notre programme d'éducation pour les jeunes – conçues pour générer de l'intérêt envers le radioamateurisme chez les jeunes. Deux articles dans le présent numéro de TCA le soulignent encore plus.

Daniel Dion, VE5DLD, décrit la participation de l'Association Radio Amateur de Régina au festival STEAM 2017 (The Science Technology Engineering Arts and Mathematics) en collaboration avec le « Canada-Wide Science Fair » à Régina, en Saskatchewan, en mai (voir la page 13). RAC a fourni une aide financière et du matériel propre à être utilisé pour informer les participants à propos du radioamateurisme. Les 500 meilleurs concurrents scientifiques issus des foires scientifiques régionales ont présenté leurs projets et plus de 2 000 étudiants et leurs familles ont participé au festival STEAM. Nous sommes impatients de travailler avec d'autres clubs affiliés pour promouvoir le radioamateurisme à des événements semblables à l'avenir.

Rob Striemer, VE4SHS, décrit la journée (jeudi 4 mai) des vols de ballons en haute altitude (HAB) du Manitoba Association of Physics, au cours de laquelle huit équipes ont lancé des « HAB » depuis des écoles rurales (voir la page 18). La plupart des équipes comprennent des étudiants et des enseignants radioamateurs certifiés. RAC apporte son soutien aux projets HAB depuis plusieurs années – en particulier, le Shaftesbury High Altitude Robotics Project (SHARP) au Shaftesbury High School à Winnipeg – grâce à son programme de bourses d'études et de subventions.

Des programmes comme le programme d'éducation des jeunes de RAC, notre programme de bourses d'études et le Fonds pour la défense du radioamateurisme (DARF) sont financés par des dons de membres de RAC et de clubs affiliés.

THE OTTAWA AMATEUR RADIO CLUB PRESENTS THE 2017 OTTAWA (CARP) HAMFEST



SATURDAY, SEPTEMBER 9, 2017

(The week after the Labour Day Weekend)

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Canada is among a small number of countries whose national Amateur Radio organizations provide Amateurs with an opportunity to participate in the development of international radiocommunications regulations. The generosity and farsightedness of our donors allow us to send a representative to international regulatory meetings and conferences to make sure Amateur Radio spectrum allocations are defended. Bryan Rawlings, VE3QN, RAC Special Advisor, was in Geneva, Switzerland in late May attending Preparatory Meetings for the upcoming World Radiocommunication Conference (WRC) in 2019. You can find his WRC Countdown article on page 23.

I'm looking forward to several interesting events in the coming months. I will attend the ARRL Board Meeting in Connecticut on July 21-22. The ARRL Board meets twice a year and routinely invites the Presidents of RAC and the International Amateur Radio Union to attend. The content of the meetings is always interesting, whether it deals with issues we also face or not, and regular attendance provides an opportunity to build relationships. I will provide a report on the meeting in my next Message.

The next event important event is National Peacekeepers' Day on August 13. It was established in 2008 to provide "an opportunity for Canadians to express the pride and respect they have toward personnel of the Canadian Armed Forces, the Royal Canadian Mounted Police, and provincial and municipal police forces, as well as Canadian diplomats and civilians who have worked in support of international peace and security operations". The organizers of this year's event wrote to RAC noting "the role played by Amateur Radio operators in allowing peacekeepers to remain in touch with family and friends in the era before instant personal digital communications" and inviting RAC to send a representative.

Vos frais d'adhésion paient pour les activités courantes de RAC, y compris le magazine TCA, le site web de RAC, les services aux membres tels que le fonctionnement des bureaux des QSL entrants et sortants et nos divers programmes de concours et de prix. Vos dons nous permettent non seulement de rejoindre les jeunes, mais aussi de défendre le radioamateurisme au Canada et à l'étranger.

Le Canada fait partie du petit nombre de pays dont les organisations nationales offrent aux radioamateurs la possibilité de participer au développement de la réglementation internationale des radiocommunications. La générosité et la clairvoyance de nos donateurs nous permettent d'envoyer un représentant à des réunions et des conférences internationales de réglementation afin de s'assurer que les allocations du spectre radioélectrique amateur soient bien défendues. Bryan Rawlings, VE3QN, conseiller spécial du RAC, était à Genève, en Suisse, à la fin de mai lors des réunions préparatoires pour la prochaine Conférence mondiale des radiocommunications (CMR) en 2019. Vous trouverez son article à propos de la CMR sur la page 23.

J'attends avec impatience le début de plusieurs événements intéressants dans les prochains mois. Je participerai à la réunion du conseil d'administration d'ARRL au Connecticut, les 21 et 22 juillet. Le conseil d'administration de l'ARRL se réunit deux fois par année et invite systématiquement les présidents de RAC et de l'Union internationale des radioamateurs (UIRA) à y participer. Le contenu des réunions est toujours intéressant, qu'il s'agisse de problèmes auxquels nous sommes confrontés ou non, la fréquentation régulière de ces réunions offre l'occasion de créer de nouvelles relations. Je vais fournir un rapport sur la réunion dans mon prochain message.

It is moving to know that those who served Canada as Peacekeepers remember the important role played by volunteer Radio Amateurs in maintaining links with home.

Phone patches are no longer key technologies for us, but Radio Amateurs continue to find ways to use their skills and innovative technology to serve their communities. I will be honoured to represent RAC at the ceremony. We will provide more information about the event on the RAC website as the event approaches.

On Saturday, September 9 our Annual General Meeting will be held in Ottawa. These meetings take place in a different part of Canada each year. In 2016, we met in Newfoundland on the 100th anniversary of the landing of the first transatlantic cable at the Heart's Content Cable Station. Previous AGMs were held in Saskatchewan, Quebec and British Columbia. The 2017 meeting will be held in conjunction with the Ottawa Hamfest so those able to attend can check out the bargains in the morning before the 1 pm EDT start of the AGM. If you can't attend in person you can join the meeting over the Internet using the system we have had in place in recent years. Details on the AGM and how to participate electronically can be found on page 11 and will be available on the RAC website.

This year for the first time we are holding our biennial Planning Meeting immediately before the AGM. RAC is a national organization and our Regional Directors and Executive members are scattered across our vast country. We meet regularly via online conference calls, but these meetings are often focused on immediate activities or urgent issues. The Planning Meetings take place every two years and provide an excellent opportunity for face-to-face discussions involving larger and longer-term issues and to set priorities for the coming years. This year, RAC members attending the AGM will be able to meet our Board and Executive who will also have an opportunity to participate at the AGM.

With Canada 150 activities and other Amateur Radio related events I expect this to be a hot summer in many ways. Enjoy.

*Glenn MacDonell, VE3XRA
RAC President and Chair*

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Le prochain évènement important sera la journée nationale des Casques bleus (National Peacekeepers' Day) le 13 août. L'évènement a été créé en 2008 pour fournir l'occasion aux Canadiens d'exprimer la fierté et le respect qu'ils éprouvent envers le personnel des Forces armées canadiennes, de la Gendarmerie royale du Canada ainsi que des forces policières des provinces et des municipalités. S'ajoutent les diplomates et les civils canadiens qui ont travaillé à appuyer des opérations internationales de paix et de sécurité. Les organisateurs des activités de cette année ont écrit à RAC pour souligner « le rôle qu'ont joué des radioamateurs en permettant aux forces du maintien de la paix de rester en contact avec leur famille et les amis avant l'époque des communications personnelles numériques instantanées ». Les organisateurs ont, en outre, invité RAC à envoyer un représentant.

Il est inspirant de savoir que ceux qui ont servi le Canada en tant que gardiens de la paix se souviennent du rôle important joué par les bénévoles radioamateurs dans le maintien de liens avec la famille. Les relais téléphoniques n'ont plus de secrets technologiques pour nous et les radioamateurs continuent de trouver des moyens de mettre leurs compétences et leurs innovations technologiques au service de leur communauté. Je serai honoré de représenter RAC lors de la cérémonie. Nous fournirons plus d'informations sur notre site web à l'approche de l'évènement.

Le samedi 9 septembre, notre Assemblée générale annuelle (AGM) aura lieu à Ottawa. Ces réunions se déroulent chaque année dans une région différente du Canada. En 2016, nous nous sommes rencontrés à Terre-Neuve pour 100e anniversaire de l'arrivée du premier câble transatlantique à la station de câblage Content Heart. Des AGM antérieures ont eu lieu en Saskatchewan, au Québec et en Colombie-Britannique. La réunion de 2017 se tiendra à partir de 13 heures (hae) en collaboration avec le Hamfest d'Ottawa, afin que ceux qui peuvent y assister puissent profiter des "bonnes affaires" dans la matinée, avant le début de l'AGM. Si vous ne pouvez pas participer en personne, vous pourrez vous joindre à la réunion sur internet en utilisant le système que nous avons mis en place ces dernières années. Les détails sur l'AGM et la façon de participer par voie électronique sont indiquée à la page 11 en plus d'être disponibles sur le site web du RAC.

Cette année, pour la première fois, nous organisons notre réunion biennale de planification immédiatement avant l'AGM. RAC est une organisation nationale et nos directeurs régionaux et membres de l'exécutif sont dispersés dans notre vaste pays. Nous nous réunissons régulièrement par conférence téléphonique en ligne, mais ces réunions sont souvent axées sur des activités immédiates ou des problèmes urgents. Les réunions de planification se déroulent tous les deux ans et constituent une excellente occasion pour des discussions en face-à-face relatif à des problèmes à plus grande échelle et à plus long terme et pour fixer les priorités des années à venir. Cette année, les membres de RAC qui assisteront à l'AGM pourront rencontrer les membres de notre conseil d'administration et du conseil exécutif qui y participeront.

Avec les activités du Canada 150 et autres événements liés au radioamateurisme, je m'attends à un été très occupé à bien des égards. Profitez-en!

Glenn MacDonell, VE3XRA – RAC President and Chair

– Traduction par Claude Lalande, VE2CLF. Merci Claude!



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SIX METRES AND DOWN

SPORADIC E SEASON OFF TO AN EARLY START...

Finding Sub-Bands for Amateur Television – Squeezed for Spectrum?

Grant, VE3XTV, has his TV gear up and running on 2370 MHz, into a loop yagi, and is also working on 1240 MHz and 915 MHz operations. It seems that there are potential issues with interference from other operations in our bands where we are Secondary Users, and from unlicensed low power stuff as well. Hopefully, this can be worked around so that everyone lives together on these and our higher microwave bands. The good news is that our use of the bands is now growing with narrow band terrestrial, EME, Mesh, TV and repeater growth! Let's keep it up people, we need these bands and to keep them we need activity and support from RAC and our government, as well as ITU and our fellow Amateurs through IARU.

Here's a picture of Grant's test pattern on 2370 MHz.



This is why you need to maintain your RAC membership and get your buddies to join so we can have the dollars and resources to defend our bands. Get it? Go twist some arms, for the cost of a couple of cases of beer per year its insurance for us all.

VC2EME DXpedition to Zone 2 (Grid FO10le): EME and E skip

Bob, VE3WY and Marshall, K5QE, have a plan for a Zone 2 DXpedition to provide legal limit EME and E-skip/Scatter contacts on 144, 222 and 50 MHz in mid-June. The logistics are a challenge as the site selected in Grid FO10le has neither cell service nor power so it's bring everything including Satellite internet. More on this next time. Let's hope the bugs aren't as bad up there as they are north of Toronto.

Dayton Hamvention Report

Peter, VE7PS and I made the pilgrimage to the new location near Xenia, Ohio this year and it was quite interesting! Some people likened it to

"Woodstock". I'm not sure I'd go that far, but there certainly was much more space in the buildings for vendors, without the massive crowding that occurred in the other location, particularly if it started to rain/snow/hail.

The flea market was partially on tarmac and partly in the centre area of the horse track on grass, which left people with muddy shoes and could potentially turn into a quagmire if the rains stayed on. Luckily it didn't until Sunday, but by then we were on the way home.

There was lots of VHF/UHF and microwave goodies at the hamfest as well as lots of new products from the manufacturers. There was a 150-foot crank up tower for \$19,000 that had a sold sign on it....hi.

The VHF Dinner was a hit this year, with a good gathering of VHF folks from all over the world, and the VHF talks on Saturday were well attended with some great information from G4DDK, WA5VJB, K5QE and others! Here's a picture of VE7PS, VE3DEW, VE3DS and VE2DFO at the event this year. This was Don, VE2DFO's first time at Dayton as well, and quite a few years since the boyz were together in the same place!



Congratulations to the organizers for a fine job, and we hope they will open earlier than 9 am next year! Great to see so many Canadians down there, and also the RAC guys!

50 MHz Activity

Six has been alive and well on Sporadic E, Meteor Scatter and Aurora this spring. While the season seemed to start off a bit late, the long haul, double-hop and multi-hop E skip came on stronger than normal and much earlier this year. The Spring VHF Sprint was interesting as there was little SSB activity in FN03 so we switched over to MSK144 and spent the contest working scatter contacts on digital! This proved very productive with contacts out 1,200 miles and lots of grids. Running in contest mode with 15 second sequences was actually pretty slick!

The nice surprise of the 2017 season is that it actually started a bit late, but then took off with openings to Japan, South America and all over North America, with a smattering across the Atlantic in May. There has been quite a bit of aurora as well thanks to coronal holes on the sun's surface, but not a lot of really serious flares at this point.

Finding a Sub-Band for Digital Scatter Modes

With the new modes offered by WSJT-X – such as MSK144 which is a blast to run – popularity is putting the squeeze on 50.180 MHz.

Granted the software has the ability to say, "Hey I'm transmitting here but listening on 50.170 MHz", for example, but the problem is that too many strong stations, particularly if they are operating in different sequences, can create havoc.

VE1SKY has proposed a bandplan idea to help spread activity out a bit and reduce the QRM potential. Let's see how things progress, and hopefully something can be developed not only for local North American scatter, but also for band openings to Japan and Europe as well on this and other modes for digital weak signal operating. You can find his proposal at "ve1sky" at <http://qsl.com/en>.

May 16 was a good day for the VE7 guys. Here is John, VE7DAY's report:

"Yesterday the Es season finally bloomed. At my QTH, six opened at 21:20 when I worked K0LU in DN86 55. Signals came in almost exclusively from DM grids with many DN grids as well.

From time to time, I'd work EM, EN grids and a couple of EL grids. CF7FC (VA7FC) Perry stole the show as he contacted KP4EIT in FK68, who called me several times but only heard faintly in my noise. Perry said he was S5.

At 02:45, VY1DX/b in CP20 came in 549 so I turned the antenna towards KL7 and called several CQs. The beacon was in for a total of about a half-hour. Mostly 6s and 7s and 0s replied to my CQs and some signals from the south sounded like auroral Es.

At 04:24, KL7KY was calling this way and I worked him in BP51 559. Several minutes later I heard KL7NO calling CQ and worked him both CW and SSB in BP54 at 04:24. Over a period of about an hour, he was up to 15 over 9 and very steady. Most of the signals during the opening were S5 to S9 with a few 15 to 20 over 9.

Doug, VE7DXK, worked KL7 via JT65. At 05:46, I worked W7FI in Seattle area 52 aurora.

Nothing from Asia and I closed down around 06:00.

I worked over 70 contacts and at times a contest-like rate. I was in and out of the shack, cut the grass at one point, the signals kept coming in for over 9 hours."

We had one good double-hop opening on May 17, and I'd ducked out of the shack for a while but left WSJT-X monitoring, and upon my return noted a couple of W6 stations in DM05 had been in calling CQ for a few minutes! Other stations noted were in Mexico and PY5BAB and PV8DX in Brazil being worked across the continent!

Meanwhile that same day, the JA gang had been worked on Es in Alaska, and the west coast of the US already, on CW and digital modes!

May 28 brought Aurora across the continent on 50 and 144 MHz. John, VE7DAY, got in on it too and here is his report:

"On May 28 we had an auroral opening that many felt the best in a long time.

00:41 I worked Paul, K7CW in CN87 59A, then several others in the Pacific Northwest. Also DN13 and DN15.

The opening kept up but I was out of the shack a lot of the time.

02:49 VE6SP DO20 54A

02:58 VE6PPZ DO32 54A

03:29 VE6TA DO33 55A

03:34 VE1PZ FN85 55A, could have been auroral Es and a very interesting contact, the longest distance auroral contact for me.

03:47 VE6WQ DO33 55A

03:59 VE6MRV DO33 54A

18 auroral contacts but could have had many more. I didn't see any visual aurora here and closed down after working VA7JH and VA7FC at 04:36."

June 2, found the band open from Puerto Rico to Israel, with 4X4DK working WP2B, and KP4EIT working into Italy. Meanwhile the VE6 gang were working single-hop DX into W9-land, with VE6FW working W9RM and VE6WK CQs being heard by Jay as well.

Later that day Peter, VE3EK, worked YV4DYJ on 50.11 and Steve, VE7SL, worked YV4DYJ on JT65!

Let's hope that the season continues and we get more good days of openings here and all over the country.

144 MHz Activity

The morning group continues to work DX with Stan, KA1ZE/3, orchestrating activity from his remote base in FN00 (Stan is in Florida). Lots of guys from FN04, 14, 03, 92, 93, 82 all check in and make contacts with the east coast and Midwest US gang on 144.200 SSB and CW.

We had one sporadic E session so far this year where the maximum usable frequency (MUF) hit and went past 144 MHz. I was driving and listening to 98.5 from Buffalo when the station disappeared and another unidentified FM station came in. Shortly after, contacts were being made from EN82 down into Texas on 144 MHz. Let's hope this continues.

2304 MHz and Up Activity

The saga continues here on 2304. With this old KK7B transverter, I was able to improve things by shortening leads on the receive board, improving the coupling between the local oscillator (LO) and receive mixer, replacing the antenna relay, and placing the LO crystal in an oven, but with 12x multiplication it still took about 20 minutes for the LO to stabilize and it still drifted around a bit. But we were able to work Stephen, VE3ZV, with 20 over S9 signals at 100 kilometres, as well as Stan, VA3ST, at 60 kilometres over the lake.

The next steps are to replace the LO completely with a synthesized LO that is disciplined with a 10 MHz source and that should eliminate the drift issue totally, as well as giving me an LO signal for 3456 MHz and up. These LOs are available

from Down East Microwave and are used in their line of microwave transverters.

Meanwhile, Peter, VA3ELE, solved his 2304 hearing problem as it seems one of the cables on the tower had a hole worn through the jacket that let moisture in, making the jumper cable a nice attenuator – and at these frequencies you don't want any more loss! So he's back to hearing very well up there!

On 3456 and 5760 MHz, Peter, VA3ELE, and Stephen, VE3ZV, have made two-way QSOs easily over a 100 kilometre path. They are looking for more company to come on up and join them!

Cheap Chinese Wireless Headsets

I have no idea how this junk gets into the Canadian market, but yet another of these damn things has popped up to my east. The last one was 1.6 kilometres away, wideband FM that drifted up and down the band from below 49 MHz to 50.2 MHz, and certainly never on the design frequency! This one is going to require some serious tracking again.

Why this stuff gets into Canada is beyond me. If you have problems like this, or issues on other bands let us know and speak to your RAC Director (see page 4).

Well that's it for now, don't forget the ARRL September VHF QSO Party, 10 GHz and Up and the Fall VHF/UHF Sprints.

Fall VHF/UHF/Uwave Sprints 2017

50 MHz: Saturday, August 12 from 2300Z until 0300Z Sunday, August 13

144 MHz: Monday, September 18 from 7 to 11 pm local

222 MHz: Tuesday, September 26 from 7 to 11 pm local

432 MHz: Wednesday, October 4 from 7 to 11 pm local

Microwave, 902 MHz and up: Saturday, October 7 from 8 am to 2 pm local

ARRL September VHF QSO Party
September 9 (1800 UTC) to September 11 (2359 UTC)

10 GHz and Up

First Weekend: August 19 (6 am local) to August 20 (midnight)

Second Weekend: September 16 (6 am local) to 17 (midnight)

For more contest information see the Contest Calendar on page 57.

– 73, Dana, VE3DS



2017 RAC ANNUAL GENERAL MEETING | ASSEMBLÉE GÉNÉRALE ANNUELLE

NOTICE TO RAC MEMBERS | AVIS AUX MEMBRES DE RAC



The Radio Amateurs of Canada is pleased to hold its Annual General Meeting (AGM) in Ottawa, Ontario. The AGM event will be hosted by the Ottawa Amateur Radio Club and will be held in conjunction with the 2017 Ottawa Hamfest which is being held at the same location. All RAC members are encouraged to attend the Annual General Meeting.

Date: Saturday, September 9

Time: 1 pm (Eastern Standard Time)

Place: The Annual General Meeting will be held in the W. Erskine Johnston Arena, 3832 Carp Road in Ottawa.

Agenda items will include:

- Report of the President
- Review of the 2016 finances
- Appointment of auditors for 2017

A Question and Answer period will follow the AGM proceedings. This is your opportunity to hear what your representatives have been doing over the past year, to raise questions, and to make suggestions about how RAC is managed and where it is going in the future.

The meeting will be attended by members of the RAC Board of Directors and Executive and is open to all RAC members. There will also be a Webinar which RAC members can attend remotely.

For more information about the 2017 Ottawa Hamfest please see the article on the right and on pages 7 and 63 or visit their website at <http://www.oarc.net/fleamarket>.

Radio Amateurs du Canada est heureuse de tenir son assemblée générale annuelle (AGA) à Ottawa, en Ontario. L'événement AGM sera organisé par le Club de Radio Amateur d'Ottawa et sera organisé conjointement avec l'Hamfest d'Ottawa 2017 qui se déroule au même endroit. Tous les membres du RAC sont encouragés à assister à l'assemblée générale annuelle.

Date : samedi le 9 septembre

Heure : 13h00 (heure normale de l'Est)

Lieu : L'assemblée générale annuelle se tiendra à l'aréna W. Erskine Johnston, 3832 Carp Road à Ottawa, Ontario

Les points à l'ordre du jour incluent :

- le rapport du président
- la présentation des états financiers de 2016
- nomination de l'auditeur pour 2017

Une période de questions et de réponses suivra les procédures de l'AGA. Voici votre chance d'écouter ce que vos représentants ont accompli durant la dernière année, poser vos questions et faire vos suggestions à propos de la gestion et de l'orientation future de RAC.

Les membres du conseil d'administration et de l'exécutif de la RAC participeront à la réunion et seront ouverts à tous les membres. De plus, il y aura un webinaire auquel les membres du RAC peuvent assister à distance.

Pour plus d'informations sur l'Hamfest Ottawa de 2017, veuillez consulter l'article ci-dessous ou visiter : <http://www.oarc.net/fleamarket>

OTTAWA (CARP) 21ST ANNUAL HAMFEST

The Ottawa Amateur Radio Club (OARC) is pleased to host the RAC Annual General Meeting as part of its 21st Annual Hamfest, and during the year-long celebration of Canada's 150th Anniversary of Confederation here in the Nation's capital and across Canada.



Date: Saturday, September 9

Time: The Hamfest will be open to the public from 9 am to noon. Doors will open to Commercial Vendors at 7:30 am and to Private Vendors at 8 am. The RAC Annual General Meeting will be held at 1 pm following the Hamfest.

Place: The Hamfest will be held at the Carp Agricultural Fairgrounds in the W. Erskine Johnston Arena at the north end of the fairgrounds, at 3832 Carp Road in Ottawa. We are right next door to the famous Carp Farmers' Market and just minutes from the Diefenbunker Museum (<http://diefenbunker.ca/>), a four-story, 100,000 square foot underground bunker, built between 1959 and 1961. Come to Ottawa and enjoy your visit as part of Canada's 150th Birthday celebrations!

Cost: \$6 General Admission, \$14/table (plus admission).

Talkin: VE2CRA, 146.940-, 100 Hz CTCSS

For more information please see our ad on page 7, visit <http://www.oarc.net/fleamarket> or contact Ed, VE3WGO, at fleamarket@oarc.net.

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**SECOND NOTICE TO RAC MEMBERS
RESIDING IN THE ALBERTA/NWT/NU,
QUEBEC AND ONTARIO SOUTH REGIONS**

**DEUXIÈME AVIS AUX MEMBRES DE RAC
RÉSIDENTS DANS LES RÉGIONS DE :
ALBERTA/TNO/NU, QUÉBEC ET ONTARIO SUD**

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

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

The Secretary of Radio Amateurs of Canada Inc. hereby solicits nominations for the positions of Director for the Regions of Alberta/NWT/NU, Quebec and Ontario South (postal codes L and M).

If required, an election for this position will be held in August 2017. The Director will take office immediately to complete the two-year term ending December 31, 2019.

Incumbents:

- Alberta/NT/NU: Ernest C. Clintberg, VE6EC; tenure completed
- Quebec: Guy Richard, VE2XTD; tenure completed
- Ontario South: Phil McBride, VA3QR; tenure completed

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 13 by 12 noon on Friday, July 14, 2017.

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

Faxed or emailed documents will not be accepted.

- ✓ Clearly indicate on the mailing envelope that Nomination Documents are enclosed.

Le Secrétaire de Radio Amateurs du Canada inc. sollicite des candidatures pour le poste de Directeur pour les régions de Alberta/TNO/NU, Québec et la pour la région de l'Ontario Sud (codes postaux L et M).

S'il y a lieu, une élection à ce poste sera tenue en août 2017. Le directeur entrera en fonction immédiatement pour compléter le mandat de deux ans se terminant le 31 décembre 2019.

Candidats sortants :

- Alberta/TNO/NU : Ernest C. Clintberg, VE6EC; mandat terminé
- Québec : Guy Richard, VE2XTD; mandat terminé
- Sud de l'Ontario : Phil McBride, VA3QR; 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 nommer lui-même.

3. Le formulaire de mise en nomination devra :

- ✓ être dactylographié ou imprimé
- ✓ 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 nommé.

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 13 avant 12h00 le vendredi 14 juillet 2017.

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

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

- ✓ Indiquez clairement sur l'enveloppe qu'elle contient des formulaires de mise en candidature.

CANADA-WIDE SCIENCE FAIR AND STEAM 2017: A SUCCESS

Daniel Dion, VE5DLR

In mid-2015, when I first learned that Regina was going to host the 2017 Canada-Wide Science Fair (CWSF), I knew a fantastic opportunity was presenting itself for the Regina Amateur Radio Association (RARA).

Gathering approximately 500 of Canada's brightest youth to compete and share their passion for science and technology, the CWSF has been held in various Canadian cities since its beginning in 1962. During the week of the Science Fair, students get to compete for close to 1 million dollars in prizes, share their hard work with the public, network with other highly motivated, scientifically inclined minds and have great fun in participating in planned activities by the Science Fair hosts.

Having participated in the CWSF four consecutive times as a high school student from 2000 to 2003, I know by experience how such an event can change the lives of these kids and create lasting impressions. Since that time as an Amateur experimenter in high school, I've always had the need and the desire to keep learning, to keep exploring and to keep experimenting. This is one of the main reasons that in 2012, I decided to get involved in Amateur Radio. It is Amateur Radio that has fed my passion for science and technology over the past five years and it will undoubtedly continue to fuel my curiosity for years to come.

With my previous experience as a CWSF participant and my present experience as a member of the Amateur Radio community, I couldn't think of a group of kids who would appreciate more what Amateur Radio could offer. Therefore, I sought the help my local radio club, the Regina Amateur Radio Association, to see how we could contribute to the fair and provide these kids with an opportunity to learn about our passion.



In conjunction with the CWSF, a parallel event called STEAM 2017 – Science, Technology, Engineering, Arts and Math – was created as a festival to celebrate and promote these fields of interest in the hope of encouraging students to pursue their studies in such subjects.

The event was held from May 18-20 and was visited by nearly 1,600 students from across Saskatchewan in addition to the 500 finalists participating in the Science Fair. In all, approximately 2,000 students participated in the event as well as a few hundred members of the public.

Ten members of RARA operated the booth and it included various hands-on demonstrations which allowed students to see firsthand the many aspects that make Amateur Radio interesting. From Morse code to digital modes, to homebrew transmitters and Software Defined Radios, the visitors left amazed by the wide

range of possibilities that can be explored in Amateur Radio. The top photo shows Mark Hampheys, VA5LNX, Summer Hartzfeld, VE5SDH and Neil Slater, VA5SCA at STEAM 2017.

Radio Amateurs of Canada was pleased to sponsor the booth at the event as part of its combined efforts to engage youth in Amateur Radio through events like STEAM 2017 and through its Youth Education Program. We referred many interested students from across Canada to local clubs via the RAC website. Many students expressed their desire to become Amateurs and most were happy to learn about something they never knew existed.

The event was a great success and I strongly encourage local clubs to get involved with their local Science Fairs as it may provide a fantastic opportunity to grow Amateur Radio to the youth of our country. In May 2018, the CWSF is visiting the city of Ottawa and I would like to challenge radio clubs in the region to see how they could get involved with this great event. I can guarantee the experience will be rewarding for all involved, it sure was for us.

I would like to thank RAC for their support and the volunteers from RARA for making this event a success.

- ✓ The envelope will be held unopened until after the closing deadline of July 14, 2017. 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 August 10, 2017.

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".

- ✓ L'enveloppe restera scellée, jusqu'après la fermeture des mises en candidature le 14 juillet 2017. 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 10 août 2017 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 ».

Six metre Moonbounce at VE3BZS/2 – A Reflection

Alan Goodacre, VE3HX

My interest in moonbounce – earth-moon-earth (EME) – was first kindled when I read the March 1953 QST article by Ed Tilton, W1HDQ, about a successful experiment by Ross Bateman, W4AO, Bill Smith, W3GKP and Ted Tuckerman, W3LZD. They received a few faint lunar echoes on 144 MHz in December 1952 and finally positive results on January 23 and 27, 1953. Several years later Ross gave me a demonstration tape recording of the 2 metre echoes and I visited him at his home circa 1961.

Originally licensed in January 1953 as VE7AIZ in Victoria, British Columbia, I moved to Ottawa, Ontario in 1960 to take up a job after finishing university. My new call sign was VE3BZS.

One of my friends at work had access to his uncle's vacant house in Aylmer, Quebec so I set up operation as VE3BZS/2 where I erected an array of four 5-element Yagis on 20-foot booms which were spaced 20 feet apart vertically and 20 feet horizontally. The antenna was facing westward and could be rotated in azimuth about 45 degrees.

Although the phasing harness was made of 50 ohm coax, the transmission line from the house to the antenna was 450 ohm TV open wire line to minimize power loss.

To achieve stability for the transmitter, I mixed the output of two continuously running crystal oscillators – one at 9.8 MHz, the other at 15.2 MHz – to get a signal at 25 MHz and then double the signal to 50 MHz. This allowed me to key the mixer and obtain chirp-free pulses.

My amplifier used push-pull VT127As as shown in the photo on the right. The VT127As were developed for pulse application so had robust filaments taking 10 amperes at 5 volts.

The tubes had a rated plate dissipation of 100 watts so I could load up the amplifier until the plates were cherry red and it would put out an estimated 500 watts.

For the receiver I used a triode-connected and neutralized 6AK5 RF amplifier to try and get a better noise figure than using it as a pentode (see Figure 3). The output of the crystal controlled converter was at 3.5 MHz to get good frequency stability with my National NC-270 receiver. The output of the receiver passed through a narrow-band audio filter.

Note: A similar article was first published in issue #107 of FOCUS, the Journal of the First Class CW Operators' Club and is being used with their permission. Thanks Gabor!

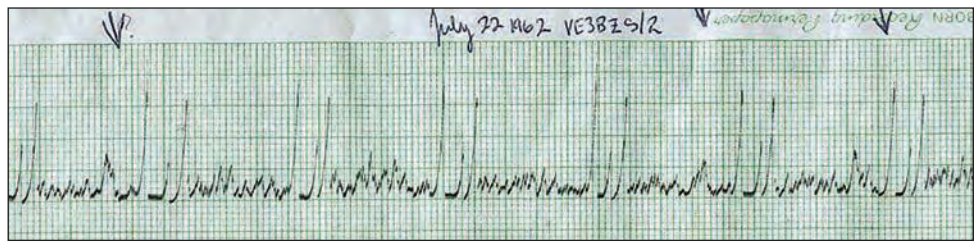


Figure 1: A recording of 6 metre lunar echoes received at VE3BZS/2 on July 22, 1962.

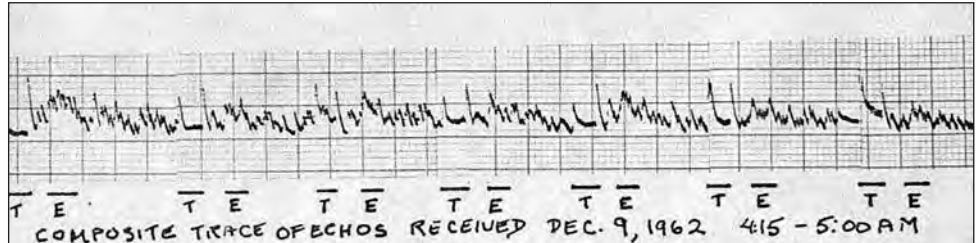


Figure 2: A recording of 6 metre lunar echoes received at VE3BZS/2 on December 9, 1962.

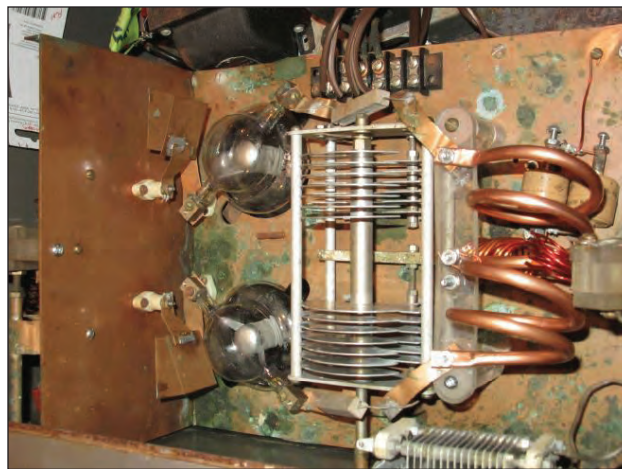


Figure 3: My home-built push-pull VT127A amplifier.

Unlike the first diagram the time goes from left to right. And, as before, I was transmitting 1 second pulses every 7.5 seconds.

I noted on the photocopy that I would receive echoes about two percent of the time.

These results might be unique because I don't know of any other Amateurs who were trying moonbounce at that time

I would tape record the output of the audio filter and subsequently rectify it and play it into a strip chart recorder.

After more than a half century I only have two records of my 6 metre moonbounce efforts.

The first is a short piece of strip chart recording labeled "July 22, 1962 VE3BZS/2" on the front and "50.001" on the back.

On this occasion I was transmitting one second pulses every 7.5 seconds and time goes from right to left. There is a switching transient when I switch from receive to transmit, a second transient when the pulse starts, and a third transient when I switch back to receive. Three lunar echoes can be seen on the chart.

The second record is a photocopy of a montage of echoes received on December 9, 1962 between 4:15 and 5:00 GMT.

on 6 metres. Two metres was much more favourable because there was considerably less sky noise on 2 metres and even less noise on the shorter wavelength VHF bands. But I didn't have suitable equipment for 2 metres at the time and so was being somewhat quixotic in persisting in using 6 metres.

I subsequently did a limited amount of 2 metre moonbounce as VE3BZS/2 at my current VE2AEJ QTH from about 1964 to 1970.

Alan worked for a total of 35 years with the Federal Government as a summer student at the Dominion Astrophysical Observatory in Victoria and as a Geophysicist at the Dominion Observatory in Ottawa.

In addition to operating mainly on CW he has had a long-standing interest in wireless echoes of long delay and has been carrying out searches for such echoes at his VE2AEJ QTH.

AMATEUR RADIO SATELLITES



Keith Baker, VA3KSF/KB1SF
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In previous columns, I have been sharing some AMSAT history and also some information on how you can “go portable” on the satellites without “breaking the bank”.

In this installment, I’ll be sharing information about one of the various ham radio-related gatherings that we satellite ops routinely attend. I’ll also discuss some upcoming AMSAT satellite launches that may be happening “real soon now”.

The Dayton Hamvention

AMSAT’s presence at the annual Hamvention – held until this year in Dayton, Ohio – has traditionally been a mixture of the new and surprising as well as a chance to meet old friends and make new ones.

It is often said that, for an Amateur Radio operator, attending the Dayton Hamvention is a lot like climbing Mt. Fuji for someone of Japanese heritage – you must do it at least *once* in your lifetime. It is also said (with tongue firmly planted in cheek) that if you stand in the middle of the Hamvention fleamarket and throw a hot dog in the air, it will be cooked when it lands from all the RF floating around.

Clearly, there is nothing else quite like “Dayton” in the fascinating world of Amateur Radio.

Having lived and worked professionally in the Dayton area for many years – as well as being a long-time member of the Dayton

Amateur Radio Association (DARA), the parent organization of Hamvention since I first became licensed in the Dayton area back in 1976 – one of the frequent questions I was routinely asked was, “Why Dayton?” I chalk it up to a number of factors.

First of all, Hamvention has been sponsored by DARA since 1952 and was continually housed in the same Hara Arena complex since the early 1960s. DARA is also one of the USA’s oldest and largest Amateur Radio clubs, having received its American Radio Relay League (ARRL) Affiliated Club Charter, signed by none other than the founder of the ARRL, Hiram Percy Maxim, himself! DARA’s current active membership is also nearing 1,000 and some 600 of those members (and a number of others) graciously volunteer their time and talents to produce the annual event.

In addition, besides the Wright Brothers, Dayton is home to a number of inventors and, at one time, boasted the largest number of US Patents per capita in the United States. Over the years, it has also been home to a number of high-tech companies including a number of General Motors manufacturing plants, along with such firms as the National Cash Register Company (now a part of AT&T) and the Mead Corporation. Also, one of the US Air Force’s largest air bases (Wright-Patterson AFB) is home to the (now) Air Force Material Command. Wright-Patt also hosts the unit that oversees the research, development, purchase and modification of *all* of the US Air Force’s new air-breathing weapons systems including such (now) famous aircraft as the F-117 Stealth Fighter, the B-2 Stealth Bomber, the F-22 Air Superiority fighter and the brand new F-35 Joint Strike Fighter.

Another major factor is geography. If you draw a “one day drive” circle around Dayton on a map, you will quickly note that that circle encompasses about 1/3 of the population of North America including such large metro areas as Detroit, Chicago, New York, Toronto, Montreal, Atlanta, St. Louis, Boston, Louisville, Memphis, Milwaukee, Indianapolis, Kansas City, Philadelphia, Baltimore and Washington, DC.

Clearly, Hamvention benefits from a “perfect storm” of a number of highly talented, high-tech people from the local area, a thriving Amateur Radio club of nearly 1000 members, an absolutely *ideal* geographic position plus an ideal venue (the large Hara Arena complex boasted over 3,000 fleamarket spaces outside) that, in many ways, was expanded over the years to better accommodate this one show.

In recent years, AMSAT occupied a number of booth spaces in one of the main indoor areas of the Hara complex. Our booth was often located adjacent to the extensive “ARRL Expo” area and just a quick walk from our outdoor AMSAT satellite demonstration area that Hamvention organizers graciously set up for us every year in the adjacent



DARA President Sam Anderson, N8VES, presents a \$5,000 donation to AMSAT President Barry Baines, WD4ASW, while Keith Baker, VA3KSF and DARA’s Treasurer Michael Kalter, W8CI, look on. (Courtesy: DARA)



RAC President Glenn MacDonell, VE3XRA (2nd from left) meets with other Canadian Amateurs at the AMSAT booth. (Courtesy: Keith Baker, VA3KSF)



AMSAT’s new Hamvention “digs” in Maxim Hall attracted lots of people. (Courtesy: Keith Baker, VA3KSF)

parking lot. In addition to our booth activities, we also traditionally plan a Thursday evening get-together at a local restaurant and a Friday evening banquet that AMSAT hosts along with members of the Tuscon Amateur Packet Radio (TAPR) group.

One of the other features of Hamvention is their extensive forum program. In these forums, virtually every aspect of our wonderful hobby is discussed by some of the “movers and shakers” of that particular part of Amateur Radio. And our AMSAT forums have always been no exception.

FREQUENCY AND MODE DATA

Satellite	Mode	Uplink (MHz)	Downlink (MHz)	Beacons (MHz)
Fox-1A	U/V (Mode B)	435.170	145.980 +/-	FM Voice
Fox-1B	U/V (Mode B)	435.160	145.960	FM Voice
Fox-1C	U/V (Mode B) L/V**	435.300 1267.300	145.920 145.920	FM Voice FM Voice
Fox-1D	U/V (Mode B) L/V**	435.350 1267.350	145.880 145.880	FM Voice FM Voice
Fox-1E*	U/V (*Mode B) Linear*	TBD	TBD	TBD

* Pending IARU Coordination ** U/V and L/V operations will be switchable by command stations but will not be operational simultaneously.

Over the years, AMSAT's speakers have covered a wealth of topics about AMSAT operations and plans, but also new developments for future spacecraft. What's more, the 2 hours and 15 minutes usually allotted to us by Hamvention organizers is one of the longest of the show and our forum crowd is usually "standing room only."

With the permanent closing of the Hara Arena in 2017, the Dayton Hamvention was forced to move to new quarters at the Greene County Fairgrounds in Xenia, Ohio. I used to live just up the road from that complex which was also completely rebuilt after a tornado in 2000 totally destroyed most of the old buildings. In their place, Greene County government officials had the complex completely rebuilt to not only house the annual county fair, but to also host large, non-agricultural expositions such as Hamvention.

Once DARA announced the move to the new venue in August 2016, they went about installing nearly \$60,000 in permanent infrastructure improvements to the complex, primarily to make it better able to handle the extensive electronic needs for a trade show that routinely attracts nearly 30,000 visitors. I'm told that the local County Visitors and Convention Bureau, as well as local and county government officials, "bent over backwards" to accommodate DARA and the show in their new complex.

Now that Hamvention 2017 is history, I can honestly say that the initial show in the new venue was a qualified success. After a few "hiccups" on the first day of the event, primarily due to large amounts of traffic congestion that was quickly rectified by DARA and the local Sheriff on the second day, the new venue largely proved to be a hit with both vendors and attendees. AMSAT's new "digs" proved to be more expansive than in previous years which, in turn, allowed us to accommodate many more visitors at one time at our booth.

I'm also told that DARA has contractually secured the new Greene County Fairgrounds complex for at least the next two years, with options well beyond that time frame. Clearly, the Dayton Hamvention will continue to be "the place to be" for the movers and shakers in Amateur Radio. As always, AMSAT will once again be there.

Fox Satellite News

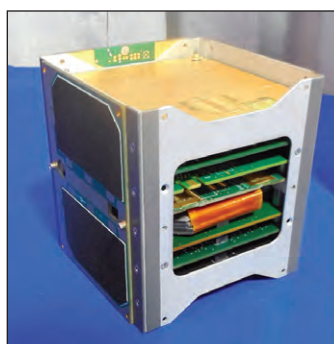
At deadline, the clock was ticking down towards the launches for RadFxFoxSat (Fox-1B) as well as Fox-1C (Fox-1Cliff) and Fox-1D. Again, if these launches go as planned, all three of these AMSAT satellites will be in orbit sometime this year.

It's looking like RadFxFoxSat may now launch first and will ride as one of the ELaNax XIV secondary payloads aboard the NASA JPSS-1 launch on a ULA Delta II rocket. That launch will be out of Vandenberg Air Force Base in California on one of only two remaining Delta II rockets in the inventory.

The RadFxFoxSat mission is a partnership with Vanderbilt Institute for Space and Defense Electronics (ISDE) that will study space radiation effects on commercial off-the-shelf memory chips. The experiment data will be downlinked in the subaudible telemetry stream of the Fox-1B FM repeater along with the CubeSat telemetry data. The telemetry can also be decoded and displayed by anyone using AMSAT's FoxTelem software that's freely available from AMSAT.

I've also learned that the launch for the NASA Educational Launch of Nanosatellites (ELaNax) XX mission that will carry RadFxFoxSat-2 (Fox-1E) has been tentatively scheduled for late 2017 or early 2018.

In addition to RadFxFoxSat-2, the ELaNax XX mission will carry 12 CubeSats constructed by NASA and several universities around the United States. Virgin Galactic will launch the satellite on their Launcher One air-launch-to-orbit system from Mojave, California.



RadFxFoxSat-2, much like RadFxFoxSat (Fox-1B), is a partnership opportunity between the Vanderbilt University Institute for Space and Defense Electronics and AMSAT and will carry a similar radiation effects experiment using new FinFET technology. RadFxFoxSat-2 will be the fifth (and most likely final) Fox-1 series satellite built by AMSAT.

The RadFxFoxSat-2 spacecraft bus will be based on the Fox-1 series but will feature a linear transponder "upgrade" to replace the standard FM transponders in Fox-1A through D. In addition, the uplink and downlink bands will be reversed from the previous Fox satellites in a Mode V/U (Old Mode J) configuration using a 2m uplink and 70 cm downlink. The downlink will feature a 1200 bps BPSK telemetry channel to carry the Vanderbilt science data in addition to a 30 kHz-wide analog (SSB/CW) transponder for Amateur Radio use.

And, finally, Fox-1A – now AMSAT-OSCAR 85 (AO-85) – which was successfully launched on October 8, 2015 – remains fully operational on orbit, providing science data from its onboard experiments and FM transponder service for the Amateur Radio community.

As always, the latest information on these (and many other) launches of additions to our Amateur Radio satellite "fleet" can be obtained by visiting the AMSAT website at <http://www.amsat.org>.



“Hamvention 2017: Same Friends, New Home...”

Richard Ferch, VE3IAY/VE3KI

The Dayton Hamvention is the world's largest Amateur Radio gathering, with an attendance of over 20,000 in recent years. For the 7th year in a row, RAC had a booth at the Dayton Hamvention, where Canadian Amateurs and friends can drop by, meet and renew their membership if so desired. RAC's President, Office Manager and a number of the Directors and Executive members and other volunteers were all at Hamvention.

This year was a bit different from the past because the venue was changed from the Hara Arena in Dayton, Ohio to the Greene County Fairgrounds in nearby Xenia. Xenia is a small town about 20 miles southeast of Dayton, with a population of about 25,000. Although there was some onsite camping, accommodations within the town of Xenia were clearly insufficient and the majority of attendees stayed in Dayton and its suburbs as in previous years. There are a number of offsite related activities, such as the “QRP Four Days in May”, a variety of dinners, and the Contest Supersuites and Contest University – these were held in the same locations as in previous years.

While there is a four-lane highway between Dayton and Xenia (US 35), access to the fairgrounds is via local 2-lane roads. On the first day, traffic was terrible. Thousands of cars following the same route led to total gridlock – it took us 90 minutes to cover the final three kilometres to the site.

The second day was much better, for several reasons. After the chaos of the first day, local officials were able to improve traffic management by doing things such as declaring some access roads to be one-way temporarily, doubling their capacity. Many participants found alternate routes instead of letting their GPS tell them how to get there and all using the same roads. More people used the offsite parking locations that had been set up by the organizers instead of trying to park at the fairgrounds themselves. The shuttle buses to and from the offsite parking were free and worked well.



The exhibition halls at Xenia were, on balance, an improvement over the old Hara Arena. While they were in several separate buildings instead of under one roof, the buildings were clean and well-maintained, as were the washrooms



(a welcome change!), which were supplemented by lots of porta-potties. There was not enough room in the halls for all of the exhibitors so one of the “buildings” was actually a large tent. This was less successful than the permanent buildings.



RAC President Glenn MacDonell, VE3XRA, Adam MacDonell (Office Manager) and Dave Parks, VE3AV (RAC volunteer)

Exhibitors in the tent complained that although the tent kept the rain out, the air was stuffy and humid. The booths were not as well-marked as they were in the buildings, so if you were looking for a specific booth you might have had more difficulty. There were rumours circulating that a new building will be put up before next year's Hamvention to replace the tent, but it's not clear yet whether this is real or just wishful thinking.

The RAC booth was located near other national Amateur Radio organizations making it easy to meet and share experiences with leaders of national Amateur Radio organizations around the world. We didn't keep a guest book this year, but attendance at the RAC booth seemed comparable to past years.

The outdoor flea market was mostly on grass in the infield of the fairgrounds horse racing track. Initially, while the weather was nice, this worked well, but after a rainstorm it got very muddy and parts turned into a quagmire, making it very hard to tour the flea market. Some improvements are going to be required here. The rain and mud also affected some of the onsite parking. This will be another reason for using the designated offsite parking in future years.

A feature of Hamvention is a series of forums – actually four sets of forums in parallel. The forum buildings were separate from the exhibit halls, roomy and much better insulated for sound than the forum rooms at Hara Arena. Another plus for the new Xenia Hamvention site.

The food at Xenia was an improvement. There were several small food vendors set up in the area immediately outside the exhibition buildings and there was a variety of food available. We heard lots of comments about the better food.

All in all, things worked out well for the first year at a new location. Unlike previous years, when the year-by-year deterioration of the old Hara Arena facilities was evident and was starting to affect attendance, we can look forward to improvements in the future as the event settles down into its new digs. In fact the ARRL have issued a news release indicating that improvements are already “in the works for 2018.

You can read more about this on the RAC website at:
<http://wp.rac.ca/hamvention-improvements-2018/>



Manitoba High Altitude Balloon Flight Day

Rob Strierner, VE4SHS – Manitoba Association of Physics Teachers



SHARP 71r is launched from Langruth Elementary School at 11:38 am on May 4, 2017. St. James Collegiate and Maples Collegiate HABs are ready.

Langruth, a small town on the west side of Lake Manitoba, was the perfect launch site for the Manitoba Association of Physics Teacher's (MAPT) High Altitude Balloon (HAB) Flight Day on Thursday, May 4. This was the third year that MAPT organized HAB flights that launch from rural schools. Eight teams launched HABs this year and other schools sent observers.

Students from the HAB schools work on their payloads all year long. Each payload includes science and engineering experiments as well as a 2-metre band Automatic Packet Reporting System (APRS) transmitter.

The HAB's APRS beacon transmits a call sign, as well as latitude, longitude, altitude and airspeed provided by the attached GPS receiver. Most teams include students and teachers who are certified Amateur Radio operators.

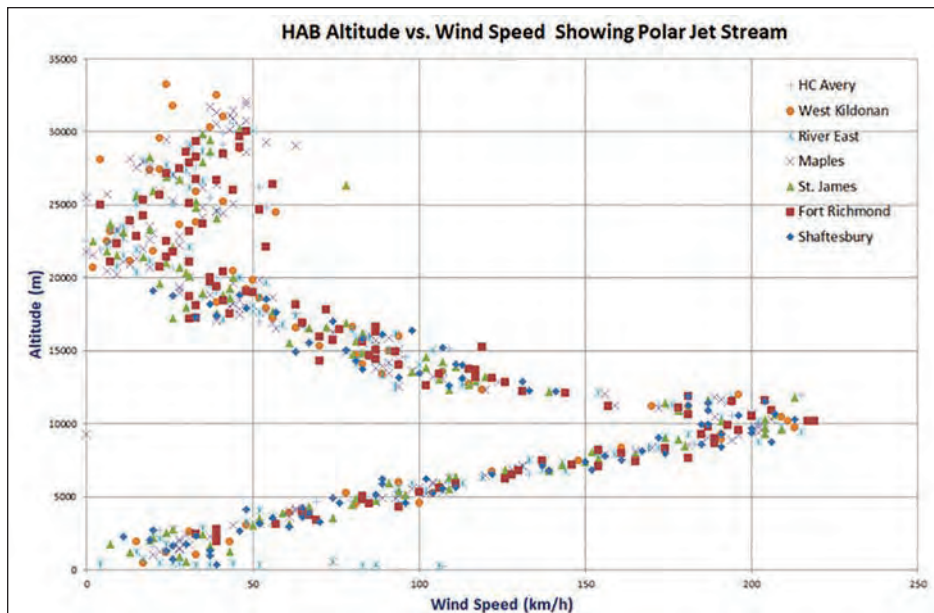
The team from **Shaftesbury High School** in Winnipeg – as part of the Shaftesbury High Altitude Robotics Project (SHARP) – launched their HAB first using teacher Adrian Deakin's call sign VA4AMD-8. All HABs were in the air by noon. The weather was warm and sunny. Surface winds were light. The children of **Langruth Elementary School** watched

with great interest from the edge of the field. Launches are always fun and exciting events for our growing community of young scientists and engineers.

After the launches, all the HABs drifted out over Lake Manitoba. The teams quickly cleaned up the launch site and got into their vehicles and proceeded to chase their high flying experiments. At an altitude of about 10 km, near the city of Portage la Prairie, the HABs entered the polar jet stream. The balloons were now travelling at over 200 km/h. These speeds were faster than our model had predicted and concern was growing among some teams that their payloads could land in the United States.

A half-hour later, the Shaftesbury High School HAB was at an altitude of almost 20 kilometres (65,000 feet) and about 40 kilometres to the southeast of the chase team. The crew had stopped at a gas station on the outskirts of Portage la Prairie to consider the speed and range problem. The HAB was now above the jet stream, but it was much farther south than predicted. The team decided that an engineering experiment called the Iridium Satellite Transceiver Circuit in the Shaftesbury payload should be activated right away. Student Bryce Jenkins sent a command from his cellphone, through the Iridium satellite system, to the SHARP HAB at 12:37 pm to "cut" the Dacron line between the parachute and the balloon. The Iridium transceiver-Arduino circuit worked perfectly. This turned out to be the right decision. Although the Shaftesbury payload did not reach its desired 30 kilometre altitude in a region of the atmosphere called "near space", it did stay in Canada. Otherwise the Shaftesbury payload would have joined another team, landing just across the border in Minnesota. Thank you Tom Tessier, VE4TRT (President of Solara Remote Data Delivery, <https://www.solaradata.com/index.html>) for mentoring students Bryce Jenkins, VA4VBC and Matthew Hewlett, VE4MRH, on this project! Tom and MAPT will encourage the guys to develop the device further.

The SHARP payload, free of the balloon, descended to Earth hanging from its parachute. It landed within a few hundred metres of a farmhouse three miles northeast of Plum Coulee, Manitoba. Mr. Nickel, the farmer who owned the land, discovered the payload and happily gave it to students Bowen LeMay and Bryce Jenkins. A good discussion about the HABs and the technology in the payload was had with the Nickel family.



The Polar Jet Stream May 4, 2017 is 10 kilometres above Portage la Prairie (HAB data via APRS).



The Shaftesbury High Altitude Robotics Project's payload is recovered near Plum Coulee.

Bryce had earlier decided not to trigger the cold smoke dispenser in the payload, just before the landing, because the team would not be near enough to see the coloured smoke trail. Now with the payload on the ground, Bryce sent the command, through the Iridium satellite system, to trigger the smoke. Unfortunately, the smoke dispenser was damaged when the payload landed and it did not start properly. All we saw was a puff of smoke from the fuse. Our new friends gave Bryce a propane torch and lots of orange smoke was quickly produced.

All teams had adventures which makes these science and engineering field trips really special and unique events. MAPT looks forward to the annual Manitoba HAB Schools Symposium where students will present papers on what they learned from the May 2017 flights and relive their successes and failures and discuss plans for future flights.

"The Cockroaches did not Survive" and Other Stories from Near Space

The jet stream encountered by the school HABs on May 4 was part of the infamous omega block which resulted in a stalled cyclone over eastern Canada. This resulted in days of rain followed by severe flooding in Ottawa, Gatineau and Montreal. Weather, including atmospheric circulation patterns and the jet stream, are studied by Canadian science students in Grade 10. School HABs built by students, return data revealing the structure of Earth's atmosphere.

The following story comes from Fort Richmond Collegiate (FRC) Physics teacher Jennifer Piaseck, VE4JPI, whose students receive live TV from their HABs.

Fort Richmond Collegiate managed to retrieve our payload. It was three kilometres from Emerson and just 0.5 kilometres north of the US border! The APRS transmitter's battery conked out at 7,000 metres on the descent. We predicted the area where the payload might be and then began grid searching. We had two false alarms, where we ran into the field but were disappointed. A school bus driving by saw us running in the field, a kid called his mom to say there were 20 "black people" in the field and she called the Canadian border patrol.

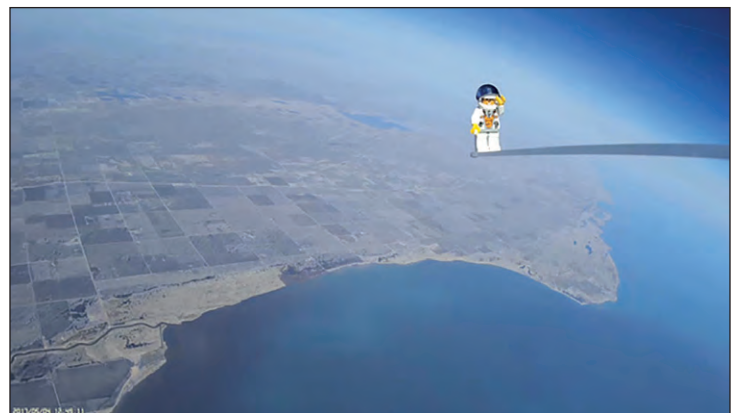
More than 400 illegal migrants have crossed into Manitoba from the United States since January 1. We talked to the patrol twice before they figured out that the "illegals" they were looking for were us! Maybe the student on the bus was referring to FRC's black T-shirts.

As we were about to give up the search and drive home, a farmer caught up to us and said he had found our payload and had it back on the corner of his property. He had also talked to the border patrol so he knew we were driving around and searching. Lots of excitement and even some crying ensued! We arrived back in Winnipeg at 7:45 pm.

Quote from student: "Best field trip ever!"

Garden City Collegiate teachers Barbara Gajda, VE4PAZ and Gabe Kraljevic, VE4GMK, report that their students used a device incorporating an electronic force sensor to measure the neck lift of their balloon before launch with great success. Grade 10 student Nik Riechert, VE4NJR, used sensors to measure and log UV intensity and ozone levels with an Arduino microcontroller.

The Gopher Space payload carried a plasmid genetic damage experiment. Plasmids are short pieces of bacterial DNA. The DNA will now undergo gel electrophoresis at the University of Winnipeg to look for molecular fragmentation from exposure to the near space environment. Gopher Space had a CBC TV news crew follow them all day and they were featured on CBC's "The National" at 10 pm on Friday. Thanks CBC!

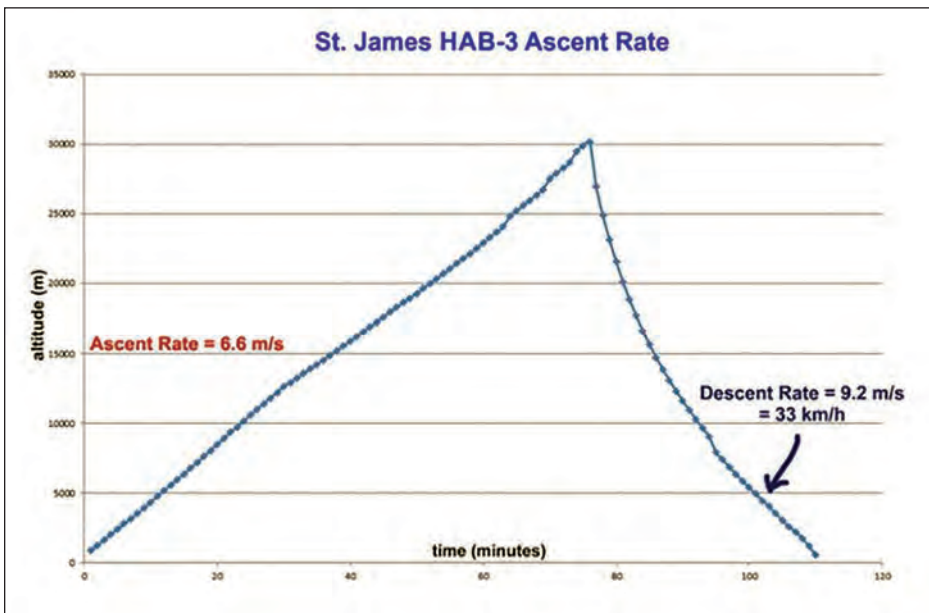


The Garden City Collegiate's Gopheronaut soars over Lake Manitoba.

MAPT President Heidi Werner provided the following report:

The **St. James Collegiate Jimmies** had a wonderful time and everything seemed to go very smoothly. Thanks to teacher Andrea Misner, VA4NGC and the Maples Collegiate team (Maraud Air) for sharing their helium as we ran out. Our flight path was pretty much as predicted and we recovered our payload just northwest of Lowe Farm at 2:30 pm. The cockroaches did not survive, but we are not sure if they died in near space or on impact. It looks like they got a bit squashed on landing as some items came loose from the velcro.

We are just beginning to sort through all our footage and data, but the Jimmies reached an altitude of 30.2 kilometres. The lowest external temperature recorded was $-50\text{ }^{\circ}\text{C}$ at 11,930 metres (the tropopause). The jet stream is just below the tropopause. The lowest pressure recorded was 1.3 kPa, roughly 0.01 atm, at an altitude of 99,000 feet. Our radiation sensor didn't seem to work. The APRS tracking beacon and all four cameras worked great. Two cameras lasted the duration of the flight with the other two stopping just before landing.



Motion graphs are studied in Grade 10 Science and Grades 11 and 12 Physics.



A St. James Collegiate sunburst.

We have excellent video of the burst and all the beautiful landscape of southern Manitoba.

The highest altitude achieved this year was by a new team from West Kildonan Collegiate. The team Icarus HAB burst at 33,223 metres or 109,000 feet. This Icarus flew high but landed safely.

HC Avery Middle School reported that students and teachers had a great experience and the team is already talking about plans for next year's flight.

River East Collegiate is another new team for 2017. Teacher Dean Hallick, VE4ADH, gives the following report:

Our team's launch and recovery was an unforgettable, positive experience. The fill went a little slow but the release was near perfect. We retrieved our payload just north of Rosenfeld, a few hundred metres from where we received our final APRS packet. We had two Möbius video cameras on board and the footage is outstanding. We absolutely plan on launching in the future and look forward to working with everyone again.

The final story is about the Maples Collegiate HAB flight which moved along the Canada-US border for over an hour before the balloon burst at a height of 32 kilometres, about 15 kilometres northeast of Emerson. The payload landed just across the border near Hallock, Minnesota and was recovered quickly by a farmer.

Maples Collegiate teacher Andrea Misner, VA4NGC, made the following report on May 25, three weeks after flight day: "I have good and bad news about our payload. The good news is we finally got it back! The bad news is none of our cameras have video! Certainly the cameras were recording at launch. My feeling is someone at the border deleted the files. Ms. Misner will attempt to recover the deleted video files from the camera's micro SD cards."

Many Thanks!

Thank you Langruth Elementary school principal Tim Klein for hosting our group. We hope your students enjoyed watching the high altitude balloon launches. Coincidentally, Langruth Elementary held their annual Science Fair the next day. Perfect timing! Flight is a unit of study in Grade 6 science classes.

Thank you to all the school administrators for supporting our STEM projects by releasing staff and students for the day. Thank you to the parents and drivers who made the day possible.

Thanks to all the farmers across Manitoba (and now Minnesota) who keep finding and returning our payloads.

Thank you to our local Amateurs for their equipment donations, the Winnipeg Amateur Radio Club (WARC) for providing our students with Amateur Radio classes, the University of Manitoba Amateur Radio Society (UMARS) for providing Arduino workshops and tracking help on flight days, the Radio Amateurs in Manitoba and North Dakota who provide the APRS infrastructure that allows real-time HAB tracking and provides our students with much useful data to study; and finally, thank you Radio Amateurs of Canada for the community grants and scholarships and bursaries which continue to help our science and engineering minded students.

With the support of RAC and the Amateur Radio community, the Manitoba Association of Physics Teachers will grow the Manitoba schools HAB project and work to develop a for-credit Science, Technology, Engineering and Mathematics (STEM) program centred on Amateur Radio, electronics, science and aerospace that will excite and inspire the next generation of Canadian engineers and scientists.

Robert Striemer, VE4SHS, has been a public high school physics and science teacher for the past 33 years and he received his BSc degree and Certificate in Education from the University of Manitoba. His classroom skills and dedication to students were recognized by a Prime Minister's Award for Teaching Excellence in 2012. He is a member of the Science Teachers Association of Manitoba, the Manitoba Association of Physics Teachers, the Radio Amateurs of Canada, the Manitoba Repeater Society and the Winnipeg Amateur Radio Club. Rob has served as a Chief Instructor for the Winnipeg Amateur Radio Club, delivering Amateur Radio certification courses to the community including school teachers and their students.



River East Collegiate, one of three new schools this year, recovers its payload.

THE CANADIAN AMATEUR RADIO HALL OF FAME

TEMPLE DE LA RENOMMÉE DES RADIOAMATEURS CANADIENS

CALL FOR NOMINATIONS

What is the Hall of Fame all About?

Ed Frazer, VE7EF – Chair of Board of Trustees of the Canadian Amateur Radio Hall of Fame

Radio Amateurs of Canada recognizes deserving Amateurs by appointments to the Canadian Amateur Radio Hall of Fame. The Constitution of the Hall specifies that the appointment as Member of the Hall is for “outstanding achievement and excellence of the highest degree, for serious and sustained service to Amateur Radio in Canada, or to Amateur Radio at large”. So what does all that mean?

The Trustees of the Hall have interpreted the Constitution to mean that the person has performed significant service over many years to enhance the well-being of Amateur Radio. For example, the Amateur may have served on: Canada’s national Amateur Radio organizations (the Canadian Radio Relay League, the Canadian Amateur Radio Federation or Radio Amateurs of Canada); technical, regulatory or international committees; and/or Provincial or local associations such as repeater or emergency councils.

He or she may have become proficient in one or more areas of expertise and then shared this knowledge with other Amateurs by publishing articles, giving classes or providing seminars. They may have given back to Amateur Radio by becoming Accredited Examiners or teaching classes (Basic, Advanced and Morse Code) for several years.

No single achievement would necessarily qualify an Amateur for the Hall of Fame, but a lifetime of service would be favourable. Look at the list of Hall Members at <http://wp.rac.ca/carhof/> and you will find Amateurs who have made distinguished contributions in many areas.

Please get together with your fellow Amateurs or club members and submit a nomination or two. Let us avoid the situation where no nominations are received as in past years. Let’s not wait until a worthy Amateur becomes a Silent Key before he or she is honoured.

How do you nominate someone?

Any resident of Canada who holds a current Amateur Radio Operator Certificate issued by the Government of Canada, or any Canadian Amateur Radio organization, other than Radio Amateurs of Canada, may submit a nomination for Member of the Canadian Amateur Radio Hall of Fame. Membership in RAC is not mandatory.

Any resident of Canada who holds a current Amateur Radio Operator Certificate issued by the Government of Canada, except a Radio Amateurs of Canada employee, officer, Director, Assistant Director, volunteer manager, or leadership official in the Field Organization, may be appointed as a Member of the Hall. Membership in RAC is not mandatory.

Nomination or appointment for Member or Honorary Member of the Hall may be after the death of the nominee. A person who is not a resident of Canada may be appointed only as an Honorary Member of the Hall. The other requirements for appointment as Honorary Member of the Hall are the same as for Member.

MISE EN NOMINATION

Qu’est-ce que le Temple de la renommée?

Ed Frazer, VE7EF – Président du Conseil d’administration des fiduciaires du « Temple de la renommée radioamateur canadien »

Radio Amateurs du Canada marque sa reconnaissance envers les amateurs impliqués en les nommant au Temple de la renommée radioamateur canadien. La constitution du Temple de la renommée indique clairement que la nomination au Temple est liée à une réalisation hors du commun et à excellence au plus haut niveau, pour service d’envergure et soutien au radioamateurisme au Canada ou au-delà ». Qu’est-ce que tout cela veut dire?

Le conseil d’administration du Temple a interprété la constitution de manière à reconnaître les personnes qui ont rendu un imminent service et consacré plusieurs années à l’avancement du radioamateurisme. Par exemple, l’amateur peut avoir servi dans les organisations radioamateurs du Canada (la Canadian Radio Relay League, la Canadian Amateur Radio Federation ou Radio Amateurs du Canada); dans le domaine technique, réglementation ou comités internationaux; et/ou dans des associations provinciales ou locales tels répéteurs ou conseils d’urgence.

Il ou elle peut être devenu expert dans un ou plusieurs champs d’expertise et alors partager la connaissance acquise avec d’autres amateurs en publiant des articles, en donnant des conférences ou en organisant des séminaires. Ils ou elles peuvent avoir redonné au radioamateurisme en devenant examinateurs accrédités ou en donnant des cours (radioamateur de base, supérieur et code morse) durant plusieurs années.

Une réalisation spécifique n’est pas obligatoire pour se qualifier pour le Temple de la renommée. Une vie de service est tout aussi favorable. Voyez la liste des membres du Temple au <http://wp.rac.ca/carhof/> et vous lirez le nom d’amateurs qui se sont distingués par des contributions dans plusieurs domaines.

Veillez s.v.p. vous réunir entre amateurs ou membres de clubs et soumettez une ou deux nominations. Évitez l’absence de nominations comme cela s’est produit dans des années antérieures. N’attendez pas qu’un ou une amateur qualifiable devienne une clé silencieuse avant de lui accorder cet honneur.

Comment se fait une mise en nomination?

Tout résident du Canada qui détient un certificat régulier de radioamateur émis par le gouvernement du Canada, ou toute organisation radioamateur canadienne autre que Radio Amateurs of/du Canada, peut proposer une candidature au titre de membre du Temple de la Renommée des Radioamateurs Canadiens. Être membre de RAC n’est pas obligatoire.

Tout résident du Canada qui détient un certificat régulier de radioamateur émis par le gouvernement du Canada, sauf un employé de Radio Amateurs of/du Canada, dirigeant, directeur, assistant directeur, gestionnaire bénévole ou chef attiré dans l’Organisation sur le terrain, peut être choisi comme membre du Temple de la renommée. Être membre de RAC n’est pas obligatoire.

La mise en nomination ou le choix d’un membre régulier ou honoraire au Temple de la renommée est possible à titre posthume. Une personne qui ne réside pas au Canada peut devenir membre du Temple de la renommée à titre honoraire seulement.

Only the RAC Board of Directors, by majority vote, is allowed to nominate candidates for Honorary Member (those persons not residents of Canada). Because of the requirement for Canadian residency for appointment as Member of the Hall, it is incumbent upon the nominator to confirm the Canadian residency of a nominee prior to submitting a nomination.

Nominations shall be submitted to the Board of Trustees using the Canadian Amateur Radio Hall of Fame Nomination Form which is available on request from RAC Headquarters or for download from the RAC website at <http://wp.rac.ca/carhof/>.

All nominations shall include a biographical sketch or curriculum vitae. Three references shall be included for Member of the Hall.

All nominations for Member of the Canadian Amateur Radio Hall of Fame must be received at RAC Headquarters by the close of the last business day of September.

Late nominations will be considered in the next year. Once received, all handling shall be conducted in a secure and confidential manner. On or before the last business day of November, the Chair of the Board of Trustees for the Hall of Fame shall advise the Custodian (RAC) of the decisions of the Board of Trustees on appointments for the calendar year.

The Board may appoint a person who has been nominated in a previous year. For this reason, no advice shall be issued to the nominator that the nomination has not resulted in an appointment, nor any reason given why an appointment has not been made as a result of that nomination.

Les autres prérequis de mise en nomination honoraire sont similaires à ceux réservés au membre.

Seulement le Bureau des directeurs, majoritairement, est habilité à nommer un candidat honoraire ne résidant pas au Canada. En raison de l'obligation de résidence canadienne pour une nomination au titre de membre du Temple de la renommée, il est impératif pour celui qui nomme un candidat de s'assurer de sa résidence canadienne avant de présenter sa candidature.

Les mises en nomination devront être présentées au Conseil d'administration du concours (Board of Trustees) au moyen du formulaire "Canadian Amateur Radio Hall of Fame" disponible sur demande au siège social de RAC. Le formulaire peut être téléchargé à partir du site web de RAC à <http://wp.rac.ca/carhof/>.

Toute nomination doit inclure un résumé biographique ou un curriculum vitae (CV) du candidat. Trois références doivent accompagner le formulaire de mise en candidature.

Toute mise en nomination au Temple de la Renommée des Radioamateurs Canadiens doit arriver au siège social de RAC avant la fin du dernier jour ouvrable de septembre.

Les mises en nomination retardataires seront prises en compte l'année suivante. Une fois reçue, la mise en nomination sera traitée de façon sécuritaire et confidentielle. Le ou avant le dernier jour ouvrable de novembre, le président du Conseil d'administration du Temple de la renommée avise le responsable (RAC) de la décision du Conseil relativement aux mises en nomination de l'année.

Le Conseil peut nommer une personne nommée l'année précédente. Pour cette raison, aucun avis ne sera fourni au proposeur lui indiquant que la mise en nomination est demeurée sans résultat, ni tout autre raison indiquant le non choix du candidat.



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CALL FOR NOMINATIONS: RAC AMATEUR OF THE YEAR AWARD

To qualify for the title "Amateur of the Year", an individual should have made an outstanding contribution to Amateur Radio in the past year, or have contributed consistently to the welfare of Amateur Radio over several years. RAC Directors, Officers and Section Managers are not eligible for the award while in office, and not in respect to their term(s) of office.

Nominations with supporting documentation are to be addressed to the RAC Corporate Secretary (see address at bottom of the page) and received at RAC Headquarters by the close of the last business day of September, for consideration for the current year.

Selection of the winning candidate will be by majority vote of the RAC Board of Directors based on the supporting documentation submitted with the nomination. The winning candidate will be notified by mail. Due recognition will appear in *The Canadian Amateur* and a suitable plaque will be presented at an appropriate time and place. For more information visit: <http://wp.rac.ca/rac-amateur-of-the-year/>

MISE EN NOMINATION : PRIX AMATEUR DE L'ANNÉE DE RAC

Pour se qualifier au titre « Amateur de l'année », une personne doit avoir fourni une contribution hors du commun à la cause radioamateur au cours de l'année qui se termine, ou avoir travaillé substantiellement au bien-être du radioamateurisme depuis plusieurs années. Les directeurs de RAC, dirigeants et gérants de section ne sont pas éligibles au Prix aussi longtemps qu'ils sont en fonction, et sans considération quant à leur(s) mandat(s).

Les mises en nomination, documentées, doivent être envoyées au secrétaire de RAC de manière à ce qu'elles parviennent au siège social de RAC au plus tard à la fin du dernier jour ouvrable du mois de septembre pour être prises en considération la même année.

Le choix du candidat gagnant est effectué à la majorité des membres du Bureau des directeurs, basé sur la documentation accompagnant la mise en nomination. Le candidat gagnant est avisé par la poste.

The Canadian Amateur (TCA) publiera un texte de félicitation et une plaque sera remise au récipiendaire en temps et lieu appropriés.

Pour plus d'informations, visitez :
<http://wp.rac.ca/rac-amateur-of-the-year/>

Radio Amateurs of/du Canada
720 Belfast Road
Suite / Bureau 217
Ottawa, ON K1G 0Z5

Getting Ready for the 2019 World Radiocommunication Conference

Bryan Rawlings, VE3QN – WRC Special Advisor

After a couple of World Radiocommunication Conferences (2012 and 2015) in which Amateurs, despite great odds, achieved two new frequency allocations (630 metres and 60 metres), the current WRC-19 may seem less interesting. Whenever I start to think like this I am reminded that the principal reason I and my Amateur colleagues from around the world keep such close tabs on the WRC processes is to look out for our existing allocations which are, surprisingly, under threat from a number of new technology projects including several in the current WRC-19 planning cycle.

Recently, I participated in the eighteenth meeting of Working Party 5A (whose mandate includes the Amateur Radio Service) which took place at the International Telecommunications Union (ITU) in Geneva, Switzerland between May 22 and June 2. As I have done occasionally in the past, I wore two hats: sometimes as an Expert Consultant for the International Amateur Radio Union (IARU) and at other times as a member of the Canadian Delegation. The following is a brief overview of what we Amateurs worked on over this period.

One agenda item seeks a frequency allocation for Wireless Power Transmission. This would include, if it can all be put together, an ability to effect charging of electric vehicles. The frequency range being considered – 79 to 90 kHz – doesn't directly affect any of our Amateur bands; however, the technology employed may be capable of generating strong harmonics and spurious signals which could cause us grief in our Amateur bands.

The explosive growth of wireless access nodes is fueling an initiative to expand the frequency bands available to Wireless Access Nodes (WAN) and Radio Local Area Networks (RLAN) in the 5 GHz range. Canadian Amateurs have a secondary allocation here in 5650 to 5925 MHz. In addition to the Primary Users here – the Fixed Service, earth-to-space satellite uplinks and radiolocation services – we share much of our allocation with an Industrial, Scientific and Medical (ISM) band (5725 to 5875 MHz) in which are operated Wi-Fi, cordless telephone and Bluetooth links. The specific initiative at WRC-19 seeks an expansion of RLAN usage into four frequency ranges – two of which would cover 5725 to 5925 MHz. In this range Radio Amateurs are engaged in weak-signal work including EME activities. There is also growing interest in broadband mesh networks in 5 GHz, often using re-purposed RLAN equipment. Finally, there are at least two active projects for geostationary Amateur satellites which plan to use 5 GHz for uplinks and/or downlinks. As a secondary user our leverage is limited; however, we have succeeded in documenting our concerns and the characteristics of the operations we would hope to protect and we will continue to follow this carefully.

A major part of the Amateur Radio Working Group's time has been devoted to the WRC-19 agenda item which seeks an international allocation of 50 to 54 MHz to the Amateur Radio Service in ITU Region 1 (Europe and Africa). Currently, in Region 1 this frequency range is allocated to the Broadcasting Service on a Primary basis while in Regions 2 and 3 there are Primary allocations to the Amateur Service. (Limited domestic allocations to all or part of the band we know as six-metres have been made in many Region 1 countries).

With the transition to digital broadcasting, the number of television transmitters in this part of the spectrum has declined dramatically and this development has helped drive



The above photo shows most of the members of the Canadian delegation to Working Party 5A. Jean-Yves Bernard of Rogers Communications is missing because he took the photo.

Front row (seated; from left): Bryan Rawlings, VE3QN; Ms. Paramita Melanson, Senior Spectrum Engineer with Innovation, Science and Economic Development Canada (ISED) who is the new Chairman of the Canadian Delegation to WP-5A; and Ali Shoamanesh of Telesat.

Back row (standing; from left): Dr. José Costa, a member of the delegation when he is not in his role as the overall Chairman of Working Party 5A at the ITU; and Daniel Gratton of the Canadian Space Agency.

the current Amateur effort to harmonize the six-metre band worldwide. In Russia and some neighbouring states, however, analog television broadcasting in 50 to 54 MHz continues and likely will beyond the European Broadcast Union target of removing all television broadcasting from the lower VHF range by 2020. We Amateurs are, therefore, proposing ways of sharing the spectrum while also taking this fact into account.

There are also a limited number of wind-profiler radars operating in Europe in or near 50 to 54 MHz and separate studies for sharing with the Amateur Service are being prepared for these. Finally, other studies are being finalized considering sharing with stations in government tactical mobile service.

Leading these efforts is the International Amateur Radio Union (IARU) in which Canadian participation is through Radio Amateurs of Canada. The IARU Vice-President, Ole Garpestad, LA2RR, led these efforts throughout the two weeks of meetings in Geneva. Amateurs from Australia, the United Kingdom, the Netherlands, Germany, Japan, China and the United States assisted.

The next meeting of Working Party 5A is scheduled for the two-week period beginning November 6 at the ITU in Geneva. The World Radiocommunication Conference itself is scheduled for October of 2019.

Note: It costs a lot to send a person to Geneva to work and live for almost a month, even with discounted airfare and hotel rates. If you have not contributed to the Defence of Amateur Radio Fund (DARF), please consider making a personal donation and also suggest a club donation to DARF at your next club meeting. For more information see page 26 and visit <http://darf.rac.ca>.

QUA – A TOPICAL DIGEST



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When I first obtained my “Certificate of Proficiency in Radio” in 1964, radio communications came under the jurisdiction of the Department of Transport.

Ten words per minute Morse was a requirement and a year of CW operation as an Amateur, shown in the station log, was a prerequisite to writing the exam for the Advanced Amateur certificate. For this exam, in addition to theory, 15 wpm Morse was expected.

I looked forward eagerly to using HF “phone” and remember finally being able to use it as a newly minted Advanced Amateur.

In the time since then I have come to appreciate Morse code CW operation more and more and it now is easily my favourite mode.

I know that not everyone shares this view, nor do I expect them to. However, I value CW for many reasons.

I like that it slows down a conversation and gives me time to think about what the other person is saying. It is remarkable, I think, how much of that person’s personality comes across even though he or she is heard only through the artificial medium of Morse.

I like that CW allows me to converse – perhaps in only a limited fashion using Q codes and other abbreviations – with people who may not speak any English or whose accent (or mine) would otherwise make communication difficult.

As a sometimes QRP operator I also really appreciate CW’s narrow bandwidth and its copyability when propagation is less than optimum. CW transmitters can be relatively straightforward so this mode opens up the possibility of experimentation with simple homemade (often low power) equipment. Finally, with headphones on and my key I can operate in a world of my own without disturbing anyone else around me.

CW Keying Response

The on-off nature of CW means it is really a digital mode – perhaps the original digital mode? The manner in which the CW signal rises from zero to its maximum value and then falls again from that maximum to zero is important. If the rise or fall time is too rapid, sidebands will be produced around the carrier frequency and these will cause interference to nearby stations. They will be evident as “key clicks” as one tunes off frequency from a station. Ideally both rise and fall time will be rounded with no abrupt changes.

For some time I have been enjoying regular QSOs with Geoff Grant, VY1BG, who lives about 20 kilometres south of me near Whitehorse. I usually use a 1983 Yaesu FT-ONE transceiver, but sometimes I use a 1976 Kenwood TS-520S. One evening Geoff mentioned how pleasant the TS-520S sounded whereas he found the FT-ONE somewhat harsh. This was also my experience when I had the opportunity to listen to these two radios so I decided to see what their keying responses looked like. To do so I set up some equipment as shown in Figure 1.

The –40 dB tap I use is homemade from a design on page 7.8 of the excellent ARRL book, *Experimental Methods in RF Design*, by Wes Hayward, W7ZOI, Rick Campbell, KK7B and Bob Larkin, W7PUA. It was also published in the June 2001 edition of *QST* in an article entitled “Simple RF Power Measurement” by Wes Hayward and Bob Larkin. I have found this tap to be very useful for a variety of measurements. A photo of the interior of this tap is shown in Figure 2. I used copper foil for the straight-through connection between the two SO-239 coax connectors. It is shaped to provide a constant 50 ohm impedance to the tap.

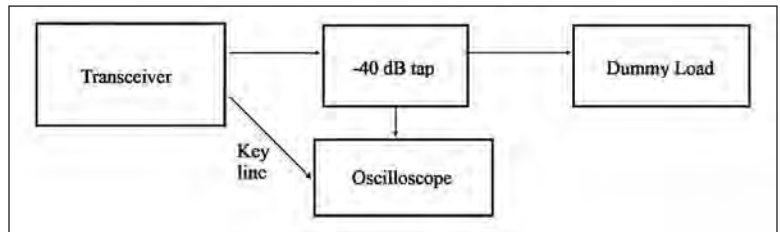


Figure 1: Test set up for monitoring the transceiver’s keying. The key line was connected to one channel of the oscilloscope, the output from the –40 dB tap to the other.

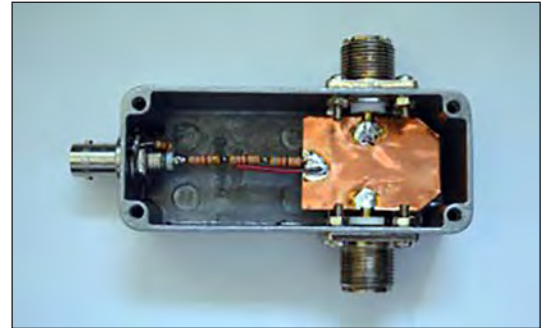


Figure 2: The interior construction of the –40 dB tap.

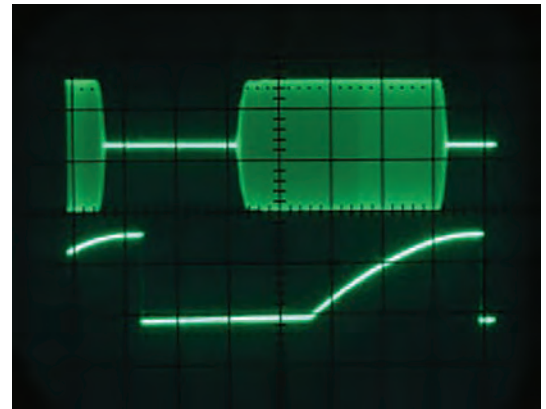


Figure 3: Keying waveform for a Yaesu FT-ONE transceiver dating from 1983. Rise and fall times are around 1 ms.

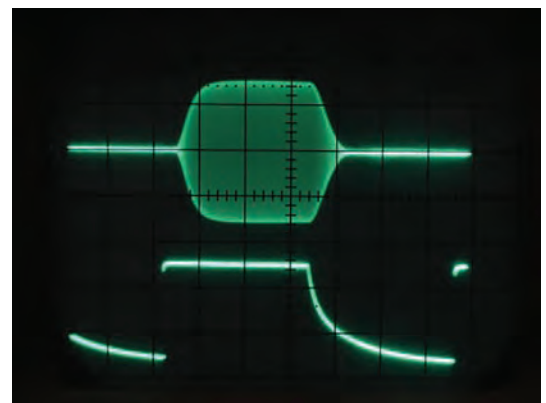


Figure 4: Keying waveform for a Kenwood TS-520S transceiver dating from about 1976. Note that the key line goes positive on transmit whereas for most transceivers the key line is grounded. Rise time is about 4 ms; fall time is about 3 ms.

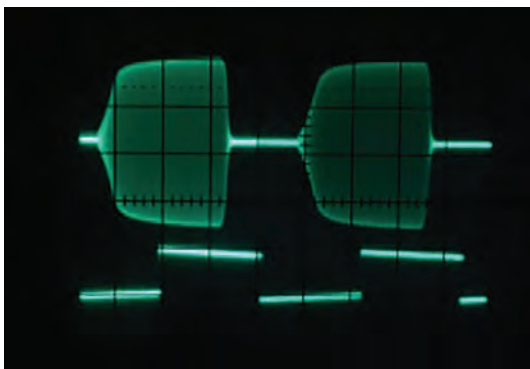


Figure 5: Keying waveform for a Yaesu FT-817ND transceiver, currently in production since 2004. Rise time is about 3 to 4 ms; fall time about 1 ms.

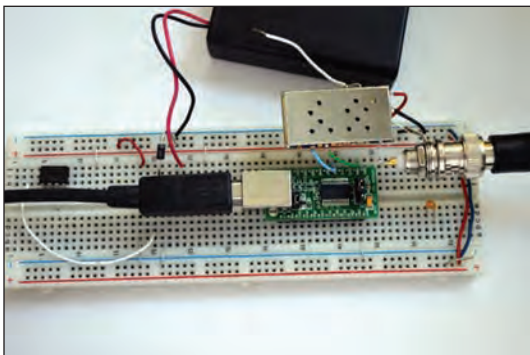


Figure 6: The programming setup for the DRA818V module. The UM232R FTDI USB to RS232 converter is in the centre of the photo with a USB cable connection to a computer. The DRA818V module with a few wires attached is just above it. Power was provided by three AA cells and a dummy load was connected to the module's antenna port. Only two connections from the UM232R to the DRA818V are needed: the TxD to RxD and RXD to TxD.

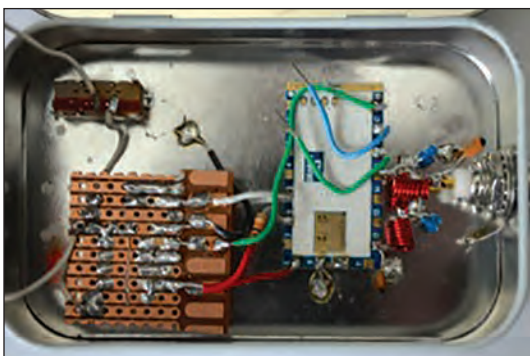


Figure 7: The foxhunt transmitter. On the left is the microcontroller circuit that turns the transmitter on and off and that inputs a CW identifier and message into the transmission. The Dorji DRA818V module is to its right. TxD and RxD connections to the module are available through the two unconnected wires in the event that a change in operating parameters is desired. A low-pass filter is located between the module and the BNC antenna jack.

With a -40 dB tap connected as shown in Figure 1, only $1/10,000$ of the power applied to the input appears at the tap output and the majority of the power is absorbed by the dummy load. Connected to a transmitter operating at 100 watts, the tap output will have $100/10,000$ watts or 0.01 watts or 10 dBm.

I found the keying waveform results I obtained using this apparatus to be very interesting. Figure 3 shows the results from my Yaesu FT-ONE while in Figure 4 you can see that of my Kenwood TS-520S. Figure 5 shows the keying waveform of my FT-817ND. In each case the upper trace is the keying waveform, the lower trace is the key line and the horizontal scale is 5 ms/division.

Of these three transceivers it is clear that the TS-520S has the smoothest transition from off to on and from on to off, and it should also have the cleanest signal spectrum so VY1BG's observations regarding the signals are unsurprising.

DRA818V VHF Transceiver Module

In my column in the January/February 2017 TCA, I mentioned the Dorji DRA818V and DRA818U transceiver modules that are available for less than \$20 on eBay. I had ordered and received one of these modules (the V version for VHF) shortly before I wrote the column and I was looking forward to experimenting with the module to see if I could get it working. During some inclement -35 C weather I finally got around to seeing what I could do.

The module's electrical connections were not a problem since there are just a few connections to be made, as you can see if you check the DRA818V data sheet at <http://www.dorji.com/docs/data/DRA818V.pdf>. Programming the module, however, did pose a problem. Initially, I thought I could use a microcontroller to send the appropriate data to the module, but I soon realized that the module's data sheet was not very helpful and there were a number of things I just didn't know how to do. After a few days effort and some online searching, however, I found the website of Ivo Klinkert, PA1IVO, and he had provided a program with which to program the DRA818 modules. You can find this program along with some other very interesting information at <https://ivok.home.xs4all.nl>.

My initial attempt to use Ivo's program was unsuccessful but the problem was easily solved with email advice from Ivo. Once the program was working I used a Future Technology Devices International (FTDI) UM232R USB to RS232 converter, that I had purchased from DigiKey some time ago, to transfer the required data from my computer into my DRA818V module. This process went smoothly and, much to my surprise, when I grounded the module's push-to-talk terminal the module worked right away, producing a signal on the frequency I had chosen. The setup I used for programming and testing is shown in Figure 6. I connected a 1N4004 diode in series with the power source to drop the voltage from the three AA cell batteries I used to about 4 volts because the DRA818 data sheet is very clear that the maximum supply voltage for the module is 4.5 volts.

Amateur experimenters who have used these modules all emphasize that they have very limited harmonic suppression so a low-pass filter is needed between the module's output and the antenna. To design a suitable filter I used the freely available student edition of the program "Elsie". It is an excellent program and very easy to use. I used a 7th order Chebyshev filter with capacitor input and 150 MHz cutoff frequency. You can see this filter in Figure 7, squeezed between the module and the BNC antenna connector.

Two members of the Yukon Amateur Radio Association – Elizabeth, VY1EH and Charles, VY1CC – are also involved with Scouts Canada and they are interested in having a simple foxhunt for this group of young people. It seemed to me that the small size and minimal parts of the DRA818V module made it ideally suited for a foxhunt so I added a microcontroller circuit that would key the transmitter and insert a tone and CW identification to its audio input.

The bottom side of this perfboard circuit is also visible in Figure 7 and both it and the DRA818V are contained in an "Altoids" tin. Three AAA batteries also fit so the result is a self-contained, easily hidden 2 metre transmitter.

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Some people have used these modules to make complete VHF or UHF transceivers. However, since complete transceivers that may use the same module are available for not much more than the cost of the module, I think the real value of these modules is for projects that use only specific features tailored to the project.

One example is the foxhunt transmitter I've described, but there are quite a range of other projects that should be possible. For example, in the July 2016 *RadCom*, Andy Talbot, G4JNT, describes a circuit and program he developed that allows remote DTMF control of one of these modules, and I think they could be used very effectively for relaying measurements of temperature, pressure or humidity. You can find the PIC microcontroller code for this circuit at http://www.g4jnt.com/DRA_TCVR_Test02.asm.

G4JNT's program and the one I used in the foxhunt beacon both use Morse code with one byte used for each Morse character. A dit is signified by a 0 and a dah by 1. Using this system, the letter A, for example, is represented by 01000010 where the last two digits indicate that an A has only two components. For comparison, the letters B, C and D are represented by 10000100, 10100100 and 10000011. Once again, the utility of Morse is evident even in this digital age of the 21st century!

If you would like to know more about my experience with any of the material in this edition of "QUA" – in particular my experiments with the DRA818V or the foxhunt beacon circuit and programming – please contact me at vy1kx@rac.ca. My thanks to Ivo, PA1IVO, for his assistance with the DRA818 program.



International Lighthouse Lightship Weekend

The International Lighthouse Lightship Weekend (ILLW) has been held on the third full weekend each August since 1998. This year the event will be held on August 19-20.

The ILLW website (<https://illw.net/>) describes the event as follows:

"The ILLW attracts over 500 lighthouse entries located in over 40 countries. It is one of the most popular international Amateur Radio events in

existence probably because there are very few rules and it is not the usual contest type event. It is also free and there are no prizes for contacting large numbers of other stations. There is little doubt that the month of August has become 'Lighthouse Month' due largely to the popularity and growth of the ILLW.

This year's event takes place on the 3rd full weekend in August so if you haven't done so already, find a lighthouse nearby and get a group together or do it solo and fire up a lighthouse station. In most cases if you don't intend operating from within the lighthouse itself or one of its cottages, you really don't need to get any approval. Most first time entrants are so enthused with the event that they return year after year."

Plans are underway for a number of lighthouse activation's on Prince Edward Island by George Dewar, VY2GF, using the call sign VY2PLH. One special activation will be for the International Lighthouse Lightship Weekend (ILLW) at East Point which has been designated the Confederation Lighthouse (<http://www.cbc.ca/news/canada/prince-edward-island/pei-confederation-lighthouse-1.3765495>).

George extends an invitation to any Amateur who would like to operate and he will also facilitate individual activations at other locations. The PEI Lighthouse Society (<http://www.peilighthousesociety.ca/>) lists in excess of 50 sites. You can hear an interview with George on Amateur Radio Newsline (<https://www.arnewline.org/>) Report 2058 for April 7 at the 8:55 point on the audio portion. He can be reached at vy2gf@rac.ca or dewarg@bellaliant.net.

For more information on the ILLW event please visit: <https://illw.net/>



The Defence of Amateur Radio Fund

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



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

Donations can be sent to RAC Headquarters at the address shown below. Please make the cheque payable to "Radio Amateurs of Canada" and note in the memo field "DARF donation". Call or email RAC HQ if you wish to donate by other payment methods or have a question on how to donate. For more information please see the DARF Annual Report on page 47 of the March-April 2017 TCA and visit darf.rac.ca. **Note:** RAC is currently updating the DARF website.

Radio Amateurs of Canada, 720 Belfast Road, Suite 217 Ottawa K1G 0Z5
Email: rachq@rac.ca; Tel: 1-877-273-8304 | 613-244-4367

RANDOM THOUGHTS...



Dirk Moraal, VY1NM
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Amateur Radio must be

one of the few places left where one can call a guy an Old Man to his face and not offend. OM is a badge of honour for young and, well, old Amateurs alike.

I recall once again how proud I was when, on a memorable hot dusty summer day in a long gone but not forgotten childhood, my mother sent me to the tub. "Go have a bath," she said. "You smell like a man." You have no idea how that boosts a boy's self-esteem. The inner glow must have radiated from the soap suds. And I felt some of that same sense of pride the first time someone called me OM on the radio.

Odd, then, that we should refrain from calling the distaff side OL or OW, but, believe me, think before you experiment with one, unless you like your suppers cold and prefer your shoulders icy.

I reserve an extra measure of respect for the YLs and XYLs in our lives as they often put up, patiently, with our clutter and noise, events like EMI setting off fire alarms and in my particular case, RF shutting down the fridge at predictable intervals.

Of course the solution is to hook up with a YL who is already an Amateur.

In which I wax loquacious about future generations...

BTW, the March-April 2013 issue of TCA had an informative article by Mike Okincha VE3PBE, which was called "Urban EMI Chaos: Managing the Coexistence of Incompatibilities". (Now why can't I think up fancy titles like that!). If you did not read it, it covered causes and various cures for dealing with the effects of EMI on RF sensitive household electronics. But it offered no hints on how to manage the AF at home. We are on our own there.

Now, where was I going with this...!

Ah. Yes. Ya gotta get 'em fresh.

Being not long from joining the Energeezzer crowd myself – and may we long keep going and going – my thoughts turn to the coming generation. No. Make that the next coming generation. Someone once said that if he had known how great the grand kids would turn out, he would have had them first.

Taking this as my cue, I had been making survival plans should this fate ever befall me. And I think that an early introduction to the bright little lights and shiny knobs of a radio station is just the ticket to bond us to the wee 'uns. We are planning to spoil them, aren't we? We might, of course, need to mind the sticky, little, chocolate-coated fingers with a few sani-wipes before we let them take a poke at the buttons. (Men, we can learn to do this).

Early exposure to the ham shack / man cave should be a good start. I often visualize bouncing the "grand's" on my knee, but not too hard and not too high, as I recite nursery rhymes and fairy tales. Appropriate stories such as we might recall from our early ham hood work well, titles such as "Little Red Radio Shack", "Goldilocks and the Three Amplifiers", "The Three Little Hams", "Seven MHz Boots", "Paid Pauper at Ham Store", "Jack and the Radio Tower" – and I tell you, I am just getting started!

So here is a first rhyme for those grand little kids, the future of Amateur Radio.

(With abject apologies to A. A. Milne)

Round about

And round about

And round about I go

Round about and round about

The dial on the radio.

I think I am an Amateur

Talking to another Amateur

Talking to another Amateur

Who really isn't there.

And round about

And round about

And round about I go

Round about and round about

The dial on the radio.

Of all the books I read in my busy Little Guy years, one, a gift from my Father, entitled "Now We Are Six", by the same A. A. Milne (which I read cover to cover when I was four) is the one that left the most long-term memories. I can still visualize the illustrations and I still remember the cadence of the rhymes. If memory serves me, now and then I might even recall some of the words. Whatever magic was in that book and made it so special, maybe we could find out just what it was and apply it to Junior Ham course material. I'm just sayin'. Great read for the grand kids too, except I do not recall any references to radio in that book.

Considering the fact that My One True Love once told me she would like to have 12 children (11 kids plus myself presumably rounding out the platoon to make us an even dozen), the thought of all those future grand kids all at once really scared me. But, I thought, maybe amongst them all there might be at least one who was destined to become fascinated with Ham Radio. We can only hope.

Finally, for the non-grand dads and non-grand-dads-to-be out there, we know who we are, I have composed a little bit of doggerel we can recite to ourselves when we suffer from the side effects of solar storms and QSB and Aurora and the like. May it bring comfort during the Dog Days.

What a sad and lonely Thing

A silent radio Be

Say anguished Amateurs of their Game

But should they chance upon faint CQ Call

In an instant, they forget their Pain.

– 73,OM!

TCA 



For the RAC Store visit: http://www.cafepress.ca/rac_radio

Operating Amateur Radio in Another Country

George Gorsline, VE3YV RAC International Affairs Officer

One of the most common questions I receive is: "How do I operate in another country?"

While the overall framework for Amateur Radio is part of international treaties and regulations set by the International Telecommunications Union (ITU) and updated at World Radio Conferences (see page 23), each country sets its own rules and criteria for Amateur Radio operation within its territory.

As a result, there are at least six possible answers to this question depending on where you intend to visit. In all cases, this applies only to temporary operations by visitors, usually limited to three, six or 12 months. Longer stays or permanent residence will likely require obtaining operating credentials in that country.

Some general guidelines on operating internationally are provided below.

Start early: check to see what the appropriate process is for the country you intend to visit. The most popular destination for Canadian Amateurs is the United States which requires no paperwork at all.

For many countries in Europe and some in Latin America, an international permit, similar to an international driver's licence is required. Other countries require that you apply directly to their telecommunications regulator for permission to operate. It could take several months to work through their procedures via mail. Or it could be that a brief set of email exchanges is all that's needed to arrange a visit to the regulator's offices upon your arrival to present your paperwork, pay a fee, and walk out with your operating permission.

Always have your Canadian Passport and your Amateur Radio Operator Certificate with you as proof that you are a qualified operator.

For dual citizens, in most cases you may not operate on a Canadian certificate in your other country of citizenship (e.g., a dual Canada/US citizen may not operate in the US on a Canadian Certificate and vice versa).

Permanent Residents of Canada generally need to be licensed in their country of citizenship and follow the processes for that country to operate outside of Canada.

United States

Canada and the United States have a Reciprocal Operating Agreement, a treaty in effect since 1952.

Under this treaty, visiting Amateurs may operate in the host country in accordance with their rules and regulations.

No special permits or paperwork are required, although proof of citizenship (passport or enhanced driver's licence) and your Amateur Certificate should be available should authorities ask to see it. As this treaty pre-dates modern ITU conventions, the prefix is appended to the issued call sign.

Examples: a Canadian Amateur would use VA3RAC/W4 in the US 4th call area. A US Amateur would sign as K8HI/VE3 in Ontario.

The main difference for Canadian Amateurs operating in the US is that, unlike Canada, the US has a mandatory band plan which specifies modes and sub-bands. Canadians in the US must operate in accordance with FCC Part 97 Rules using the appropriate modes within their designated sub-bands. For detailed information see <http://www.arrl.org/band-plan>.

Most visitors want to operate using VHF or UHF mobile (typically 50 watts or less) or portable using handhelds. All levels of qualification may operate just like at home, identifying as in this example: "VE3YV mobile W3 near Erie PA". Note that US rules require identification every 10 minutes.

Your operating privileges in the US are the same as those you are authorized for in Canada, but not to exceed the privileges of a US Extra class operator. Therefore, for example, you cannot operate phone in the "foreign phone" sections of HF bands, only on those sub-bands where US Amateurs are authorized to operate.

Similarly, US Amateurs operating in Canada must abide by the rules in "RBR-4 – Standards for the Operation of Radio Stations in the Amateur Radio Service". Specifically, a US Amateur who has a Morse code qualification may



operate in accordance with the provisions applicable to the holder of an Amateur Operator's Certificate with Basic, Morse code (5 wpm) and Advanced Qualifications.

A US Amateur without Morse qualification would operate in accordance with provisions applicable to the Amateur Operator's Certificate with Basic Qualifications, which can be summarized as no operation below 30 MHz, input limited to 250 watts and commercially built equipment.

Europe (CEPT)

CEPT is an organization of European telecommunications authorities which works to harmonize radio regulations though out the European Union (EU). This includes a specific treaty T/R 61-01 which allows Amateurs to operate in other countries.

In addition to most, but not all, European countries, Canada, the United States, Australia, New Zealand, Peru, Israel, South Africa, and the Netherlands and its overseas territories have also signed as participants. T/R 61-01 is periodically updated and the latest version is available at: <http://www.erodocdb.dk/docs/doc98/official/pdf/TR6101.pdf>

Please note that some signatory countries may have further restrictions. For example, Aruba requires an equipment inspection, call sign assignment, and annual fee. Some countries require proof of Morse proficiency for HF operations. In addition to the footnotes in T/R 61-01, check with the International Amateur Radio Union (IARU) society or country regulator to be sure.

Amateurs with Advanced qualifications may apply for a CEPT permit, valid for one year. Applicants may apply to RAC, which issues the permits on delegated authority from Innovation, Science and Economic Development Canada (ISED),

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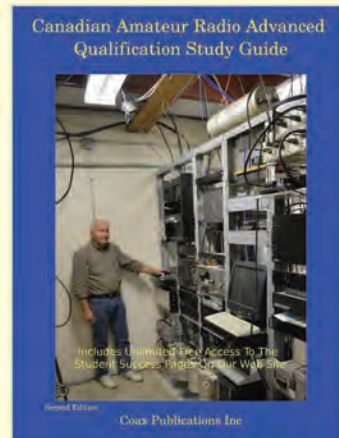
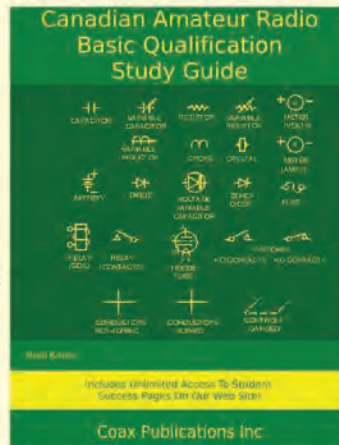
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our regulator. Fees for the permit are \$20 or just \$10 for RAC members. To apply, complete the online application form at: <http://wp.rac.ca/operating/cept-permits/>

At this time, holders of Basic and Basic with Honours qualifications are not eligible for a CEPT permit.

International Amateur Radio Permit

An International Amateur Radio Permit (IARP) is issued under an agreement of the Inter-American Telecommunication Commission (CITEL).

As with CEPT permits, the IARP is valid for one year and applicants may apply to RAC, which issues these under delegated authority from ISED. The booklet-style permit requires a passport-sized photo. Fees are \$35 with \$10 discount for RAC Members.

IARP participating countries are:

Canada, Argentina, Brazil, El Salvador, Panama, Peru, Trinidad & Tobago, United States, Uruguay and Venezuela. Advanced qualifications may be required to operate below 30 MHz. To apply, complete the online application form at: <http://wp.rac.ca/operating/iarp-permits/>

Australia and New Zealand

Based on information provided by the Wireless Institute of Australia (WIA) and the New Zealand Amateur Radio Society (NZARTS), Canadian Amateurs may operate for up to 90 days in either country without special permission. For more information visit <http://www.wia.org.au/licenses/licensing/visitorlicense/> or <http://www.nzart.org.nz/info/visitors>.

Other Countries

Canada has bilateral treaties with several countries to recognize each other's Amateur qualifications. This allows a Canadian Amateur to apply to operate in that country without an examination. Since regulations vary, Amateurs should contact the regulator or the IARU society in the specific country for further information. These countries include: Chile, Haiti, Columbia, Honduras, Iceland, Guatemala, Brazil and Venezuela.

For other countries, contacting the regulator and/or the IARU society is a good place to start. The following web resources may be helpful:

For IARU society contact information:
<http://www.iaru.org/member-societies.html>

For general information: <http://www.arrl.org/reciprocal-permit>. Note that this is for US Amateurs and some information may not apply to Canadians.

Maritime Mobile

Operations in international waters (those areas outside of national jurisdiction) are controlled by the vessel's "flag", the country in which it is registered, and also by the ITU region where the vessel is located. In addition, the ship's master must give permission for the operation. Operations in or over the Great Lakes outside Canadian waters are mobile operations as described in the United States summary.

Further information and Updates

Although the information above has been checked for accuracy, changes will occur over time and errors do creep in. If you have any updates, changes or questions, please contact me at VE3YV@rac.ca or use the contact form on the RAC website at <http://wp.rac.ca/executives/> addressed to the International Affairs Officer.





70th Anniversary of Amateur Radio at Eureka Part 2: The VY0ERC Club Station

Pierre Fogal, VE3KTB, John Gilbert, VE3CXL and Alexey Tikhomirov, VE1RUS

Part 1 of this article in the May-June 2017 issue of TCA told of how the weather station at Eureka, then the most northerly post office in the world was established in 1947. From the beginning, Amateur Radio provided a vital link for the eight-person station staff and, under the station call sign VE8MA, Amateur operations continued for many years. The year 2017 marks the 70th anniversary of the establishment of the station. VE8MB was established at Resolute Bay in Nunavut three months after Eureka and is also celebrating its 70th anniversary. Eureka is located in the Canadian Arctic on Ellesmere Island at approximately 80°N, 86°W. **Note:** All photos are from the collections of Pierre Fogal and Alexey Tikhomirov.

2017 marks a year-long celebration of Canada's 150th birthday, highlighting significant nation building milestones and celebrating our many diverse regions including the Canadian North. The 70th Anniversary of the establishment of the Eureka Weather Station, with its long service in meteorology and other scientific observations and research, is an important and visible example of such a milestone. Its meteorological services continue today along with the Polar Environment Atmospheric Research Laboratory (PEARL), recognized worldwide for its scientific contributions. Amateur Radio has played its part in this history and is being acknowledged here as part of the 70th anniversary of Eureka.

Amateur Radio contacts with Eureka and Ellesmere Island are much sought after today by Amateurs worldwide. Contacts from both are rare. On-the-air casual operation and contests routinely generate statements of appreciation, providing a needed contact for one Amateur Radio award or another.

Two of the co-authors of the current article, Alexey (Alex) Tikhomirov, VE1RUS and Pierre Fogal, VE3KTB, have been operating from Eureka for the last few years using their own call signs with the prefix VY0.

The third co-author, John Gilbert, VE3CXL, operated from Eureka from 1956-58 using the VE8MA call sign. All three have enjoyed contesting and DXing from this unique location.

The return of NA-008 to the airwaves from Eureka in recent years has been closely tied to the research conducted at PEARL operated by the Canadian Network for Detection of Atmospheric Change (CANDAC; <http://www.candac.ca>). CANDAC-related activations began with Robert Albee, AG0DX (formerly KC0VEU) in 2012 using a Yaesu FT-897 transceiver and wire antennas.

The return of Amateur Radio to Eureka on a consistent, albeit intermittent, basis began in 2014 when Pierre carried his Kenwood TS-570 in for a three-week period in mid-March. He and the rig would return again in June and then October. It was during that October trip when Alex was first active from Eureka. Both Alex and Pierre are atmospheric scientists working as a part of the CANDAC and often travel to Eureka where they perform their regular duties and, when time permits, operate an Amateur Radio station. Their work shifts typically span two weeks to three months



Figure 2: Eureka Weather Station QSL cards and occur several times per year. During these periods they reside at the Eureka Weather Station in Eureka, Nunavut, X0A 0G0 (see Figure 1). In accordance with the regulations governing Amateur Radio in Canada they have signed portable VY0 with their personal call signs (see Figure 2).

In February 2015, the station attained a more permanent basis with the acquisition and transport of a used Kenwood TS-480HX transceiver acquired from Ronnie Smith, VE3NLS and a Cushcraft R5 vertical from

Figure 3:
The PEARL Ridge Lab, current home for VY0ERC.

Jim Flowers, VE1JIM (currently VA7JSF). The TS-480HX, the R5 as well as the MFJ-941e tuner, an Astron power supply, and a lot of useful bits and pieces brought by Pierre earlier, became the main



components of the shack. In addition to the R5, antennas have been constructed mainly of wire. They have included a multiband loop, multiband dipoles, 40m dipole, 40m sloper, a 40m half-square and 160-40m Beverage antenna. The other notable antenna is a homebrew 20m Moxon built from a combination of telescoping aluminum tubing and PVC conduit.

In early 2016, Alex became the trustee for VY0ERC and with that the Eureka Amateur Radio Club (EARC) was formed with Alex, Pierre and John as the club's initial members and Executive. The establishment of a radio club at Eureka was inspired by the commemoration of Canada 150 and the 70th anniversary of the weather station. The establishment of a radio club so far north was not undertaken lightly. The reasons for the station, accepted by the licensing authorities, are as follows:

- 1) It promotes Canadian Amateur Radio, bringing attention to Nunavut and to a remote place such as Ellesmere Island.
- 2) The use of a consistent call sign with VY0 prefix clearly identifies operations from Nunavut and provides a Northern voice consistent with the Canada 150 aims.
- 3) It re-establishes the long tradition of an ongoing Amateur Radio presence at Eureka. The first radio contact from Eureka took place in 1947 as VE8MA when the Eureka Weather Station was established as a part of the Joint Arctic Weather Stations program (see Part 1 of this article in the May-June 2017 TCA). Eureka and the other High Arctic Weather Stations had Amateur stations for many years. Amateur Radio has been an integral part of the history of these remote stations.
- 4) It restores an HF communications capability to the Eureka Weather Station's environs providing the possibility of HF emergency communications for the station and region in a manner consistent with the best traditions of the Amateur Radio Service.

5) It allows the further exploration of HF propagation to and from the High Arctic through the operation of beacons and related equipment in support of 21st century Amateur Radio activities which encourage young people to explore new ideas and innovation.

6) It provides visiting Radio Amateurs with the opportunity to operate from a unique and unusual location.

The Eureka Amateur Radio Club is located in the environs of the Eureka Weather Station which is itself located at 79° 59' N, 85° 56' W on Ellesmere Island IOTA NA-008. VY0ERC operates from the CANDAC facility, known as the Ridge Laboratory (Ridge Lab; see Figure 3) approximately 11 kilometres as the crow flies from the weather station. The Ridge Lab was built in 1992 specifically for the study of stratospheric ozone by the Meteorological Service of Canada (currently Environment and Climate Change Canada). It is located on a ridge that runs approximately North-South at an altitude of 610 metres. The observatory includes four large laboratories (total area of approximately 120 square metres) and a rooftop observing platform (total floor area of approximately 350 square metres) for instrumentation. It is in all respects a self-contained state-of-the-art scientific laboratory.

It is located at 80° 3' N, 86° 25' W. The separation is significant as the weather station is in grid square EQ79ax and the Ridge Lab is in grid square ER60tb, and since the Ridge Lab is above 80° N, it is in ITU zone 75 rather than ITU zone 4. Both are located in CQ zone 2. The Club Station VY0ERC took to the air, with Alex at the controls, on January 26, 2016. The first QSO was on 40 metres between Eureka and Sable Island (CY0/VA1AXC, op. Aaron).

Unlike stations in the more populated parts of Canada, VY0ERC faces conditions not generally encountered in southern Canada. In particular, Eureka is a base for scientific activities and has no permanent residents. Given the remote

location of Eureka, there is not likely to ever be a "resident" Amateur population. Eureka has a permanent complement of eight weather station staff to which CANDAC adds anywhere from one to 12 people from time to time. Conditions at the station, from an Amateur Radio viewpoint, offer both challenges and opportunities:

- 1) The station will operate as long as CANDAC staff, such as Alex and Pierre, are involved in some kind of program in Eureka.
- 2) As with Amateur Radio at the station from the earliest days, Amateur operations must not interfere with the measurements being carried out by the scientific programs. This limits antenna locations as well as their uptime.
- 3) The costs associated with the club station are the responsibility of the club members. However, contributions to defray the costs may be sought in the same way that Amateur Radio operations in remote and out-of-the-way locations have always been funded. These might be



Figure 4: Pierre (left) and Alex (right) after R5 Cushcraft installation at the PEARL Ridge Lab roof before the 2015 CQ WW SSB.

traditional mechanisms or modern methods such as crowdsourcing. Any such approaches will be properly documented and open to scrutiny.

4) Club membership is open to all interested Amateurs. Those who might actually visit Eureka are particularly welcome. Radio Amateurs with an interest in encouraging Amateur Radio in Nunavut and the Northwest Territories are invited to join. Visitors, such as those on cruise ships, might welcome the opportunity to operate at such an interesting location.

Perhaps the most significant challenge faced at VY0ERC is keeping antennas in the air. In the 1950s, John operated effectively from Eureka using fixed Vee Beams and the logic of being “on top of the world”, where all directions are south, was employed. For the most part, current antennas are not rotated either and are fixed with the preferred directions being either south, to cover the Americas, or northeast to cover Europe, Asia and Africa.

While the lack of a rotator does likely impact ultimate signal strength, the few times we have attempted to use one with the 20m Moxon antenna have not gone well, with the rotator seizing in the extreme cold. It has shown us that the uptime for it is fairly low from October to May when temperatures are typically ranging from the mid-20s °C to the mid-40s °C. Winds can reach 100 knots several times a year and, perhaps more importantly, they can be consistently in the 40 to 60 knot range for several days at a time.

The boom of the Moxon antenna is constructed of 1.25-inch in diameter thick-wall aluminum tubing and it is now noticeably S-shaped. The Cushcraft R5 vertical is mounted on a steel pole which is fastened to the roof of the PEARL Ridge Lab approximately three metres above the roof deck, and therefore approximately 10 metres above the ridge itself (see Figure 4 on the previous page). It also has suffered significant wind damage on multiple occasions, requiring it to be rebuilt.

Typically, the Moxon is removed and lashed to the roof structures whereas the R5 and dipoles may be left in position to operate for as long as they survive. In 2016, the R5, together with the 40m dipole and sloper, were left in position at the end of March. They survived until a storm in mid-June at which point all three were destroyed, in part due to a relatively recent weather phenomenon, icing. Prior to 2015, the Ridge Lab had not been subject to the formation of hard ice, although it could be subjected to the growth of a considerable amount of frost. During September and October, as much as 15 centimetres of frost can accumulate overnight on any surfaces on the Ridge Lab roof due to the combination of colder temperatures and open water in Eureka Sound and Slidre Fjord. However, the summers of 2015 and 2016 have both had events in which hard water ice has formed with disastrous implications for antennas.

Once all the antenna challenges are dealt with we are still left with the challenges presented by propagation. Due to its extreme northern location, any Amateur Radio activity in the vicinity of Eureka must deal with the impact of the auroral oval. As readers are likely aware, the North Magnetic Pole moves around and recently has been located some few hundred kilometres more or less due west of Eureka.

Of even greater importance, is the geomagnetic pole and this is located just east of Eureka, also on Ellesmere Island (see <https://spaceweatherlive.com/>). As can be seen in Figure 5, this means that Eureka and its environs are pretty much dead centre of the auroral oval and its related impacts on HF propagation. When this is coupled with the extreme diurnal solar position – which gives us a “typical” night and day for only a few weeks per year – we find that there are severe restrictions on which bands are available to us. Far and away, the most consistent band is 20m. The higher bands (15m, 12m, 10m) are generally

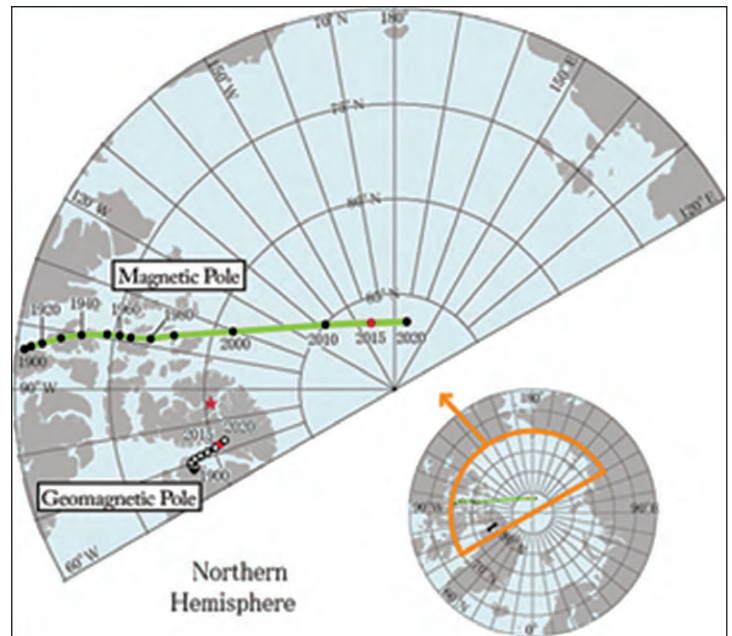


Figure 5: Position of the magnetic and geomagnetic pole relative to Eureka, NU.

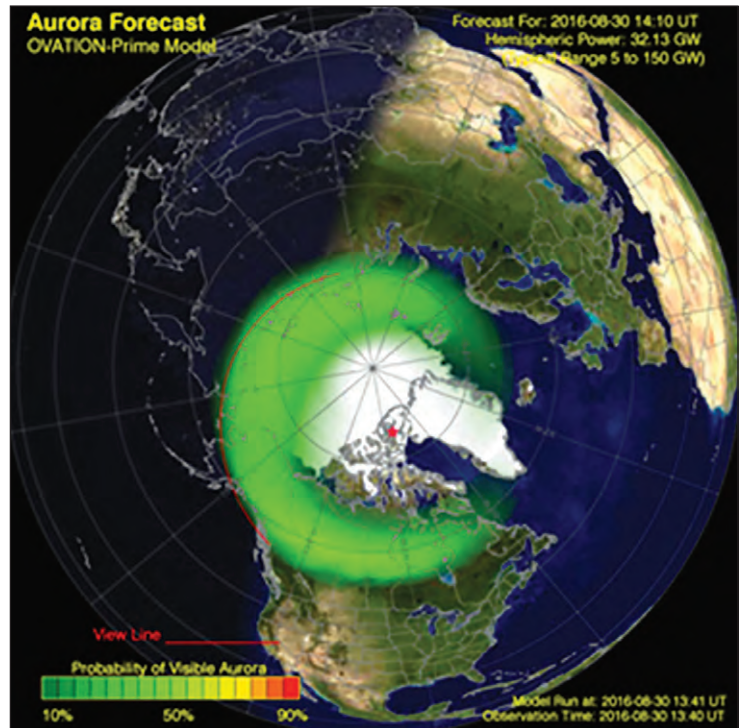


Figure 6: Auroral forecast indicating position of auroral oval with respect to Eureka, NU.

not available from late October to early March unless we are near the peak of the 11-year sunspot cycle. 40m and 80m are generally not available during the period from April to September when the Sun is above the horizon for 24 hours a day. The auroral oval position computed for late August is shown in Figure 6 (see <http://wdc.kugi.kyoto-u.ac.jp/poles/polesexp.html>), with the approximate position of Eureka indicated by the red star. It is clear from the Figures that signals to and from Eureka will be significantly impacted by the auroral oval.

VY0ERC activities include the usual Amateur modes. Thus far, most activity has been on SSB, with some digital in the form of RTTY, PSK31, JT65 and WSPR. As yet we have not undertaken much CW, but we are working on improving our skills there.

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Figure 7: Alex checking equipment after antenna installation.

Given that we are heavily involved in various flavours of atmospheric and physics research, VY0ERC is very interested in participating in experimental undertakings. We are also interested in participating in outreach should any southern stations wish to arrange for a contact for public or school events.

VY0ERC is on the air for multiple weeks three to six times per year as Pierre and Alex visit PEARL in support of the atmospheric measurements program. Operations are as the work schedule permits. Local network connections are excellent and provide the capability to operate the TS-480 from the weather station, where the operators eat and sleep. The operators are avid contesters and place VY0ERC on the air for any major contests that occur while they are on site and have spare time. VY0ERC was in operation for part of 2016 and part of 2017. Statistics for the VY0ERC are shown in Table 1 at the top right.

Propagation conditions have not been ideal but results in the ARRL DX Contest (SSB) on March 5-6, 2016 justified interest in the station. Pierre had 442 contacts and 71 countries during the contest. Each day produces different conditions and, for example, the third day produced only 100 contacts but gleaned a good number of multipliers. 15m, not expected to be open, produced a few contacts to the West Pacific even after it had closed to Europe. Sunday, March 6



Figure 8: Pierre getting ready for a QSO using his Kenwood TS-570D.

TABLE 1: VY0ERC STATION'S CONTEST STATISTICS

Contest	# of QSOs	Time on the air in hours
2016 WAE RTTY	30	~4
2016 ARRL DX SSB	442	~20
2016 IOTA SSB	497	12
2016 CQ WW SSB	98	15
2016 CQ WPX SSB	509	~23
2017 CQ WPX RTTY	216*	~16
2017 ARRL DX SSB	128*	~9
2017 CQ WPX SSB	279*	~18

Note: in the above Table an * indicates claimed scores

produced a number of contacts to the Caribbean. The lesson seems to be that there is always propagation to somewhere, but maybe not where anyone expects to hear a VY0.

John's stories of hearing South African stations at noon, during the dark period, show that there remains much to be learned about operating from the top of the world.

As we described earlier, the sun is not above the horizon from October 20 to February 20 and this greatly affects propagation. In the 2016 CQ WW SSB contest, Pierre and Alex struggled to make 104 QSOs in 48 hours while back in 2015, using the VE3KTB/VY0 call sign, they conducted 529 QSOs from the same location. Quite often we observe situations when other stations report that our signal is strong, but we cannot hear other stations calling us. Details of our more significant contest efforts can be found in Table 1.

We are also grateful for the opportunities offered in special events such as the North Country DX Association (NCDXA) sponsored "RST" event to promote Amateur Radio activity in the far north (February-March 2016: 441 QSOs) and the VE100VIMY/VY0 special event celebrating the 100th anniversary of the Battle of Vimy Ridge (February 19-25, 2017: 302 QSOs).

A useful resource that can be consulted to gauge propagation are the RBN reports for the VE8AT beacon located at the weather station. VE8AT is a part of the NCDXF/IARU International Beacon Project and has been sponsored by the Northern Alberta Radio Club (<https://www.narc.net/>) for many years.

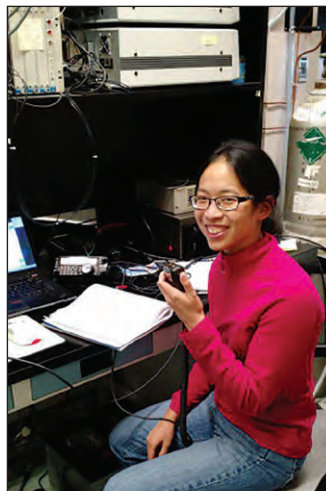


Figure 9: Rachel, VA3CYW, an atmospheric scientist and Assistant Professor from Dalhousie University is introduced to the pileup from the "DX" side.

Another resource to observe current propagation conditions is the WSPR project. The club's radio is set as a WSPR beacon from time to time. The VY0ERC WSPR is being tracked by stations around the world. The enthusiastic reception of the Eureka WSPR, and the clear evidence that there are propagation paths from the High Arctic still to be explored, has been instrumental in generating

enthusiasm to install a WSPR beacon on the ship *Polar Prince* in the Canada C3 Expedition (<https://canadac3.ca/>), a key event of the celebrations of Canada's 150th birthday

Pierre, Alex and John encourage all interested Amateurs to join them as members of the Eureka Amateur Radio Club. Amateur Radio activity is expected to continue and hopefully increase at VY0ERC.

Alex and Pierre would like to acknowledge the support received from friends at the Eureka weather station and CANADC colleagues, specifically James Drummond of Dalhousie University. Without the forbearance of all of the above, it would be very difficult to operate from Eureka.

We sincerely appreciate help from Charles Wilmott, M0OXO, who provides QSL service for us (<http://www.m0oxo.com>).

Our contact information is as follows:
 Email: vy0erc@gmail.com
 Web: <https://www.qrz.com/db/vy0erc>
 Twitter: <https://twitter.com/vy0erc>

Note: Short bios of each of the authors can be found on page 18 of the May-June 2017 TCA.

Why Canada may be the best place to experience the Solar Eclipse when you are an Amateur!

Alex Schwarz, VE7DXW

A very exciting celestial event will be happening in North America on August 21. A solar eclipse will pass over Oregon and then move over the United States from west to east (against the direction of the sun) in a southerly direction. This will be spectacular when viewed with our eyes. The effects of the solar radiation on the propagation of radio waves will be equally or more exciting.

It may look like Canada is not part of the solar eclipse, but British Columbia will have up to 95% coverage of the sun. As the solar eclipse is moving over the planet, it is leaving a canyon of de-ionized gas on the ionosphere in altitudes of about 100 to 300 kilometres.

This puts Canada and especially Ontario in a very good position to get really long signal paths to the horizon towards the south. Southern Ontario will be in the best location to make contacts into southern and western USA and Central America. In southern British Columbia we can aim our antennas right down the length of the propagation anomaly and reach the Caribbean and southeast USA.

Timing is important because the gas will ionize again after the solar shadow has passed. During the solar eclipse in Europe in 1999, Amateurs recorded long-distance contacts on 160 and 80 metres!

The map on the right shows an epicentre line that goes across North America. It will not be visible in Europe but the effects of the eclipse on propagation could be worldwide. In southern Alberta and British Columbia the coverage of the sun will still be over 90%.

The event will start at the West Coast of America at 16:04 UTC (~10 am local time) and then work its way across the continent in a southeastern direction.

It will exit the US on the Coast of South Carolina northeast of Charleston at around 20:10 UTC (~4 pm local time). The total time of the eclipse from start to finish is about 2h30m.

Adding the time it takes the sun to pass North America, the time of the total event could be more than five hours for RF propagation effects.

In the US, HamSci.com is organizing efforts to light up the sky with shortwave radio transmissions and have a beacon network record the bouncing radio waves. Efforts are also on the way to use JT-65 and WSPR during this event.

We want to inform all Amateurs about the opportunity to experience the solar eclipse on a totally different level by operating radios in your ham shack.

We also have an outreach program that lets Amateurs buy a down-converter (on the web). The unit plugs into the option filter port of many currently available shortwave radios. The unit connects to the sound card and works in conjunction with our software (MDSR and RF-Seismograph) which can be downloaded for free from our website: <http://users.skynet.be/myspace/mdsr/>

Besides the logging of the data, our software also has the capability to upload the current noise level measurements onto the web. My home station is set up for the scanning RF-Seismograph and I have been recording six bands since August of 2016.

You can view the noise level in almost real time on a website hosted by the North Shore Amateur Radio Club (NSARC) at: http://www.nsarc.ca/hf/rf_seismo/main.html

You can also view the propagation listing by clicking on a link on the page. At present, I am the only one displaying data, but our intent is to have all participants upload their images.

We also have an MDSRadio Yahoo user group to get everybody set up and organized. It can be found online at:

<http://users.skynet.be/myspace/mdsr/>

I encourage all Amateur Radio clubs to participate in this wonderful opportunity, to not only see the eclipse, but also experience the effect it has on radio propagation. Maybe we can partner up with the Astronomical Society which is also planning to bring out telescopes to give the public a firsthand look.

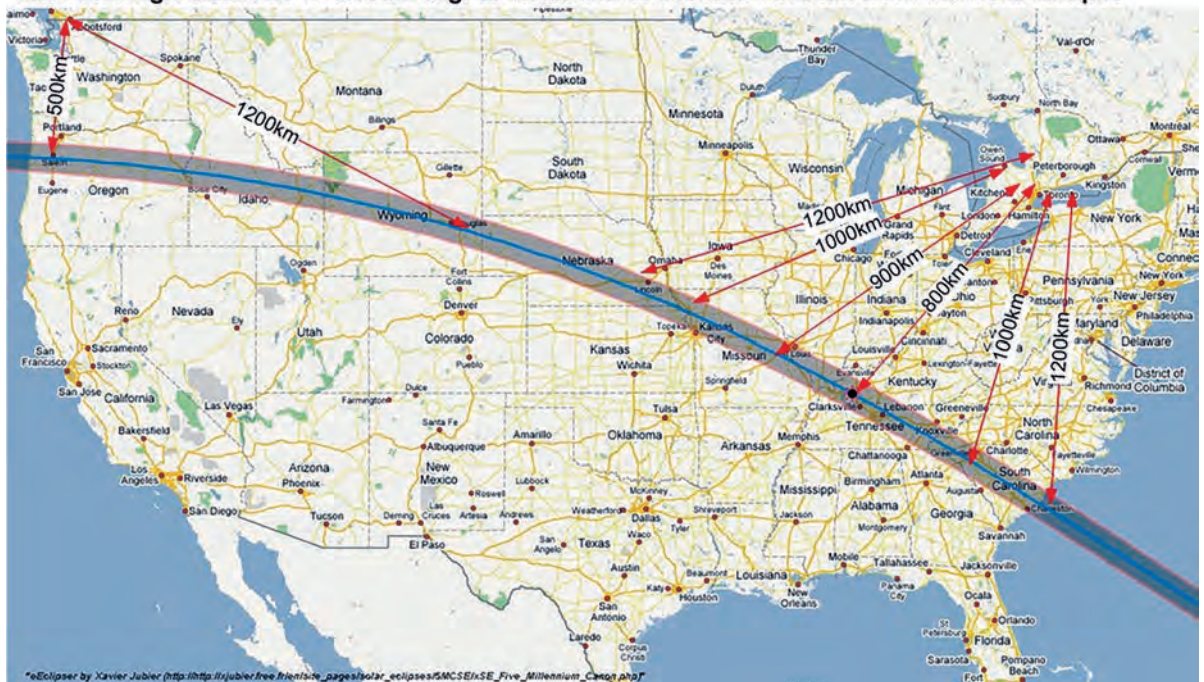
All the best. Alex, VE7DXW and the MDSR Team.

For more information, please refer to my article "The Development of the Scanning RF-Seismograph" on page 35 of the March/April 2017 TCA. The photo of the solar eclipse at the top of the page is courtesy of NASA.

You can reach Alex, VE7DXW, by email at alexschwarz@telus.net.



Take-off Angle between 10 and 20 deg. at distances of 800 and 1200 km from the Solar Eclipse



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 Larry Berta, VE3LXV
 Serge Bertuzzo, VA3SB
 Markus Biehl, VA3MQS
 Brian Biggings, VE3XA
 Christian Bisaillon, VE3CBK
 Allan Boyd, VE3AJB
 Harold Braun, VE3CD
 Leroy W Braun, VA3LB
 Patrick Brewer, VE3KJQ
 Michael Brickell, VE3TKI
 Matthew Eric Brown, VE3EB
 Vern Brownell, VE7MCC
 John Brummell, VE3EL
 Pamela Buckway, YV1PJB
 Ian Burgess, VA6EMS
 William Burgess, VE3CRU
 Paul Burggraaf, VE3PRB
 Rick Burke, VO1SA
 Clarke Burnett, VE4MB
 William Bush, VE3BXI
 Gary Butler, VE7OQ
 Paul Caccamo, VA3PC
 David Caddell, VA7VVV
 Frederick Cain, VE3JMJ
 Ralph Cameron, VE3BBM
 Sandy Cameron, VE3AAC
 Mark Capewell, VA7MNV
 Mary Card, VE3FEB
 Gilles Chevalier, VA2CG
 John Christensen, VE3IAO
 David Clarke, VE6LX
 Ken Clarke, VE7BC
 Ernest Clintberg, VE6ECK
 Reginald Collie, VE1DOG
 Edmondo Conetta, VA3ITA
 John Connor, VE3TG
 Guy Costanzo, VA7GAC
 K James Couprie, VE6IG
 Donald Courcy, VE1CG
 David Coutts, VA7UX
 Robert Cove, VO1REC
 Chris Cowx, VA7CWX
 Paul Cragg, VE3AXT

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

Francois Daigneault, VE2AAY
 Renze Dam, VE6DC
 Rick Danby, VE3BK
 Brian Davies, VE6CKC
 Frank Davis, VO1HP
 George Davis, VE3OGP
 Donald Dawe, VA3DDW
 Julio Diaz, VA3JCL
 Richard Dion, VE3LAD
 Grant Dixon, VE3CGV
 Tom Dobson, VE3TWD
 Michael Drake, VA3BKQ
 George Duffield, VE3WKJ
 Chris Dunford, VA3CRD
 Robert Dyer, VE3KTY
 Tim Ellam, VE6SH
 Clinton Elliott, VA6CBE
 Doug Elliott, VA3DAE
 David Evans, VA7DXX
 Thomas Feeney, VE3KTP
 Richard Ferch, VE3KI
 James Fisher, VE1JF
 L Clare Fowler, VE3NPC
 Doug Frame, VE3JDF
 Richard Francis, VE3OXX
 Ed Frazer, VE7EF
 Norm Freidin, VE3CZI
 Mario Gasparovic, VE3HVY
 Gordon Gibson, VE3NQG
 Ross Gibson, VE4RWG
 John Gilje, VE6KJG
 Gursimran Gill, VA7GUR
 Thomas W Godden, VE3TWG
 Dave Goodwin, VE9CB
 Stephen Goodwin, VE6SMG
 Larry Gorman, VE3LGN
 George Gorsline, VE3YV
 Richard Govoni, VE3SHL
 Timothy Graham, VA6TDG
 Gregory Grant, VA7GRA
 David Green, VE3TLY
 Dominic Grosleau, VE3DGZ
 Reg Gulliford, VE3AWN
 James Gunter, VE6JRG
 Tom Haavisto, VE3CX
 D A (Sandy) Haggart, VE3HAZ
 Colin Haig, VE3MSC
 Alan Haines, VE3ALH
 David Hamilton, VE6DWH
 Don Hamilton, VA7GL
 Gordon Hamilton, VE7ON
 Karl Hamilton, VE3RRP
 Garry Hammond, VE3GHP
 Garry V Hammond, VE3XN
 Richard Hanishewski, VE5RH
 Martin Hann, VE9PLS
 Brad Harris, VE3MXJ
 Derek Hay, VE4HAY
 Harm Hazeu, VE4HAZ
 Margaret Heaslip, VE3EQE
 Jean-Paul Henault, VE2JHP
 Hugh Henderson, VY1HH
 Richard Henderson, VA6RIC

Doug Henry, VE1ZG
 Howard Hepburn, VE6GT
 Dallas Hinton, VE7FKH
 James W Hodgson, VE3HOV
 Peter Hodgson, VE3UR
 Anne Hodson, VE3XAJ
 David Hodson, VA3UL
 Frank-Michael Hofmann, VE6FMH
 G Bruce Hollett, VE1MLW
 Henry Hollinger, VA6HBY
 Clare Hopkins, VE7IBK
 Robert (Bob) Howard, VE3YX
 Gordon Hungerford, VE6TI
 A Graham Ide, VE3BYT
 Robert Ireland, VE9KM
 Lorne Jackson, VE3CXT
 Gordon Jacques, VA3GJJ
 Peter Jago, VA3PJ
 B M Jatzeck, VA6BMJ
 Jonathan Jennings, VE6JDJ
 Gordon Jewsbury, VE7JBY
 Doug Johns, VA3DLJ
 Dave Johnson, VE7VR
 Glen Johnson, VE7GPJ
 Walter Johnston, VE3GE
 Sam Jones, VE3LCK
 Ernie Jury, VE3EJJ
 W J Karle, VE1YY
 Eric Kehler, VA7NX
 Ernest Kenward, VE7BYK
 Wayne Kidd, VE7IBF
 Robert King, VA7DX
 David Kingsland, VE3MDX
 Bill Kirby, VO1BB
 David Klatt, VE5GN
 Walter Kohler, VE7SM
 Boris Kohut, VE4BG
 Gordon Kosmenko, VE6SV
 David LaHay, VE7FVW
 Jason Lapierre, VE6TMR
 Benoit Laprade, VE2LSF
 Al Law, VE3FZ
 Doug Leach, VE3XK
 Francis Leclerc, VE2FLP
 John Lediett, VE3FVC
 Bryce Lee, VA3TRN
 Ken Lehman, VE3IKL
 Barrie Lennox, VE3AOI
 Stan Leschinsky, VE3TW
 Joel Lewis, VE3CJJ
 Roger Lloyd, VA3REL
 John Lockwood, VE9KC
 David P Lopetinsky, VE6ELL
 Gerald Lutley, VE1GPL
 Rand Lutman, VE7HRA
 Glenn MacDonell, VE3XRA
 Ian MacFarquhar, VE9IM
 Jim MacKenzie, VE5EIS
 Robert MacKenzie, VA3RKM
 Neil Macklem, VE3SST
 Douglas MacNabb, VE1DBM
 Daniel Madden, VA3RRJ
 Pierre Mainville, VA3PM

Alan Mallett, VA7AWM
 Eric Manning, VA7DZ
 Tom Martens, VE6TRM
 Dan Martin, VE6GDM
 Gregory Mason, VE4AMN
 Gabriel Mazzeo, VA3CWT
 Philip McBride, VA3QR
 Don McCallan, VA3GFD
 Duncan McCansh, VE3OM
 Bernard McCoy, VE6HFD
 David McKinlay, VA3IR
 L David McLennon, VO1LM
 Malcolm McLeod, VE5ZG
 Doug Mercer, VO1DM
 G Rick Michowicz, VE3US
 Eric Mills, VE1AST
 Vladimir Milutinovic, VE3JM
 Micheal Misiwich, VA6MIS
 J T Mitchell, VE6OH
 Lenard Moen Sr, VA3HBR
 Marcel Mongeon, VA3DDD
 Don Morgan, VE5RT
 Byron Morse, VA3BMO
 Bob Morton, VE3BFM
 Peter Mosher, VA3PKM
 Robert Nash, VE3KZ
 Albert Nelson, VE7WC
 Jim Nelson, VE6ACR
 Scott Nichols, VE1OP
 Patricia Nordin, VE3ZP
 Sheldon Olmstead, VE3XI
 Keith Olson, VE4VO
 Dennis Paganin, VA3DTP
 Michael Papper, VE3OX
 James Park, VE7IW
 Joseph Parkinson, VE3JG
 Gordon Passmore, VA7GAP
 Colin Pavay, VA3FP
 Doug Peckhover, VE3ATP
 Johan Pedersen, VE0NLI
 Tim Pekkonen, VE3UO
 Steve Pengelly, VE3STV
 Brent Petersen, VE9EX
 Ron Philip, VE7NS
 Marcus Phillips, VE7MWP
 Robert Piggott, VE7CYU
 Dale Pilsworth, VA6OK
 Gary Pollock, VE1GMP
 Harold Porter, VO1JA
 Garnet Potter, VE3GNP
 John Potts, VE6JWP
 Terry Potts, VE3TEP
 Everett Price, VO1DK
 Devon Racicot, VE5DWR
 Marty Raine, VE1AE
 Norm Rashleigh, VE3LC
 Bryan Rawlings, VE3QN
 Steve Regan, VA3MGY
 Gilles Renucci, VE2TZT
 Earl Richardet, VE7QJ
 Ed Roberts, VE3KSW
 Donald Robinson, VE5DAI
 Donald Rowed, VE3KII



Denis Roy, VE2FAX
 Dale Runge, VE6RAA
 Mark Sales, VE6VER
 Edward Samborski, VE3TAS
 Dan Sanchez, VE7EOZ
 Brian Sayer, VA6BCS
 Shawn Schenkey, VE6NS
 Bill Scholey, VE7QC
 David Scott, VE3ZZU
 John Scott, VE1JS
 Ellis Seddon, VE4AJO
 Ian Seddon, VE3HUT
 Ian Shaw, VE3IJS
 Kieran Shepherd, VA3KS
 Robert Shkuratoff, VA7DIV
 John Sibbett, VA3SQ
 George Simpson, VE6HX
 Ron Sinclair, VE3JRN
 Gary Skett, VE7AS
 Thor Skotar, VE3GXV
 Dave Snyder, VE4XN
 Patrick Speer, VE7PJS
 Mark Spencer, VE7AFZ
 Edward Spingola, VA3TPV
 Mike Stafford, VE6MEX
 Rob Steenweg, VE1CHW
 Al Stephens, VE3NXP
 Jeff Stewart, VA3WXM
 Don Suarez, VA4DON
 Jack Summers, VA3XR
 Hiroshi Takahashi, VA7LET
 Josh Tarchuk, VE6ISH
 Jason Timmis, VE7AG
 Colin Truman, VE6TGC
 Yori Tsuji, VE4ACX
 William Underwood, VE1WLU
 Bill Unger, VE3XT
 Richard Upfield, VA3RMU
 Ronald Vadeboncoeur, VE3REV
 A Vaillancourt, VE3DPZ
 Alex Vandermeij, VE3LEX
 Robert Vanderminnen, VA3RMV
 Graham Walker, VE6GW
 Aaron Warner, VE3FZZ
 Andrew Webb, VE6EN
 James Webb, VE3WA
 Joel Weder, VE6EI
 Andrew Wells, VE3WEL
 Ralph Welsh, VE3RWO
 Garth Wetherall, VE3YC
 Brice Wightman, VE3EDR
 James Wilkins, VE7UJL
 Kenneth Williams, VE9KW

Lee Williams, VE9LJW
 Stan Williams, VA7NF
 Bruce Winter, VE7HBW
 John Wiseman, VE7BVS
 K Scott Wood, VE1QD
 Allen Wootton, VY1KX
 Vladimir Ziabrov, VA2TTA

**NEW RAC MEMBERS
 NOUVEAUX MEMBRES RAC**

Jeffrey Arcand, VA3PEW
 James Armstrong, VE3PNN
 Wendy Armstrong, VE3WNB
 Clifford Barrett, VA7IAG
 Eli Beachy, VE7ILE
 Rob Beauchamp, VE7FSP
 Serge Belisle, VA2SVB
 Russell Belyea, VE6AEQ
 Benjamin Bignell, VA2XBJ
 Brandon Binder, VA3BLL
 Jocelyn Blanchard, VE2JKE
 Jacques Brault, VA2BRK
 Eric Brown, VA6EBR
 Denis Brunette, VA3DCB
 Sherry Buryniuk, VE5SAB
 Robert Butcher, VA3KJI
 Chip Campbell, VA3PAE
 Stephen Cathcart, VE3OHF
 Yanick Charland, VE2YCF
 Chai Chee, VE7CIC
 Christian Chenier, VE2XPE
 Abby Cheung, VA3YGX
 Joseph Cheung, VA3EZZ
 Michael Cicchetti, KC9OPV
 Wojciech Ciecierski, VE7TBE
 Isaac Cohen, VE4JSJ
 Garvin Cole, VE3GCZ
 Chris Cuff, VO1CFC
 Ryan Czernick, VE6KRP
 Erick Dahan, VE2LRZ
 John Dale, VE7QJD
 Bart Dammers, VA7BID
 Les Dawes, VA7CBN
 Trevor d'Entremont, VE1TRD
 John Desmond, K0TG
 W Brian Dixon, VE3BHD
 Michael Drew, VE3MJD
 Gilles Dumont, VE2NB
 Paul Dunn, VA3PDN
 Richard Elgart, VE7BTE
 William Erlenbach, VE7EAF
 Anthony Ettlinger, VA7ETT
 Thomas Evdokimoff, VA7TEV

Curtis Fast, VE7CQF
 H Field, VE7UTS
 Khalil Foundy, VE2KFO
 Raphael Francis, VA3GFA
 Dustin Frisch, VE6DJF
 Derek Gagnon, VA3DXG
 Barbara Gajda, VE4PAZ
 Patricia Gakis, VE5PXG
 Charles Gale, VY1CC
 J P Gauvin, VE9JPG
 Robert Goodfield, VA3BBO
 Colin Graham, VY1WTF
 Gregory Green, VA3ZDX
 Clyde Halliday, VE3VOC
 James Harris, VA3JHO
 H Dee Henderson, VE6HDH
 Csaba Hollo, VA7NDT
 Valli Hoski, N8QVT
 E Keith Hostetler, VE7ZAB
 Rebecca Hughes, VE6YLD
 Gordon Hutchinson, VE7GBH
 Jonathan Jacox, VA7JRJ
 Rosaire Jacques, VE2RRJ
 Josh Jensen, VA6ACK
 Greg Kear, VE7GWK
 Eric Kilbreath, VA3EHK
 Doug Kiz, VE4KIZ
 Roland Klann, VE7RGK
 Ramprakash Krishnamurthy, VE4AAO
 Christopher Labrie, VA7BTC
 Jean-Marc Lebel, VE2BLE
 Misha LeBlanc, VE9GIS
 Kevin Lee, VA7KLL
 Robert Lee, VE3CGA
 John Leroy, W4JKL
 John Lubzinski, VE7BSU
 Leslie Luck, VA3LGL
 Robert Lukianchuk, VE4RJL
 Eric Mahoney, VA3MHY
 Jay Mandelker, VA3COW
 Colin Mantay, VE4CEM
 Fern Marques, VE3FMY
 Geoffrey Mayne, VE3SYR
 Sean McAleer, VE7OMA
 Keith Mcconachie, VA3QL
 Sheri Melanson, VA6SHE
 Daniel Mestre, VA2MOI
 Troy Michel, VA6TNA
 Paul Miller, VA6TPM
 Zachary Miller, VE1ZJM
 Craig Mistal, VA7CRG
 Marco Mok, VE7OMM
 Robert Mongeau, VA2RMX

Rowena Morcillo, VA5ARC
 F Richard Morris, VE1ASK
 Farshid Mortazavi, VE2QFM
 Paul Mower, VA6MPM
 Alan Muir, VE7BEU
 C H James Muschik, VE7PZD
 Larry Myres, VE7LXX
 Linda Myres, VE7LME
 Lonn Myronuk, VE7LXM
 Byron O'Brien, VA7GFC
 Jack Olsen, VE7GDE
 Jino Papineau, VA2JIN
 Bruce Patterson, VE7XBP
 Igor Pavelko, VE3PI
 Sloane Perry, VA7WKD
 Geoffrey Petersen, VE6LSX
 Brian Pettapiece, VE4NQ
 Terence Phillips, VE7WTP
 Chris Pye, VA1PYE
 Joseph Rajhard, VA6ABI
 Shawna Reichelt, VE7BTO
 Scott Roleson, KC7CJ
 Jim Ronback
 Gary Rousseau, VE3URA
 Donald Ryan, VO1DJR
 Paul Sampson, VE1UVVW
 Carl Schumacher, AF9L
 Jason Schwarz, VE3NYA
 Felix Serban, VA7OVI
 Brian W Shaw, VO1OT
 Kelly Shulman, VE3KLLX
 Harondel Sibble, VA7MCZ
 Sabrina Skoczylas, VA3AXU
 Stephen Smyth, VA7SMY
 Mark Sobkowicz, VA3VTE
 John Sokolowski, KB9SXF
 Laura Sutherland, VE4LSC
 Kent Timm, VA3ZUG
 Mark Topham, VE4MDT
 Matthew Touesnard, VA1MRT
 Ken Trudel, VA6KWL
 Roberto Urrea, VA4RUL
 Stephane Vermette, VA3SPV
 Paul Vervarec, VE2JPK
 Greg Weir, VE1GWE
 Eli Westinghouse, VE7CTP
 Matthew Wilfort, VA6AMX
 Devon Wilkins, VE3DEV
 Patrick Williams, KG4NSC
 Ian Wray, VA3AKI
 Satyanarayana Yerrapragada, VE3YSN
 Gabriel Zeifman, VE6NJH

RAC CANADA WINTER CONTEST 2016 RESULTS

Sam Ferris, VE5SF and Bart Ritchie, VE5CPU

Participation in the 2016 running of the Canada Winter Contest was down slightly from last year with a total of 529 entries received. Conditions were poor for the first evening of the contest with some operators reporting few to no phone contacts during the evening hours of the contest. This year there were no new records established given the general poor conditions.

SINGLE OP ALL BANDS LOW POWER

Sam Ferris, VE5SF, achieved first place this year with a score of 338,256. Summer Hartzfeld, VE5SDH, using the VE5RAC call sign, captured second place again this year by scoring 159,940. Pierre Loranger, VE2CZ, captured third place in the winter contest with a score of 81,144. Michael Lawrence, N9UA, took fourth place this year scoring 76,944, while Bon Rennard, N7WY, took fifth place with a score of 67,500.

SINGLE OP ALL BANDS HIGH POWER

Victor Petcherkin, N8OO, captured the first place SOABHP with a score of 525,300. Second place went to Gilles Renucci, VA2EW, using the VA2RAC call sign, with a score of 483,480. Rob Kaufmann, VE4GV placed third with a score of 211,800, moving up from fourth place last year. Guy Lemieux, VE2BML, joined the top scorers in fourth place scoring 191,200. Bart Ritchie, VE5CPU, captured fifth place in the category with a score of 160,126. Within the SOABHP category Victor Petcherkin, N8OO, captured the Russ Coleston, VK4XA Memorial for the highest scoring Single Op Foreign Entrant with a score of 525,300.

SINGLE OP – QRP

This year Thomas J. Warren, K3TW, achieved first place in the SOABQRP category with a score of 49,502, up from second place last year. Bill Unger, VE3XT, took second place in the 2016 contest with a score of 20,216. Dan Alwin, KE0TT, took third place with a score of 14,858. Dave Stephenson, VE3PYG, won fourth place this year with a QRP score of 12,800 ahead of Dan Lazar, VE6EX in fifth scoring 12,768.

SINGLE OP SINGLE BAND

With a score of 58,464, Gabor Horvath, VE3JH, won the overall SOSB crown this year using the 20 metre band. Adrian Stimpson, VE7NZ, once again took second overall SOSB place with a score of 34,714 with his 20 metre band entry. Third place in the overall SOSB was taken by Anthony Ratajczak, VE1ZA, with 29,448 points on the 80 metre band. On a band-by-band breakdown, Ken Keeler, N6RO, once again took top band honours on 160 metres with a single band high power score of 7,202. Anthony Ratajczak, VE1ZA, won first place in 80 metres with a high power score of 29,448. Noel Poulin, VE2FWW, took the 40 metre band honours using low power with a score of 13,300. As noted above, Gabor Horvath, VE7JH, took first place on 20 metres with a high power entry scoring 58,464. Doug Pichette, VA7DP, took the honours for the 15 metre band with a low power score of 5,036. The winner of the 10 metre SOSB category was Andre Haan, PD3OES, with a low power score of just 6 points. Pierre Jolin, VE2GT, won the 2 metre band with a low power score of 30 points. There were no entrants this year in the 6 metre Single Op, Single Band sub category.

SINGLE OP – ALL BAND – CW

Top honours for the CW only category go to Robert Nash, VE3KZ, with a score of 178,966. Second place is awarded to

PLAQUE WINNERS

Single Operator All Bands Low Power Sponsored by Contest Club Ontario

Sam Ferris, VE5SF
890 QSOs, 72 Multipliers
338,256 Points

Single Operator All Bands High Power Sponsored by Radioworld

Victor Petcherkin, N8OO
1,368 QSOs, 75 Multipliers
525,300 Points

Single Operator All Bands – QRP Sponsored by QRP Canada

Thomas J Warren, K3TW
152 QSOs, 37 Multipliers
49,502 Points

Single Operator Single Band Any Authorized Power Sponsored by Radio Amateurs of Canada

Gabor Horvath, VE7JH
679 QSOs, 21 Multipliers, 20 Metre Band
58,464 Points

Single Operator All Bands CW Sponsored by the Maritime Contest Club

Robert Nash, VE3KZ
917 QSOs, 43 Multipliers
178,966 Points

Single Operator All Bands Phone Sponsored by the Saskatchewan Contest Club

Victor Paul, WB0TEV
754 QSOs, 38 Multipliers
270,864 Points

Multi-Operator Single-Transmitter High Power Sponsored by Alfa Radio

Tony Osman, VE3RZ
1,065 QSOs, 82 Multipliers
449,688 Points

Multi-Operator Single-Transmitter Low Power Tony Allsop VE3FTA Memorial Sponsored by the Mississauga ARC

Marcel LeBlanc, VE9ML and Jean-Paul LeBlanc, VE9BK at VE9ML
906 QSOs, 62 Multipliers
278,256 Points

Multi-Operator Multi-Transmitter Any Authorized Power Sponsored by Radioworld

Mississauga Radio Club as VA3RAC
(Operators: VE3VE, VE3CWU, VE3TWG,
VA3JK, VE3AXC, VE3TKI and VE3NI)
1,319 QSOs, 72 Multipliers
422,352 Points

Single Operator Foreign Entrant Russ Coleston, VK4XA Memorial Sponsored by

Alan Goodacre, VE3HX
Victor Petcherkin, N8OO
1,368 QSOs, 75 Multipliers
525,300 Points

Tom Haavisto, VE3CX, with a score of 172,068. Third place was taken by Mark Wilson, K1RO, with a score of 151,126, up one place from last year. This year fourth place goes to Doug Freestone, VE5UF, with a score of 135,052. Fifth place goes to Sylvan Katz, VE5ZX, with a score of 108,498.

SINGLE OP – ALL BAND – PHONE

This year top honours in the Single Op All Band Phone only category goes to Victor Paul, WB0TEV, with a score of 174,724.

CANADA WINTER CONTEST RECORDS AS OF DECEMBER 31, 2016

Call	Category	QSOs	Mult	Score	Year
VE3EJ	SO-AB-HP	1659	125	1,429,750	2014
VX5SF (op VE5SF)	SOABLP	1510	109	1,002,800	2001
VE3JC	SO-AB-QRP	399	81	271,674	2001
VE3YOC	SO-SB-144MHz	82	2	1,464	1995
VY2SS	SO-SB-50 MHz	382	10	10,720	2001
ZF2NT	SO-SB-28 MHz	1127	23	100,832	1998
VE3KZ	SO-SB-21 MHz	873	20	75,040	1997
VE9HF	SO-SB-14 MHz	1246	24	124,080	2013
VA3MO	SO-SB-7 MHz	525	22	72,644	2001
VE3BY	SO-SB-3.5 MHz	537	22	104,016	1997
VE3MGY	SO-SB-1.8 MHz	382	17	25,296	2012
VE7JH	SO-AB-CW	1385	62	368,900	2013
VE4VT	SO-AB-PH	1498	60	479,880	2011
VX6JY	MS*	2092	132	1,476,024	2001
VA6SV	MO-ST-HP	1750	119	1,065,526	2013
VE7UF	MO-ST-LP	1179	108	655,560	2015
VE6RAC	MM	5393	125	2,896,500	2013

* Category superseded in Winter 2003

Rene Raimbault, VE4TV, took second place with a score of 44,950, up from third place last year. Rick Baron, VE3WU, took third place with a score of 28,400. Brian McArthur, VA3QWW, took fourth place with a score of 27,400. Fifth place goes to Eric Wouters, VA2MO with a score of 21,024.

MULTI-OPERATOR SINGLE-TRANSMITTER HIGH POWER

Tony Osman, VE3RZ, won the multi-single high power category with a score of 449,688. Again this year Dave Tucker, KA6BIM, took second place with a score of 327,600. Third place was taken by Bob Schofield, VE1RSM, using the VE1RAC call sign with a score of (operators VE1FA, VA1YL, VE1BAB, VA1AVR, VE1LD and VE1RSM) with a score of 192,576.

MULTI-OPERATOR SINGLE-TRANSMITTER LOW POWER

This year Marcel LeBlanc, VE9ML and Jean-Paul LeBlanc, VE9BK, at VE9MLF took top honours and the Tony Allsop, VE3FTA Memorial in the Multi-Single Low Power category with a score of 278,256 – congratulation to Marcel and Jean Paul. Al Niittymaa, VA3KAI, took second place with a score of 117,810. Third place goes to David Pritchard, VE9OA, with a score of 108,376.

MULTI-OPERATOR MULTI-TRANSMITTER

Again this year, operators of the Mississauga Radio Club, as VA3RAC (VE3VE, VE3CWU, VE3TWG, VA3JK, VE3AXC, VE3TKI and VE3NI), took top honours in the Multi-Multi category with a score of 422,352. Second place was once again captured by the operators the Calgary Amateur Radio association using the VE6RAC call sign (VA6CQB, VA6DJH VA6STN, VE3RTL, VE6BIR, VE6CCL,

VE6CCM, VE6KC, VE6TC, VE6TWP and VE6IKR), with a score of 343,808. VE7RAC and operators VE7IO, VA7NF, VA7NLF, VA7QD and VE7BC of the Orca DX and Contest Club captured third place in the category with a score of 227,600.

WRAP UP

Your contest managers sincerely appreciate the increased use of Cabrillo based log entries. Cabrillo files significantly reduce the workload associated with producing the contest results. Current versions of popular contest programs such as CT, NA, Super Duper and TR produce Cabrillo files that can be readily handled by new scoring software developed by VE5CPU.

As in the past we will continue to accept paper logs and other electronic logging formats so it is easy for everyone to send in an entry. If you are submitting a paper log, we would appreciate, if possible, receiving summary sheets prepared in accordance with the format set out in the official rules and which provide a breakdown of VE, RAC, DX contact and a multiplier total. This will make compiling and checking of logs an easier and quicker process. For more information visit: <http://wp.rac.ca/rac-canada-winter-contest-rules/>

Thanks and congratulations to all for participating in the 2016 Canada Winter Contest and good luck in 2017. A special thanks goes out to the operators of the RAC call signs. Hopefully, we will have some better propagation for the 2017 Canada Winter Contest this December. Operator comments are available on the RAC website at <http://wp.rac.ca/contesting-results/>.

– 73, Sam, VE5SF and Bart, VE5CPU

MULTI-OPERATOR DETAILS

AC0MN: W6NF	PA3EVY: PA3EVY
AA0FO: AA0FO	PY5FO: PY5FO
AB1J: AB1J	SM5NQB: SM5NQB
AB1YD: AB1YD	VA2BN: VA2BN
AE1T: AE1T	VA2EN: VA2EN,
G3ORY: G3ORY	VE2DDZ, VE2EGN,
G3RLE: G3RLE	VA2KEY
JA2XYO: JA2XYO	VA2QR: VA2QR
JO7KMB: JO7KMB	VA3DX: VA3DX
K0JPL: K0JPL	VA3KAI: VA3KAI
K0LDS: K0LDS	VA3MW: VA3MW
K0RC: K0RC	VA3NFA: VA3NFA
K0VXU: K0VXU	VA3RAC: VE3VE,
K1ESE: K1ESE	VE3CWU, VE3TWG,
K1JB: K1JB	VA3JK, VE3AXC,
K2CYE: K2CYE	VE3TKI, VE3NI
K2ZR: K2ZR	VA4HZ: VE4HAZ
K3AJ: K3AJ	VA7IR: VA7IR, VE7WKN
K3ZU: K3ZU	VE1DT: VE1DT
K4AFE: K4AFE	VE1JS: VE1JS
K4GM: K4GM	VE1RAC: VE1FA,
K4IQJ: K4IQJ	VA1YL, VE1BAB,
K4IU: K4IU	VA1AVR, VE1LD,
K4YND: K4YND	VE1RSM
K6KQV: K6KQV	VE2CJR: VE2CJR
K6MMM: KE1B	VE2FK: VE2FK
K6PO: K6PO	VE2ZT: VE2ZT
K7BX: K7BX	VE3CV: VE3CV
K7FA: K7FA	VE2NCG: 1200 VE2NCG
K7PRW: K7PRW	VE3CWM: VE3FFK,
K7UT: K7UT	VE3XRA, VE3CZN,
K8LF: K8LF	VE3BBM, VE3KL,
K9YC: K9YC	VE3TLY, VE3ICV
KA6BIM: KA6BIM	VA3DGN VE3ZTU
KB6WKT: KB6WKT	VA3GD VA3ZTF
NX6T: KK6NON	VE3DC: VA3WPS,
KC1SA: KC1SA	VE3BK, VE3DCU,
KC9BG: KC9BG	VE3JS, VE3QEE,
KD7QOT: KD7QOT	VE3RYI
KE0EBK: KE0EBK	VE3JAQ: VE3JAQ
KE4KY: KE4KY	VE3KTB: VE3KTB
KF7DX: KF7DX	VE3MGY: VE3MGY
KG4W: KG4W	+Packet
KI1U: KI1U	VE3MM: VE3MM
KI7Y: KI7Y	VE3MXJ: VE3MXJ
KJ8O: KJ8O	VE3PJ: VE3PJ
KL7SB: KL7SB	VE3RZ: VE3RZ
KM6I: KM6I	VE3SAO: VE3EFC,
KP4CPC: KP4CPC	VE3RVA
N0BK: N0BK	VE3YAA: VE3DQ,
N1SOH: W1FM,	VE3EUT, VE3FJ,
N1SOH	VE3NFR
N2AJO: N2AJO	VE4EA: VE4JBB,
N3AM: N3AM	VE4VJR, VE4DLA,
N3QE: N3QE	VE4EA
N4GG: N4GG	VE4RAC: VE4RAC
N4KHI: N4KHI	VE5RI: VE5WI,
N4VV: N4VV	VE5SPR, VE5CJB
N5MKY: N5MKY	VE6FI: VE6FI, VE6AQ
N5SJ: N5SJ,	VE6CSX: VE6CSX
KG5KZE	VE6LB: VE6LB
N6OIL: N6OIL	VE6KD: VE6KD
N8YXR: N8YXR	VE6RAC: VA6CQB,
N9CK: N9CK	VA6DJH, VA6STN,
N9VPV: N9VPV	VE3RTL, VE6BIR,
NA6O: NA6O	VE6CCL, VE6CCM,
NK3Y: NK3Y	VE6KC, VE6TC,
NK6A: NK6A	VE6TWP, VE6IKR
NM5M: NM5M	
NS9I: NS9I	
NX6T: KK6NON	

SCORES BY CONTEST CATEGORY

SINGLE OPERATOR, ALL BANDS, LOW POWER

Call	Cdn	RAC	DX	Mult	QSO	Score
VE5SF	304	27	559	72	890	338256**
VE5RAC	202	17	274	55	493	159940
VA2CZ	145	5	352	36	502	81144*
N9UA	130	14	126	42	270	76944*
N7WY	99	19	65	45	183	67500*
VE3GFN	98	13	231	34	342	57868*
VE3CES	78	14	90	38	182	47120
WB9HFK	80	14	82	37	176	46028
KC4TEO	80	16	114	29	210	39092*
NF8M	58	15	71	36	144	36792*
K5DHY	75	12	4	29	91	28942*
N7VS	48	13	70	29	131	25520*
VE7SGW	44	10	89	28	143	22904*
WA2JQK	50	3	28	33	81	20328*
VY2RAC	51	5	95	24	151	19200*
VE1ZAC	44	7	36	26	87	16952*
WN4AFP	47	8	37	24	92	16896
VE6TK	38	6	34	29	78	16472*
VE3DQN	39	9	76	22	124	15884
VE2GK	43	4	27	28	74	15792
KB9OWD	44	3	80	22	127	14520
VE3MA	43	4	48	22	95	13332
W0YJT	39	7	0	21	46	11130
VA3PCJ	36	4	46	20	86	10640
WA4GQG	33	6	0	23	39	10350
VE7HLW	29	5	14	21	48	8778
KC0HPM	26	5	0	18	31	6480
VE3JI	24	6	18	16	48	6336
VA7YJJ	22	7	18	14	47	5544
WR9Y	20	4	0	19	24	5320
VE3NR	18	6	11	15	35	4830
VA3IK	23	2	31	12	56	3984
K2MV	19	2	31	13	52	3796
WP3E	8	6	8	11	22	2376*
VE3DMR	13	1	0	12	14	1800
KE6QR	11	3	0	9	14	1530*
KC0WCF	18	3	6	5	27	1260
VE6CWG	8	2	16	8	26	1216
VE8NSD	8	0	17	7	25	798*
OE9WGI	4	0	46	4	50	528*
WB8WUA	3	0	4	3	7	114
RZ3Z	0	1	1	1	2	22*

SINGLE OPERATOR, ALL BANDS, HIGH POWER

Call	Cdn	RAC	DX	Mult	QSO	Score
N8OO	448	38	882	75	1368	525300**
VA2RAC	338	25	904	85	1267	483480*
VE4GV	273	12	633	50	918	211800*
VE2BWL	175	14	898	50	1087	191300
VE5CPU	206	17	157	59	380	160126*
NN6DX	116	21	43	41	180	68306*
VE3TW	86	14	105	43	205	58050*
VA2WA	73	6	185	28	264	34160
W0KIT	65	14	46	32	125	32704*
N4UEZ	57	8	61	23	126	19596*
VE3JDF	47	10	13	27	70	18792
VE7BC	73	4	81	19	158	18468*
KD5J	36	14	15	26	65	17420
ND9Z	49	8	21	25	78	17300*
KE4S	37	10	25	24	72	14880
VE8RAC	62	7	49	17	118	14586*
K2CYS	59	6	89	16	154	14208*
NL7V	47	9	45	17	101	12580*
W2UDT	33	7	18	19	58	9614
VO1RAC	4	1	17	4	22	376*

SINGLE OPERATOR, ALL BANDS, QRP

Call	Cdn	RAC	DX	Mult	QSO	Score
K3TW	73	25	54	37	152	49506**
VE3XT	67	9	107	19	183	20216*
KE0TT	58	10	1	19	69	14858*
VE3PYG	42	8	30	20	80	12800
VE6EX	44	2	159	16	205	12768*
VE3EDX	39	7	57	18	103	11592
WA8REI	37	5	52	19	94	10906*
VE5DLD	32	6	21	18	59	8676*
VY1KX	24	7	21	18	52	7596*

K3HX	24	2	31	12	57	4104*
VE7NI	24	4	27	9	55	3366*
VE3NZ	23	2	89	7	114	3136
VE3CBK	14	7	7	10	28	2940
VA3SB	16	2	89	7	107	2646
N7JI	13	5	2	10	20	2340*
K14MZC	11	3	0	9	14	1530
W4ER	15	0	0	8	15	1200
VA3WR	10	3	15	6	28	1140
KN4VV	10	1	0	9	11	1080
N9NBC	8	2	0	5	10	600*
VA3MYC	6	2	5	5	13	550
VA6TDG	6	1	2	6	9	504
K7ZYV	5	1	2	4	8	296*
VE6NS	5	0	4	4	9	232
VE3KJQ	2	1	4	3	7	144
OK6OK	0	0	50	1	50	100*
AE0EE	1	1	0	2	2	60
UT3EK	2	0	4	2	6	56*
OK/LZ3SF	0	1	1	1	2	22*
W7BAK	1	0	0	1	1	10*
RW3AI	0	0	1	1	1	2*

SINGLE OPERATOR, ALL BANDS, CW ONLY

Call	Cdn	RAC	DX	Mult	QSO	Score
VE3KZ	237	24	656	43	917	178966**
VE3CX	251	18	771	39	1040	172068
K1RO	221	24	498	41	743	151126*
VE5UF	185	19	662	38	866	135052*
VE5ZX	164	20	371	39	555	108498
VE7XF	139	24	402	37	565	98938*
VE3KAO	129	18	334	33	481	76494
WI0WA	177	16	320	27	513	73710*
VE3EJ	119	15	366	31	500	68882
VA3ATT	116	20	246	33	382	67716
W5/MM0LID	113	13	175	33	301	57420*
VE3IAE	113	10	304	29	427	56202
K6MR	119	18	2	36	139	55944*
K2NV	96	14	191	33	301	53526*
KN0V	110	11	225	30	346	53100
N5OE	120	10	232	27	362	50328
KI0I	91	13	106	36	210	49752
VE7JKZ	86	12	204	29	302	43732
AA3B	111	3	279	24	393	41472*
K4BAI	109	9	191	25	309	41300*
VE9HF	87	5	358	24	450	40464*
W9RE	99	11	0	32	110	38720*
W4YE	90	13	127	27	230	38178
VA7ST	72	5	241	25	318	32550
H18A	82	11	119	25	212	31950*
W7RN	70	12	38	30	120	30480*
KM4FO	68	10	78	28	156	29008
K3TN	77	8	95	25	180	28000
VA1MM	86	7	303	17	396	27302*
N4QS	80	7	120	23	207	27140
VE7CA	60	10	118	26	188	26936
K3IE	78	4	85	26	167	26780
K8MP	71	6	90	25	167	25250*
KR2AA	90	9	189	17	288	24786
NW0M	76	9	115	21	200	24570
K7JQ	76	8	156	19	240	23408
KQ4LA	74	7	109	21	190	23058
K0VBU	70	7	80	22	157	22000
NX0U	58	6	38	28	102	21728
VE3KP	46	8	233	20	287	21720
N7EPD	48	10	67	25	125	20350
WB8JUI	58	7	78	23	143	20148
K6RB	70	6	124	18	200	19224
VE3NRG	52	7	54	25	113	19200
K9JWI	58	9	71	21	138	18942
K4RUM	59	5	142	19	206	18506
K0AD	58	3	99	18	160	15084
VA3PM	46	7	49	20	102	13960
N5AW	43	4	56	22	103	13684
W7GF	35	10	59	20	104	13360
W6UB	44	7	41	20	92	13240
K7AZT	51	9	0	19	60	13110
AE5XQ	44	6	74	17	124	12036
K7GS	40	6	55	18	101	11340
KN4Y	51	6	0	18	57	11340

W1END	37	8	67	17	112	11288	VE2HAY	47	3	13	17	63	9452
K4ORD	37	9	48	17	94	10982	VE3CNA	49	5	14	15	68	9270
N5ZO	45	7	66	15	118	10830	VE4EV	35	7	10	17	52	8670
N5XE	39	6	15	17	60	9180	VE3RR	30	7	25	17	62	8330
NJ4Q	35	7	11	16	53	8192	VA2KF	34	7	55	14	96	8260
VE5MX	45	5	134	10	184	8180	VE6FT	31	7	7	17	45	7888
K6WSC	43	6	15	13	64	7540	VE1ZD	42	5	147	9	194	7326*
VO1HP	37	4	110	11	151	7370*	N3VYZ	33	7	13	14	53	6944*
K1EEE	37	4	34	14	75	7252	VE5CON	45	5	39	11	89	6908*
N4CW	37	3	43	14	83	7224	VY1RAC	44	1	80	11	125	6820*
K0TC	29	6	34	14	69	6692	KE3ZT	31	5	7	16	43	6784
K1BUK	33	2	42	14	77	6356	NM5WB	34	8	5	13	47	6630
VE3QO	26	4	71	13	101	6266	VE3TU	32	6	9	14	47	6412
NX4N	36	4	33	12	73	6072	KFOF	30	4	0	16	34	6080*
K8JQ	38	4	82	9	124	5616	VE6IVN	37	3	33	12	73	5952
G3LIK	17	1	184	10	202	5580*	WA0LIF	31	7	11	12	49	5664
KE2D	20	5	36	15	61	5580	KJ4KKD	24	6	2	15	32	5460*
VE2QV	25	5	36	13	66	5486*	VE3MAH	40	3	20	10	63	5000
WA6URY	25	4	44	13	73	5434	VE9JT	28	6	20	10	54	4400*
VA3FN	33	3	60	10	96	5100	VE7RSV	21	5	5	13	31	4160*
N2ED	28	2	70	11	100	5060	K1NZ	26	6	10	10	42	4000*
VA2ES	24	3	37	13	64	4862	VE3ITU	25	5	13	10	43	3760
W6GMT	24	5	29	11	58	4378	EA5HRV	19	4	5	13	28	3640*
N3KN	23	2	26	12	51	3864	KC2QJB	19	5	1	12	25	3504
F5JU	25	1	34	11	60	3718*	KX1W/2	21	4	10	11	35	3410
SA6G	26	3	25	10	54	3700*	W4LID	17	6	3	11	26	3256
K6CSL	20	3	16	11	39	3212	VY2HF	10	8	2	12	20	3168*
DM3XI	19	2	28	11	49	3146*	VE3EZB	14	6	3	11	23	2926
W4JUJ	18	3	0	13	21	3120	KB7KYK	13	4	7	12	24	2688*
N1NN	18	3	21	11	42	3102	VE3NQM	20	2	0	11	22	2640
K4ALE	19	3	5	11	27	2860	VE7CKZ	13	6	6	10	25	2620
W8NOR	20	4	0	10	24	2800	KC1BB	15	4	1	10	20	2320
N2UU	25	0	25	9	50	2700	WZ6ZZ	22	3	10	7	35	2100*
WH6YH	21	2	59	7	82	2576	AE6YB	16	3	6	9	25	2088
AF5CC	22	1	21	9	44	2538	AD6GE	13	6	2	8	21	2032
W1GD	17	3	0	10	20	2300	NW5Q	14	4	2	9	20	2016
IK1JJM	13	2	58	8	73	2288*	K5TXT	16	4	1	8	21	1936
N1GN	21	2	18	8	41	2288	K0RJW	8	5	0	10	13	1800
K0UK	12	4	18	9	34	2124	VE1SQ	20	4	8	6	32	1776
K3UA	15	2	0	11	17	2090	KG5LVT	9	5	0	9	14	1710
K2QB	15	2	6	10	23	2020	VE5SR	18	4	7	6	29	1644
KB7N	12	3	16	9	31	1908	N7MZW	12	4	7	7	23	1498
WJ9B	20	4	39	5	63	1790	KG7GYI	6	5	2	9	13	1476
K5IX	6	6	8	9	20	1764	VA3QR	11	2	3	9	16	1404
KK9JEF	14	1	18	8	33	1568	KB8ZR	11	3	0	8	14	1360*
VA3EC	12	1	16	9	29	1548	VA7FFT	12	3	4	7	19	1316
EA5IHK	12	3	33	6	48	1476*	VE7PT	12	2	2	8	16	1312
VE1ANU	11	1	16	9	28	1458	ND9K	19	1	0	6	20	1260*
DK0SU	10	2	71	5	83	1410	W8KNO	14	3	0	6	17	1200
N9KIT	9	3	12	8	24	1392	EA7JXZ	6	3	0	8	9	960
UR5MM	10	1	19	8	30	1264*	VE4DLA	9	2	2	7	13	938
W1QK	7	1	44	6	52	1068	W8ASA	10	2	2	6	14	864
NW2K	7	2	17	7	26	1008	W9KXQ	10	0	3	8	13	848
JA7QVI	10	1	0	7	11	840*	KD8VRX	8	2	0	7	10	840
KF3G	13	2	31	3	46	696	KK4PQA	10	0	0	8	10	800
IT9MUO	10	0	106	2	116	624	KG6VNA	8	2	4	6	14	768
DJ2IA	6	1	19	4	26	472	IZ4JMU	6	3	31	4	40	728*
PA5TT	6	1	0	5	7	400*	KD0CVZ	9	1	3	6	13	696
DF6RI	3	1	13	4	17	304	K1AUS	9	1	0	6	10	660
EA7AAW	2	1	27	3	30	282	KC1GSL	2	5	3	5	10	630
YU1FG	6	0	17	3	23	282*	AG5DB	8	2	1	5	11	610
NJ4F	5	0	0	4	5	200	W4BBT	7	1	38	3	46	498
OK7FL	3	0	14	3	17	174*	N2NYU	4	2	5	4	11	360
SQ9FMU	3	0	3	2	6	72*	VA3EEB	6	0	5	5	11	350
RN4SC	0	1	10	1	11	40*	K7JKM	3	1	4	3	8	174
F4GFT	0	0	15	1	15	30	DL5ALW	1	2	0	2	3	100*
							W0MB	4	0	1	2	5	84
							K0HAY	1	1	0	2	2	60
							K3URT	3	0	0	2	3	60
							VE6QO	2	0	5	2	7	60

SINGLE OPERATOR, ALL BANDS, PHONE ONLY

Call	Cdn	RAC	DX	Mult	QSO	Score
WB0TEV	348	17	389	38	754	174724**
VE4TV	105	18	70	29	193	44950*
VA3WU	105	5	135	20	245	28400*
VA3QWW	85	10	160	20	255	27400
VA2MO	58	13	18	24	89	21024*
VE6EC	50	8	20	23	78	16100*
VE3XRC	54	9	15	18	78	13500
VE4VJR	80	4	71	12	155	12264
NT2I	51	8	14	15	73	10470*
VE3OGP	39	7	13	18	59	10008
VE6WZL	46	2	187	11	235	9614

MULTI OPERATOR, SINGLE TRANSMITTER, LOW POWER

Call	Cdn	RAC	DX	Mult	QSO	Score
VE9ML	267	30	609	62	906	278256**
VA3KAI	152	19	205	51	376	117810*
VE9OA	133	16	353	46	502	108376
W9QL	132	19	69	46	220	84548*
WA0MHJ	101	18	38	48	157	69408*
VE2ZT	88	23	160	40	271	66400*
VE3MGY	98	9	321	31	428	55862

VE9RAC	91	10	197	37	298	55648	VE2FK	119	12	402	26	533	58084
VA4HZ	144	16	124	22	284	44176*	W2GR	113	11	228	31	352	55986*
K2ZR	72	15	147	31	234	40734*	W1FM	100	12	82	39	194	54756
K3AJ	95	14	101	25	210	35800*	VA3DX	97	15	174	33	286	53394
K4YND	79	10	66	29	155	32538*	WA8KAN	100	12	121	36	233	53352*
VE3JAQ	64	7	137	28	208	29512	VE5RI	117	12	98	33	227	52998*
N4VV	64	11	57	28	132	27272	K0JPL	118	13	137	28	268	47992
PY5FO	97	8	181	18	286	26856*	KL7SB	88	9	269	26	366	41548*
AB1J	71	10	111	19	192	21508*	K4AFE	70	13	21	41	104	41082
N9CK	53	9	34	26	96	20228	AE1T	75	11	128	26	214	31876
VE6LB	47	10	124	21	181	19278*	NA6O	77	14	111	25	202	31800
K7BX	40	9	92	23	141	17572*	G3ORY	77	14	187	22	278	31328*
WB9QVR	47	8	0	24	55	15120	WC7Q	79	8	120	26	207	30940*
VE7NA	32	9	50	24	91	14400*	K3ZU	52	9	14	36	75	26208
K1IU	49	7	83	18	139	14328	K4GM	70	13	100	22	183	25520
VE3PJ	36	5	40	26	81	14040	K1ESE	63	11	2	28	76	23912
AC0MN	46	10	0	20	56	13200	NS9I	67	5	95	24	167	23040*
VE7URN	41	13	12	19	66	13186	KF7DX	81	9	60	20	150	22200
AA0FO	35	11	0	20	46	11400	KI7Y	52	10	88	22	150	19712
KJ8O	30	10	9	21	49	10878*	KE4KY	61	8	73	20	142	18320
VA3NFA	43	7	15	17	65	10200	NK6A	50	8	57	23	115	17802
W9WB	48	9	17	13	74	9022	K4IQJ	46	11	0	23	57	15640
VE3KTB	31	8	15	18	54	9000	WT2P	46	8	32	22	86	15048
WA9LEY	35	2	35	18	72	8280	VE1DT	39	3	100	19	142	12350
W8JPF	29	6	22	18	57	8172	VA3MW	47	2	31	20	80	11440
K7FA	35	4	1	18	40	7776	VY1MB	82	5	94	10	181	11080*
N3AM	30	6	14	17	50	7616	VA2QR	33	10	34	18	77	10764
K7PRW	42	8	0	12	50	6960	NM5M	42	6	55	16	103	10400
KP4CPC	41	4	67	9	112	5616*	VE3MM	44	6	107	13	157	10062
N6OIL	29	6	2	13	37	5382*	VE7AX	26	7	42	20	75	9680
VA2BN	22	7	9	14	38	5292	W5ASP	49	9	4	13	62	8814
NK3Y	27	5	1	14	33	5208	VE7SAR	51	3	264	8	318	8784
VE7KCY	16	6	23	15	45	4890	VE7DB	33	6	61	13	100	7436
VE2CJR	30	4	67	9	101	4626	N1SOH	25	4	44	16	73	6688
KE0EBK	28	4	45	10	77	4500	VE7CC	46	4	136	8	186	6496
K0LDS	31	4	12	10	47	4140	W5GN	34	6	13	13	53	6318
AB1YD	23	3	30	10	56	3500	W6SX	29	5	74	11	108	5918
N5MKY	17	3	5	13	25	3120	VE3CV	14	7	11	17	32	5134
KB6WKT	19	3	9	11	31	2948	WA3AAN	27	3	40	12	70	4920
K6PO	16	4	0	8	20	1920	VP5/VE7ACN	39	1	82	8	122	4592*
K8LF	9	5	0	9	14	1710	N4GG	22	6	0	13	28	4420
VE6CSX	4	6	2	10	12	1640	W9ILY	24	3	4	9	31	2772
N2AJO	16	2	0	8	18	1600	K0RC	17	1	0	11	18	2090
G3RLE	14	1	0	9	15	1440*	K7UT	13	1	2	12	16	1848
KC1SA	11	1	4	9	16	1242	JA2XYO	13	2	36	6	51	1452*
K6KQV	10	3	0	7	13	1120	VE1JS	10	1	42	5	53	1020
K4IU	10	4	14	5	28	1040	NX6T	14	0	22	4	36	736
N8YXR	11	0	4	8	15	944	NX6T	14	0	22	4	36	736
VE3MXJ	6	2	2	7	10	728	KM6I	8	1	16	3	25	396
WL7F	8	1	22	4	31	576*	N0BK	3	2	0	5	5	350
N4KHI	8	1	1	5	10	510	JO7KMB	2	1	3	1	6	46
K2CYE	7	0	0	7	7	490	KD7QOT	0	1	0	1	1	20
N9VPV	3	3	0	5	6	450							
KC9BG	6	1	0	5	7	400							
W4LAN	9	2	1	3	12	396							
W6JWP	5	2	0	4	7	360							
PA3EVY	5	2	4	3	11	294*							
SM5NQB	4	2	0	3	6	240*							
VE2NCG	4	0	8	4	12	224							
VE7CMK	3	0	8	3	11	138							

MULTI OPERATOR, MULTI TRANSMITTER

Call	Cdn	RAC	DX	Mult	QSO	Score
VA3RAC	354	22	943	72	1319	422352**
VE6RAC	292	20	1026	64	1338	343808*
VE7RAC	282	19	676	50	977	227600*
VE3CWM	207	20	529	59	756	208152***
VE6FI	281	17	439	36	737	145008
VE3DC	188	16	336	37	540	106264
VY1AAA	143	13	522	29	678	79286*
VE3SAO	22	3	18	12	43	3792

SINGLE OPERATOR, SINGLE BAND

Call	Cdn	RAC	DX	Mult	QSO	Score	Pwr	Bnd
N6RO	37	4	52	13	93	7202*	HP	160M
W6RKC	21	1	23	11	45	3036	LP	160M
N7QT	18	3	38	6	59	1896*	HP	160M
VA7MM	15	4	43	5	62	1580*	LP	160M
VE7NY	7	0	13	3	20	288	HP	160M
JA4CUU	1	0	1	1	2	12*	HP	160M
VE1ZA	121	5	163	18	289	29448*	HP	80M
K4WW	42	3	57	9	102	5346*	HP	80M
K3KU	22	2	19	10	43	2980*	LP	80M
WA4JQS	18	3	11	8	32	2096*	LP	80M
N9NA	16	4	25	7	45	*	HP	80M
VA3PDG	20	2	17	7	39	1918*	LP	80M
VE9RLW	16	2	5	5	23	1050*	LP	80M
SP5GH	7	2	0	4	9	440*	HP	80M

RA1QD	8	1	0	3	9	300*	HP	80M
LY5O	9	0	3	3	12	288*	HP	80M
W4UT	5	1	0	4	6	280	LP	80M
YU1RA	1	2	0	3	3	150*	HP	80M
OK1AYU	4	0	1	3	5	126*	HP	80M
RA3WDK	2	1	0	3	3	120	HP	80M
UA4HQS	0	1	0	1	1	20	HP	80M
AC2FA	0	0	1	1	1	2*	LP	80M
VE2FWW	69	7	250	10	326	13300*	LP	40M
W8IQ	44	6	51	14	101	9268*	LP	40M
K6AR	56	6	80	10	142	8400*	HP	40M
K9WX	37	6	57	13	100	7852*	LP	40M
VE5GC	44	6	97	10	147	7540*	LP	40M
W2RR	37	3	126	8	166	5456*	HP	40M
VA7EU	21	7	39	10	67	4280*	LP	40M
KA9O	20	4	17	8	41	2512	LP	40M
N3JT	25	5	0	7	30	2450*	HP	40M
VE3NJE	15	1	7	7	23	1288*	LP	40M
WB0IWG	7	3	5	6	15	840*	LP	40M
N9BT	8	2	5	6	15	780	LP	40M
VA3KVI	8	0	6	5	14	460	LP	40M
W4YPW	4	2	1	2	7	164	LP	40M
VE3MDX	2	1	14	2	17	136	LP	40M
N1WRK	5	0	0	2	5	100*	LP	40M
JA5NSR	0	1	1	1	2	22*	HP	40M
JK8PBO	1	0	2	1	3	14	LP	40M
UA6AK	0	0	5	1	5	10*	HP	40M
4K9W	0	0	2	1	2	4*	LP	40M
R6CW	0	0	2	1	2	4	LP	40M
RA0LL	0	0	2	1	2	4*	LP	40M
VE7JH	158	9	512	21	679	58464**	HP	20M
VE7NZ	126	12	271	17	409	34714	HP	20M
VE5FX	162	3	293	10	458	22660*	HP	20M
VE4DDW	67	2	157	7	226	7168*	LP	20M
VA3ATW	47	6	59	8	112	5664	LP	20M
VA6CV	47	4	101	7	152	5264*	HP	20M
W6TK	30	6	0	9	36	3780*	LP	20M
AA7V	27	3	37	8	67	3232*	HP	20M
VE7DXU	24	4	5	9	33	2970	LP	20M
N9WL	20	5	0	9	25	2700*	LP	20M
YV5EMG	13	4	15	10	32	2400*	LP	20M
AA8DC	25	4	1	7	30	2324*	HP	20M
VE3SB	12	2	10	9	24	1620	LP	20M
K2HT	12	2	0	10	14	1600*	LP	20M
PY1NP	11	4	2	8	17	1552*	LP	20M
K0SIX	13	2	2	6	17	1044	HP	20M
F6DRP	11	3	2	5	16	870*	LP	20M
VA3TTZ	9	3	3	5	15	780	LP	20M
K7XE	6	3	1	6	10	732	LP	20M
VE3MZD	9	1	1	5	11	560	HP	20M
N3NZ	7	0	19	5	26	540*	LP	20M
AE7VA	4	3	0	5	7	500	HP	20M
OH6ECM	6	1	5	5	12	450*	HP	20M
VA3TPV	4	2	5	4	11	360	LP	20M
KB2SDF	5	1	0	4	6	280*	LP	20M
VE3TOG	3	2	2	3	7	222	LP	20M
HC1JQ	2	2	0	3	4	180*	HP	20M
VE6HV	3	1	0	3	4	150	LP	20M
OK2TS	5	1	1	2	7	144*	LP	20M
VE3WVP	4	0	11	2	15	124	HP	20M
KK7A	3	1	5	2	9	120	LP	20M
G4HBI/M	5	0	2	2	7	108*	HP	20M
SP9KJU	4	0	2	2	6	88*	LP	20M
XE1AY	2	0	9	2	11	76*	LP	20M
US3EW	2	0	5	2	7	60*	LP	20M
ER1LW	1	0	4	1	5	18*	LP	20M
KM6G	1	0	0	1	1	10	HP	20M
DL7FB	0	0	1	1	1	2*	LP	20M
VA7DP	38	4	194	7	236	5936*	LP	15M
R3LC	2	0	7	2	9	68*	LP	15M
VA3SY	1	0	4	1	5	18*	LP	15M
HA1TI	0	0	2	1	2	4*	LP	15M
PD3OES	0	0	3	1	3	6*	LP	10M
VE2GT	3	0	0	1	3	30*	LP	2M

Checklogs: LZ8Z, RA4AAT

HP* – Assumed high power

Call* – Assumed high power

Score* – Certificate winner

Score** – Category/Plaque winner

Score** – Provision Score given distributed Multi-Multi Operation

RAC 150 Award | Prix RAC 150

To celebrate Canada's 150th birthday, Radio Amateurs of Canada is pleased to announce the **RAC 150 Award** program. The 14 special RAC call signs will be activated by volunteers throughout the second half of 2017 starting with the Canada Day Contest on July 1.



Stations making contacts with a number of RAC stations will have the opportunity to download an award corresponding to the number of different stations worked. Please stay tuned to the RAC website for details and the link to download your award.

Pour célébrer le 150^e anniversaire du Canada, RAC annonce le programme : prix **RAC 150**. Les 14 indicatifs d'appel spéciaux de RAC seront activés par des bénévoles tout au long du deuxième semestre de 2017, débutant avec le concours de la Fête du Canada.

Les stations qui établiront des contacts avec un certain nombre de stations RAC auront la possibilité de télécharger un prix correspondant au nombre de stations différentes jointes. Surveillez le site web de RAC pour plus de détails et pour connaître le lien nécessaire au téléchargement de votre prix.

Multi-Operator Details (continued from page 39)

VE7AX: VE7AX	W2GR: W2GR
VE7CC: VE7CC	W4LAN: W4LAN
VE7CMK: VA7MM, VA7MAY @VE7CMK	W5ASP: W5ASP
VE7DB: VE7OM, VE7FFT, VA7NX	W5GN: W5GN
VE7KCY: VE7KCY	W6JWP: W6JWP
VE7NA: VE7GDE, VE7IAD, VE7FCO, VE7BGP	W6SX: W6SX
VE7RAC: VE7IO, VA7NF, VA7NLF, VA7QD, VE7BC	VE7URN: VE7URN
VE7SAR: VA7XB, VA7FMR, VA7XNL	W8JPF: W8JPF
VE7SCC: VA7DX, VE7KW, VA7CDB, VA7CFK, VA7NR	W9ILY: W9ILY
VE9ML: VE9ML, VE9BK	W9QL: W9QL
VE9OA: VE9OA	W9WB: W9WB
VE9RAC: VE9CRM	WA0MHJ: WA0MHJ
VP5/VE7ACN: VP5/VE7ACN	WA3AAN: WA3AAN
VY1AAA: KB7Q, VE3KI, W1VE @VY1JA	WA8KAN: WA8KAN
VY1MB: VY1MB	WA9LEY: WA9LEY
W1FM: W1FM, N1SOH	WB9QVR: WB9QVR
	WC7Q: WC7Q
	WL7F: WL7F
	WT2P: WT2P

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Making Waves

... Taking the Measure

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INTRODUCTION

This installment continues applying the RigExpert AA-30 antenna analyzer to transmission lines.

The aim is to identify the specifications of a transmission line.

The approach will first demonstrate the measurements, calculations and results using a line of known characteristics as a check. Then, the same routines will be applied to a transmission line of unknown traits.

CHARACTERISTIC IMPEDANCE (Z_0)

Imagine a perfect transmission line of two parallel or concentric conductors. Being perfect, the conductors have no resistance to current flow. Applying an electromotive force (EMF) of any magnitude will result in infinite current flow. We do not see that happen in real life. Why not?

The conductors might lack resistance in our mind experiment but they do have inductance (L) along their length and capacitance (C) between them. The inductance determines how rapidly the capacitance can charge and discharge. The result is that a given EMF results in a specific ratio of voltage to current that is called the characteristic impedance (Z_0) of the transmission line.

If we could easily measure the L and C, we would find that the Z_0 of such a lossless line is proportional to the square root of the ratio of L to C. Since we cannot easily measure

those factors, we call upon our impedance analyzer.

Having a piece of transmission line of unknown Z_0 , connect a known non-inductive resistor to the far end. Try 100 ohms.

Set the analyzer to scan its entire range of frequencies. On the RigExpert AA-30 the range is from 100 Hz to 30,000 kHz.

Find one frequency where the R component of the Z is at maximum while the X is as close to zero as possible and another frequency where R is at minimum and X also is at or near zero.

Figure 1 on the right shows that the R_{max} is 96.3 ohms and the R_{min} is 26.4 ohms.

Applying a little math, calculate as shown in Equation 1 on the right. The Z_0 is about 50.4 ohms, which upon checking, is near the nominal value of 50 ohms declared by the manufacturer.

You might wonder why a geometric mean is calculated instead of an arithmetic mean, an average. One reason is to give equal weight to values that could spread over widely different ranges of values and frequencies.

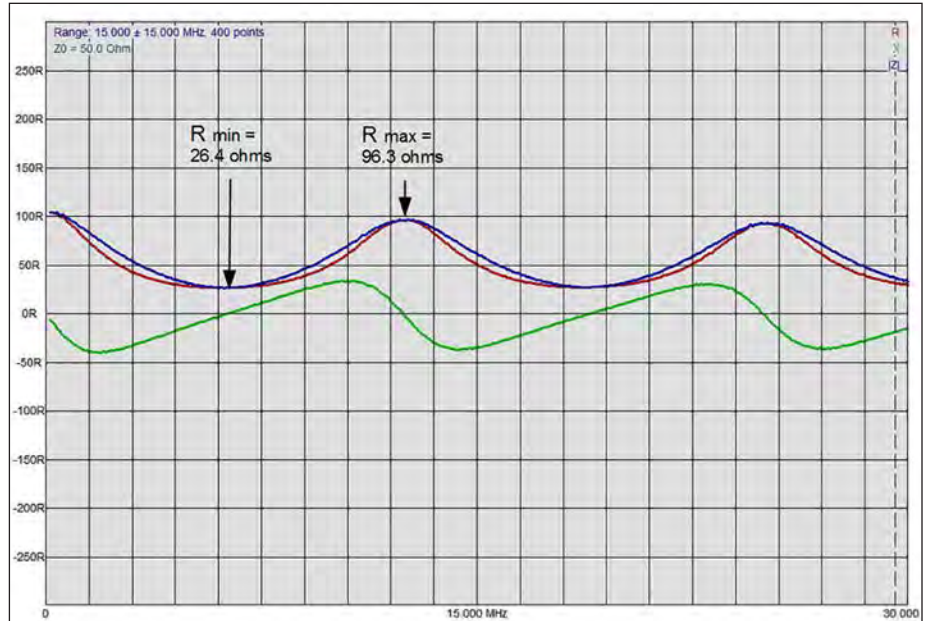


Figure 1: Data needed to find Z_0

TABLE 1: ELECTROMAGNETIC CONSTANT
Velocity of Light in a Vacuum

International System Units	Imperial System Units
299,792,458 metres per second (m/s)	983,571,056 feet per second (ft/s)
299.8 x 10 ⁶ m/s	983.6 x 10 ⁶ ft/s
300 x 10 ⁶ m/s	984 x 10 ⁶ ft/s

SEE c

Electromagnetic waves propagate at the velocity of light in a vacuum. The symbol used is the letter c. See Table 1 above.

The velocity of c is slightly slower in air and much slower in other media. By the way, c stands for *celeritas*, Latin for swift. The symbol and velocity also are known as the electromagnetic constant.

The nine-digit numbers indicate great precision. Yet, apparatus available to Amateurs neither yield accurate enough results nor sufficient display resolution to take advantage of high precision. One confidently can use three or four significant digits and a multiplier as long as all values are similarly scaled. For example, if c is written as 300 x 10⁶ metres per second, then you might as well set 7,050,020 Hz to 7.05 x 10⁶ Hz.

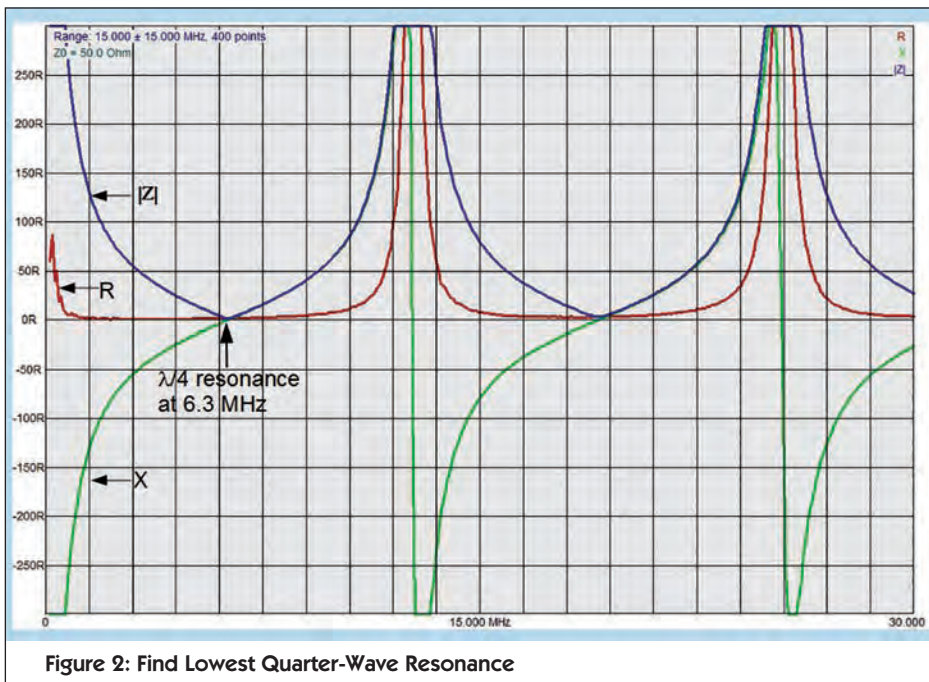


Figure 2: Find Lowest Quarter-Wave Resonance

RESONANT FREQUENCY

A transmission line not only carries energy from one point to another, it also behaves like a resonant circuit and as a transformer under certain conditions.

Measuring the resonant frequency of a length of transmission line is easy with an impedance analyzer.

It is necessary to establish standing waves on the line and this may be assured by terminating the line in a short-circuit or in an open-circuit. For instance, open the circuit at the far end of the line and connect the analyzer to the near end. Scan the frequency range in which you suspect the line to be resonant. If uncertain, scan the whole range that the instrument offers.

Inspect the series $R \pm jX$ graph (see Figure 2), noting the points where the reactance, X , passes from negative X to $X=0$. These are the resonances of the line under test.

Find the lowest frequency where X goes from a minus value to zero. This is the

one-quarter wavelength ($\lambda/4$) resonant frequency ($f_{\lambda/4}$) of the line. It is 6.3 MHz in the tested line. Should you want to know the one wavelength resonance (f_{λ}), simply multiply by four and get 25.2 MHz as shown in Equation 2 above.

Equation 2

$$\begin{aligned} f_{\lambda} &= f_{\lambda/4} \times 4 \\ &= 6.3 \text{ MHz} \times 4 \\ f_{\lambda} &= 25.2 \text{ MHz} \end{aligned}$$

You can use any odd multiple of a quarter-wavelength in order to find the one wavelength resonance. For example, the three-quarter wavelength resonant frequency is at 18.9 MHz. Scaling the value to one wavelength, yields the same answer for f , 25.2 MHz.

If you instead have a short circuit at the far end, the method is similar. Look for the one-half wavelength ($\lambda/2$) points where X goes from negative X to zero. These occur at intervals of $\lambda/2$ (e.g., $\lambda/2$, λ , $3\lambda/2$, 2λ and so on. For example, 12.6 MHz is the half-wave resonance. Multiply by 2 and see that f_{λ} is 25.2 MHz as before.

“That’s interesting”, you say, “but finding resonances surely has applications other than amusement!” Correct you are.

WAVELENGTH

We well know the formula shown in Equation 3 on the right. It returns the length of one wavelength (l) given the velocity of electromagnetic waves (c) in space and the frequency (f). If c is measured in metres per second and f in Hertz, then the wavelength is in metres. If c is in feet per second, the answer comes out in feet.

Equation 3

$$l = \frac{c}{f}$$

VELOCITY FACTOR

The velocity of c is reduced in a medium other than a vacuum. How much it is reduced in a transmission line is identified by a specification called the Velocity Factor (VF). This is a value less than 1.0 and typically ranges between 0.6 and 0.9 among the lines used by Amateurs.

Since the wave velocity is reduced in a transmission line, the length separating identical points in successive wave cycles will be shorter than in a vacuum. How much shorter is revealed when the VF is known. Hence, users of transmission lines often make the point that a given line has a certain electrical length to distinguish it from its longer physical length.

VF is a nominal value based on measurements taken by reputable manufacturers. Yet, the VF of any cable is unlikely to be exactly its nominal value.

If the exact value needs to be known it can be calculated. You only need two numbers: the physical length of the line and the line’s quarter-wave resonant frequency. Assume you have a cable that physically is 7.645 metres long.

The first step is to calculate the velocity of the wave in the cable as shown in Equations 4a below.

Equation 4a

$$\begin{aligned} v_{\text{cable}} &= l_{\text{physical}} \times \frac{f_{\text{quarter-wave}}}{1/4\lambda} \\ &= 7.645\text{m} \times 6,300,000 \text{ Hz} / 1/4 \\ &= 192,654,000 \text{ m/s} \end{aligned}$$

The second step is to find the ratio of this velocity to that of c as shown in Equations 4b below.

Equation 4b

$$\begin{aligned} VF &= \frac{v_{\text{cable}}}{c} \\ &= 192,654,000 \text{ m/s} / 299,792,458 \text{ m/s} \\ &= 0.64 \end{aligned}$$

The velocity factor comes out to 0.64. The manufacturer states a nominal VF of 0.66. The calculated value is 3% different from the nominal one.

Why would you want an accurate VF value? If you are making an electrically one-quarter wave long transmission lines – such as when forcing identical currents into each feed to an array of radiators – then knowing the VF ensures that the line will have an accurate electrical length.

APPLICATION

How about some fun? A discussion that arises, it seems with each new generation of Amateurs, is whether zip cord may be used as a transmission line. Zip cord refers not only to parallel two-conductor wiring used to power table lamps and household appliances, but also to similar wiring used for loudspeakers, networks, telephones and the like.

TABLE 2: CALCULATED LOSSES
Loss of Zip Cord vs Frequency

F (MHz)	SWR (a : 1)	Loss of 4.809 metre Test Cable (dB)	Loss per metre (dB)	Loss per 100 feet (dB)
3.72	66.73	0.13	0.03	0.9
7.14	15.49	0.56	0.12	3.7
14.22	11.77	0.74	0.15	4.6
21.12	23.81?	0.37?	0.08?	2.4?
28.10	4.57	1.93	0.40	12.2

$$Loss_{(db)} = 10 \log \frac{SWR + 1}{SWR - 1}$$

On the surface, the answer is “yes” since zip cord transfers energy from one place to another. The answer also is “yes” since some Amateurs avow success using it. The rub, though, is how well zip cord carries energy or is it just a linear dummy load?

A length of 14-gauge speaker wire arose from the wire bin. Its physical length was measured as 4.807 metres (15' 9-1/4").

To find the VF, the line was scanned with the far end open-circuited. The $R \pm jX$ graph showed a quarter-wave resonance, $f_{\lambda/4}$, at 10,320 kHz.

Plugging $f_{\lambda/4}$ into Equation 4a resulted in a propagation velocity of 198,432,960 metres per second in the line. Using the Equation 4b yielded a VF of 0.66.

With a non-inductive terminating resistor on the far end of the cable and scanning the whole frequency range, the values of R_{max} and of R_{min} were found. Using Equation 1, revealed a Z_0 of 108.2 ohms. The literature indicates that the value is in the ballpark.^{1 and 2}

Earlier we used the SWR value of an open-circuited line to calculate line loss.³ The method evaluated the loss of the length of zip cord at several frequencies. Further calculations normalized the loss to a value per metre and to a value per 100 feet. The outcome is shown in Table 2. The 21 MHz result is suspect and is probably the result of a resonance.

Notice that the loss at 3.72 MHz is not terrible. At 7.14 MHz, though, the loss is well over 3 dB; more than half of the rig's power output is being wasted. Loss is very great at 28.1 MHz. All losses are much greater than those of a quality transmission line.

And so, zip cord can be used as a transmission line and, if matched via an antenna tuner or fixed network, it will function with 50-ohm output rigs. It will work at the lower frequencies, such as on the 80 metre band, but above those frequencies the line begins to appear as a dummy load.

WRAP

The antenna analyzer indeed is a valuable and flexible tool and a necessary one for the Amateur interested in antenna and transmission line optimization. While often used to find antenna system SWR and impedance, it supports a host of other investigations such as finding faults and transmission line characteristics.

Do you have comments about or ideas for the column? If so, please send them to me at VE1YY@yahoo.ca.

REFERENCES

- 1 Jerry Hall, K1TD. “Zip-cord antennas – do they work?” QST, 1979 March, pages 31-32. Online at <http://www.w1npp.org/events/2010/2010-F-1/ANTENNAS/WIRE/790303-1.PDF>
- 2 Dr. Carol F. Milazzo, KP4MD. “Zip cord transmission lines and baluns.” Online at <http://www.qsl.net/kp4md/zipcord.htm>
- 3 Bill Karle, VE1YY. “Making waves – at a loss”, March-April 2017 TCA, pages 40-42.



For the RAC Store visit:
http://www.cafepress.ca/rac_radio

FEEDBACK: OUR READERS WRITE

“A Solution for AL-811(H) Burnt Panel Meter Lights” in the January/February 2017 TCA caused me several concerns.

During my career as a bio-medical electronics technologist, I had to work with CSA inspectors to bring electronic equipment up to standard before it was acceptable for certification.

The idea of “hot gluing” components to a panel adjacent to high voltage wiring would never be acceptable. The Plexiglas strip holding the LEDs should be securely bolted to the front panel of the amplifier using whatever means are necessary.

The author of the article neglected to elaborate on the safe way to discharge HV circuits; “letting it rest for five minutes” is just not good enough. Big HV capacitors can still hold a lethal charge hours later. Look in any ARRL *Radio Amateur's Handbook* for safe procedures.

Also, the cautionary sidebar on the first page of the article suggests that “a qualified electrical contractor” may be able to do this modification. In my experience, electrical contractors seldom would have the skill set required for this type of work. You would be better to seek out a community-college trained electronics technician.

We are Radio Amateurs, but we are capable of doing a project professionally and safely.

Ken Grant, VE3FIT
Highland Creek, Ontario

Dirk, I enjoyed your article on mobile madness in the March/April 2017 TCA. You refer to /SM as referring to Snowmobile Mobile and Sled Mobile (I presume they are being towed by the former). In southern Ontario it is common to refer to a snow machine as a sled and the towed item as a sleigh. Just to add to the confusion the two are sometimes interchanged.

The use of the English language can have interesting variations; words can have different meanings in different areas as in the above example. Another example is the use of the word “Dinner”. In urban Ontario it usually refers to an evening meal, whereas in some rural areas it refers to a midday meal. Assuming one meaning when it is the other can lead to embarrassing situations.

Just for your interest.

Bob Stewart, VA3BHS
Lindsay, Ontario



Amateur Radio and Local Weather: The Connections

Gary W Dumbleton, VE3NYF
<http://www.brantfordweather.ca>

Weather is something I have always been interested in. As a boy, I often visited the closest Environment Canada weather office at Mount Hope airport in Hamilton, Ontario. I constructed my own barometer, anemometer and rain gauge. I was also very interested in Amateur Radio and in my early twenties I got my Amateur licence.

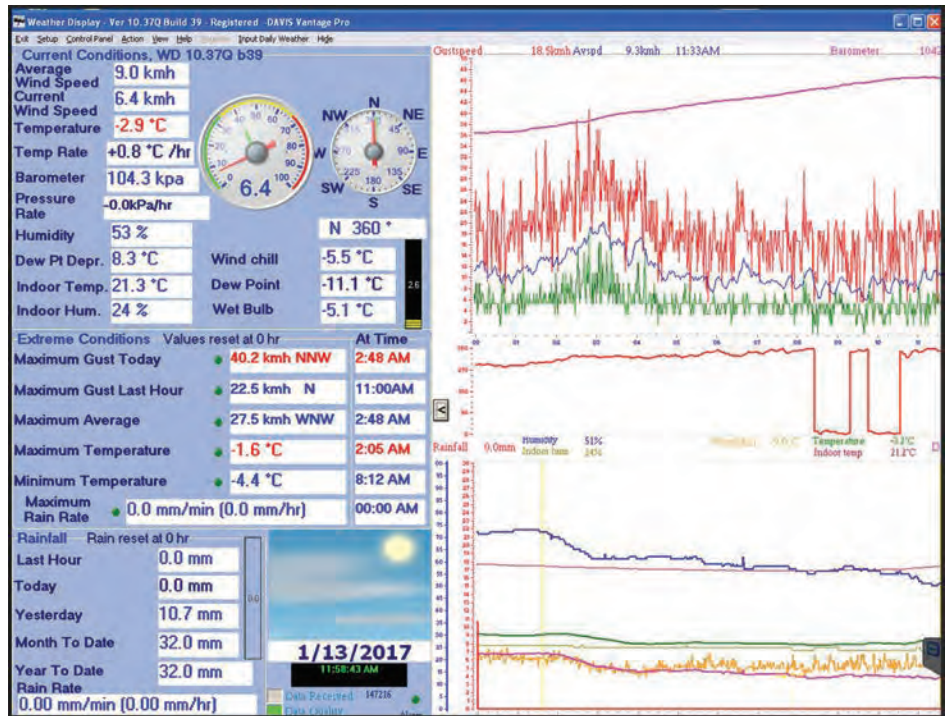
In the 1990s, Environment Canada (EC) asked Amateurs to participate in a new program call CANWARN – a necessary service in which the network of Amateurs Canada-wide could help spot dangerous weather and then report it to the EC weather stations.

In the early stages of this program, each weather station actually had a UHF or VHF radio as part of its equipment and once EC gave notice that CANWARN should be initialized, an Amateur would then go to the weather office to receive information, via a repeater. Amateurs would then transmit what they were seeing in the field. I guess we were the weather forecaster's eyes. CANWARN still exists but the format has changed somewhat. You can find out more about CANWARN online at: <http://www.eco.ca/canwarn.shtml>

This was just what I was looking for: a marrying of Amateur Radio and weather. Amateur Radio has always been about community service and emergency preparedness. I thought that it would be useful to add weather to my Amateur adventures in order to increase my service to the community. After some research I discovered that I was not the only Amateur with an interest in weather. In fact there are many worldwide forums about Amateur Radio and weather. I also found out that, due to budget cuts at EC, the nearest government weather offices in Ontario were many miles away from me.

The only way that I could make my weather a community service was to have the information easily accessible all of the time. I decided to implement my weather dream by creating a website. Now I had to decide what information I needed to have on my website to make it a useful tool for local users.

Just in case there are other Amateurs who have a weather interest, I would like to share my station setup and implementation with you in the event you would like to have your own setup.



The Weather Display view on my station's computer.

Good weather information requires two main components: current weather conditions and optional forecasts. I had to decide where I was going to get the current data and the forecasts and how I could display them on a website.

Current Weather Conditions

The Weather Station

There are many brands of weather stations to choose from. When making your choice you should make sure that it is capable of connecting to a computer.

I chose the Davis Vantage Pro 2 station (<http://www.davis.com/>). Most weather stations have sensors that must be mounted outside. They include the temperature sensor, humidity sensor, rain gauge, wind direction and anemometer.

I mounted the anemometer and the wind direction sensors on the same tower that my HF and VHF antennas were installed. About six feet off the ground, on the same tower, I mounted the enclosure with the temperature and humidity clustre, along with the rain gauge.



The Davis Vantage Pro2 station console.

Davis weather stations come with either wireless sensors or wired sensors. I chose the wired type because I thought it would be more stable. I positioned the console near the computer that I was going to use and connected it using a USB-to-Serial adapter.

The Computer

You don't need to have a powerhouse computer to run the software, but you will need at least a dual core with 4 gigabytes of RAM and with Windows XP or higher. I bought a refurbished computer for about \$250 and it runs all of my weather software without any problems.



The temperature, humidity and rain gauge module mounted on the tower.

Displaying Live Weather on the Computer Screen and the Internet

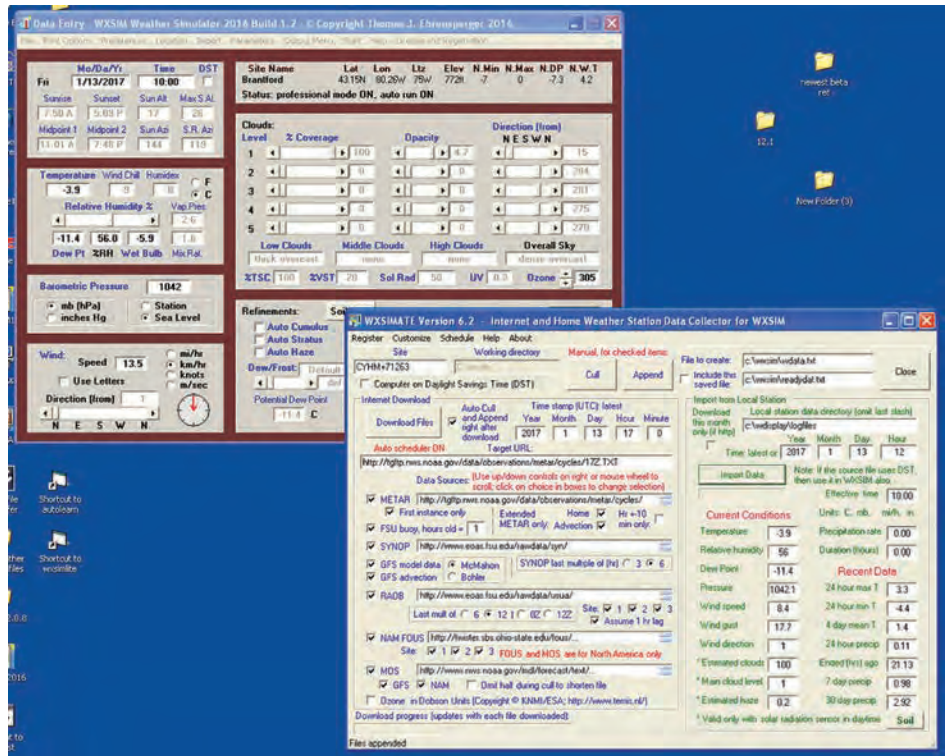
Many of the weather stations come with software that manages and displays the live weather results on your computer screen. I needed one that would also upload the results to a web server so that they could be displayed on a weather website.

There is other software available, but after some research I chose Weather Display (<http://www.weather-display.com>). This software provides a colourful display of the live conditions, updated every second. It even calculates windchill, the humidex, the dew point and others, and it displays them too. Weather display was developed by Brian Hamilton from New Zealand. During setup you have to choose your weather station and there are over 40 weather stations to choose from. Brian updates the software regularly and provides excellent support.

In order to display live results on your weather website, you need to choose software which is compatible with your on-computer weather software. I chose the Weather Display Live add-on, which is the web version of Weather Display. This software uses Adobe Flash to show the results. When viewed you will see the needles move in almost real time as Weather Display uploads the data every three seconds to your website.

Weather Website Development

Now that you have the ability to upload your live weather data, you need to have a website to accept and display this data. If you are skilled at web development you can program your own website. If your skill is not in this area, you can obtain weather templates that are already done. You just need to configure the template site to accept your data. In my opinion, the best source is Ken True, who has created weather templates along with other website functionality. Ken's support is excellent. You can see what he has to



The Wxsim forecasting software. The bottom right is the data gathering module. The upper left is the forecasting software.

offer on his website at <http://saratoga-weather.org>. I am a web developer so I decided to create my own website.

The Basic Weather Station is a Reality

We now have a complete basic weather station setup which includes the actual station hardware, a computer and a website. This in itself will provide the public with relevant information on existing weather conditions. I decided to go one step further by including a locally produced forecast and a station archive. The archive has 10 years of data and is searchable on the Internet.

Local Forecasts

The Computer-installed Software

There are not many standalone forecast software options. After some research I chose Wxsim (<http://wxsim.com>) which is a weather forecast simulator that produces quite accurate results. The software uses the GFS model and information from many sources – such as government weather stations, buoys in the ocean, and so on – along with your own weather station to make the forecast more accurate for your area. Tom Ehrensperger is the developer of this software. For every purchase he includes a customization just for your area. I have had this software for about eight years and have been extremely happy with the forecast accuracy and the level of support

that Tom gives. I have Wxsim set to do a forecast every two hours during daylight hours. After each forecast run, the data is then uploaded to the website.

Displaying the Forecast on the Internet

There is a limited number of options for displaying your forecast on the web. Ken True has developed one but I chose one called “3 in 1” which is produced in Europe and does a nice job. It also utilizes some of Ken True's handiwork. This display software takes the files for Wxsim and interprets them for display. It also has a good support forum with many people ready to help if necessary.

Station Archive

It is easy to save a station archive as the Weather Display software will also upload a station's live data to Weather Underground (<https://www.wunderground.com>), which is a weather agency that is owned by The Weather Network. The unique thing with Weather Underground is that you can register your personal weather station with them and upload data to that station location. It not only displays your station's live results – updated every five seconds – but it also archives all of this data. I started archiving this data about 10 years ago and I have used the weather archive myself and for many others in the community.

The Community Connection

The community has readily accepted my weather station. I have many thousands of visitors per month checking both forecasts and live weather. I have received many encouraging emails that make this venture worthwhile. My station is well respected as having accurate forecasts and live conditions. The station is used by the Board of Education for windchill readings, The Ministry of Natural Resources uses it for controlled burns in the area. It is used for logging by the Fire Department, for court cases, insurance company weather condition reports, auto accidents and wind damage. The City of Brantford uses it to augment their snow removal plan and to plan outside events for the Parks and Recreation Department. It is also using the 10-year archive for storm sewer studies.

The Global Connection

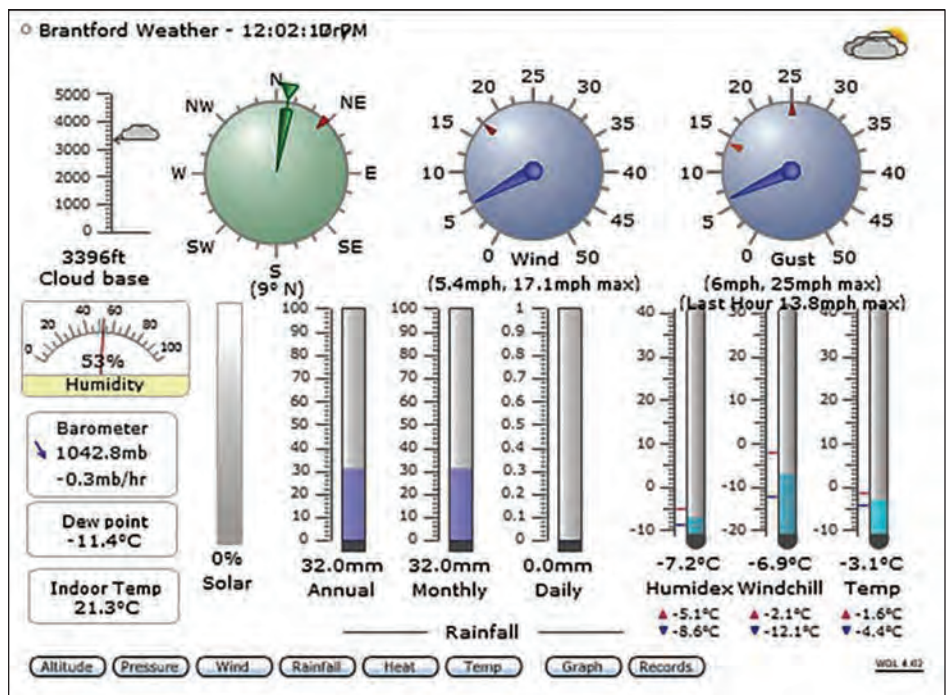
Make your data available for the world to use

You can make your local weather available by using packet radio or via the Internet. Since I do not have a Terminal Node Controller (TNC), I use the Internet. Weather Display has a provision to send packets through the Internet. Many weather stations have a TNC interface if you wish to use packet radio to send your APRS weather reports.

The leader in sharing weather data to the world is the National Oceanic and Atmospheric Administration (NOAA). This agency is based in the United States but their reach is worldwide. For example, the National Centers for Environmental Information, a division of NOAA, produces the Global Forecasting System (GFS), a weather forecasting model that is used worldwide as a weather forecasting system. You can find it at <https://www.ncdc.noaa.gov/data-access/model-data/model-datasets/global-forecast-system-gfs>

In spite of the mention of NOAA, you should not think that the emphasis is on the United States. There are many Canadian and European stations and also many worldwide stations that are reporting weather data. This data is used by many worldwide government and private agencies to make scientific global determinations about the weather and climate. The collective reporting database may even be used to fine-tune the worldwide GFS weather forecasting model.

The data from your weather station – whether you send it by packet radio or by computer – must get to the Automatic Position Reporting System (APRS) server (<http://www.findu.com>). findU not only



Weather Display Live as it is on the brantfordweather.ca website.

accepts global position data, it also accepts weather condition information from your specific location (aprswxnet – <http://www.findu.com/citizenweather>).

In order to have Amateur weather uploads accepted into the database, you need to set it up to send data based on your call sign. You then need to send an email to “support@noaa.gov” itemizing the call, location and elevation. Once your data upload is approved by NOAA, the data is accepted officially as a data source and can be viewed on the web using your registered call sign. You can find mine at <http://www.findu.com/cgi-bin/find.cgi?call=VE3NYF>. You will notice that it has my location and is uploaded every five minutes.

Quality Checking, Standardizing and Compiling Data

The Meteorological Assimilation Data Ingest System (MADIS) is a meteorological observational database and data delivery system that provides observations that cover the globe. The data from all of the weather reporting sites – government, Amateur Radio and private – are compiled into a useable format. The data is received by the ingest interface, it is quality checked and standardized during processing, and put into a database for global distribution. Many worldwide agencies make use of the data provided. To find out more about MADIS, the work they do, what they provide and to whom visit them online at: <https://madis.noaa.gov/index.shtml>

There are many positive aspects in providing the community’s and the world’s meteorological users with relevant data from your own Amateur venture into weather. Having a weather station has increased my profile as both an Amateur and a weather enthusiast, and it has provided me with community and worldwide connections.

I have a modest hamshack consisting of a Yaesu FT-450D, an Off-Center Fed (OCF) antenna and a computer for digital communications. As the basis for this article, I also have a Davis Vantage Pro weather station, a computer dedicated to the collection of weather data and distributing it to the community, the APRS network and Weather Underground.

Gary Dumbleton, VE3NYF, has been an Amateur for about 45 years and has been a weather enthusiast for about the same length of time. “I enjoy CW and Digital modes. I am a dual citizen of Canada and the UK and on a visit to London, this year, I may even write the UK ham exam. I sure would like a UK call too! I am currently living in Brantford, Ontario but was born in Hamilton. I am a former College professor. I run my own business in Web Design and Computer IT.”



TCA

For the RAC Store visit:
http://www.cafepress.ca/rac_radio



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www.phillipboucher.com

FRESH ON THE AIR

— ADVENTURES FOR THE NEW AND BEGINNING HAM

Phishing and Amateur Radio Identity Theft...

Have ever received an email that says “you’ve won a prize”, made a purchase, or something is being delivered to you? I’m sure you have. You have probably also seen that there is usually a link to click to “update your information” or cancel the transaction.

You may have also had a credit card issued in your name without your knowledge. Then you have an idea of what “phishing” scams are and may be aware that identity theft is all around us.

Some very sick and nasty people want to use your identity to steal your money, get credit cards or loans under your name, and hide behind your life for whatever reason. Thank goodness identity theft doesn’t occur in Amateur Radio, right?

You, as a new Amateur, use your call sign as your unique identifier both on and off the air. It is the moniker you are known by in the hobby. Not by your first name but by your call.

Your call sign is like your driver’s licence or birth certificate. It identifies you, as you and nobody else but you.

Note: Phishing email messages, websites, and phone calls are designed to steal money. Cybercriminals can do this by installing malicious software on your computer or stealing personal information off of your computer.

Given the laws, rules and regulations pertaining to radio communications, in general, and Amateur Radio, in particular, you have a rightful expectation that you are the *only* one who can use your call sign.

I recently discovered that this is not always the case when I became a victim of Amateur Radio Identity Theft!

I live in Niagara Falls, Ontario right near the Rainbow Bridge on the other side of the ditch. As such, I can hear some of the Buffalo, New York repeaters on the air. One night, early in the morning, I was out walking with my dogs and listening to a local Buffalo repeater. There were three parties in a QSO and one asked another what their call was. A young voice replied, phonetically, “Victor Echo Three Bravo Oscar Charlie”. He was then asked for a name and the young man answered “Phillip”.

Believe me when I say I was shocked and quite taken aback by what I had just heard. I got on the air and challenged the imposter several times, but he never came back for obvious reasons. I never would have thought that I would personally experience such a situation. But then again, no one does and we always hear about when it happens to someone else.

So what was I to do? I could have contacted Innovation, Science and Economic Development Canada and reported him, but of course, there was no way of knowing whether he was on the Canadian side or the American side of the border. Would it be their jurisdiction or the Federal Communications Commission’s?

I didn’t know where he was located so paying him a visit was not an option. Instead, I let RAC know what was going on and contacted the Buffalo repeater group that ran that repeater. They sent a message out to their membership to let them know about the situation and to report it if they hear this fellow on again. I must have scared him off because I have been monitoring the local and Buffalo repeaters and have not heard his voice on air since.

It’s quite unnerving to know that someone else is using your call sign.

On the best side of things, they are simply pretending they are you. On the worst side of things, they could be swearing, doing all sorts of other nasty and illegal antics on air so that you get the blame for it.

So how do you try to prevent such an issue from happening?

Unless it happens on a repeater or frequency that is local to you, you may not even know that it is happening until someone sends you an email or another Amateur mentions it. But once you find out, you should tell everyone you know. The more people who know what’s going on, the better chance you have of stopping it.

The best way to protect yourself from Amateur Radio identity theft is to always keep a log of when you are on the air. In the early days, it was a requirement to keep a log and nowadays, even though it is not a requirement, it’s still a good idea to document when you are on the air, what frequency or repeater you are operating on, and who you were in conversation with. This will act as proof if anyone challenges you because they heard someone else using your call. You can find several excellent Amateur Radio logging programs on the Internet.

Another way to protect your call sign is to be active in the hobby. The more you are on the air and having QSO, the more other Amateurs will eventually recognize your voice. If someone is using your call sign and they hear them, they can challenge that person and quickly get them off the air, hopefully for good.

You should also keep accurate records of your equipment and when you acquired it. This way, if an imposter operates on a band or mode for which you do not have the equipment, it will be further proof that it is not you who is doing it.

Why some people would do such a thing is beyond me but my situation shows it is happening. Be aware, be vigilant, and protect yourself from Amateur Radio Identity Theft!

Transmission Tidbit:

Got a Ham Radio joke? Send it in to me and I’ll use it here for a Transmission Tidbit!

Write me via the magazine, email me at phillipboucher@gmail.com, or via my website at www.phillipboucher.com.



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PUBLIC SERVICE / ARES

Symposium for Maritime Amateur Radio Technicians

Jim Langille, VE1JBL

After rain threatened to put a damper on things the sun came out early Saturday morning on April 29 in time for the 2017 Symposium of Maritime Amateur Radio Technicians (SMART) hosted by the WestCumb ARC in Amherst, Nova Scotia.



This year's event was held at the Dr. Carson and Marion Murray Community Centre in Springhill, Nova Scotia.

Amateurs started to arrive at 7 am and began setting up their displays in the large foyer. Treva Hebb and Jo-Ann Reynolds looked after the Registration table and prepared name tags. There were tables set up for tickets to buy prizes including digital radios and 50/50 tickets thanks to Dana Rushton, VE1VOX, Don Roland, VE1AOE and Jim Hannon, VE1AFH. Thanks to Belair Technologic, N3FJP, Scot Davis, Durham Radio, Radioworld and RAC for the prizes.

RAC Atlantic Director Dave Goodwin, VE9CB and Len Morgan, VE9MY (Manager of the RAC National Incoming QSL Bureau) manned the RAC table. Dave also gave a presentation later in the day on behalf of RAC. John Scott, VE1JS, had a table and was available to check DXCC, WAS, VUCC and WAC cards, if required. He also did identity checks for those wishing to join Logbook of The World (LoTW).

Ron MacKay, VE1AIC, from Prince Edward Island, was there again this year displaying and operating many digital modes. His hotspots were running Fusion on UHF, DMR on VHF and D-Star on another UHF channel all at the same time. Brad Ross, VE1ZX, also had a table set up to demonstrate his Fusion repeater VE1BFB. Bernie Cormier, VE9BGC, had a table showing off the upper part of his vertical with radials. It is designed for the 20m/15m band. All together it is 32 feet tall.

Coffee from Tim Hortons, tea, muffins, cinnamon rolls and cookies greeted the Amateurs when the doors opened at 8 am.

SMART participants explore the latest Nova Scotia Public Safety and Field Communications vehicle.

There were 90 Amateurs who registered online before the event and 85 attended. We also had two walk-ins for a total of 87 Amateurs. Classes began at 9 am in two separate rooms and ran smoothly throughout the day thanks to Yvon Hachey, VE1VON, who kept the presenters to their allotted time and prepared the rooms for each class.

Classes were shutdown during lunch hour between 12 noon and 1 pm for the very popular WestCumb ARC Barbecue. Kevin Burke, VE1KEV (President of the WARC), Mike Masters, VE1XDT (Vice-President) and Robert Mannette (who is now studying for his Amateur certificate) worked the barbecues and did a great job throughout the hour. Treva Hebb and Jo-Ann Reynolds changed hats and gave out the burgers, hot dogs and soft drinks to the nearly 100 Amateurs, volunteers and maintenance workers who helped out during the day.

During the break many Amateurs took the opportunity to explore the latest Nova Scotia Public Safety and Field Communications (PSFC) vehicle which was brought up to the event thanks to Al Cycles, VE1CYP. Also at this time the new "Out of Trunk" fleamarket was active with many Amateurs making deals buying and selling. Before heading back in for afternoon classes all Amateurs surrounded the PSFC vehicle and a group picture was taken as shown above. In addition, Mike Johnson, VE1MWJ (Cumberland REMO Manager) showed off the county's drone and took pictures of the group from overhead.

At 1 pm classes began again and continued till after 5 pm when the final classes from CANWARN and Radio Amateurs of Canada

were presented. Thanks to Bob Robichaud, VE1MBR, from the Atlantic Storm and Prediction Centre in Dartmouth for presenting the CANWARN course.

Other presenters included Jean-Paul Leblanc, VE9BK, Bernie Cormier, VE9BGC, Steve Frost, VE9SF, Brent Taylor, VY2HF, Sean Bridge, VE1XOP, Al Penney, VO1NO, Jerry Arsenalault, VE9CD, Jim Fisher, VE1JF, Tom Sisk, Mike Masters, VE1XDT, Bill Karle, VE1YY and Dave Goodwin, VE9CD.

I would like to thank the organizing committee for another great event: Mike Johnson, VE1MWJ, Kevin Burke, VE1KEV, Bernie Cormier, VE9BGC, Yvon Hachey, VE1VON and George Dewar, VY2GF.

We would also like to thank the County of Cumberland, Heather Laurie (Event Coordinator at the Community Centre), Joel Stone, Donald Bird, John Parsons and other staff for the use of the building and all their help throughout the day and making us feel at home.

Thanks also to all the Amateurs who registered and made it to the event. Without your support this would not have happened. Last but not least a big thank you to Treva Hebb and Jo-Ann Reynolds for looking after the Registration table and also helping to feed the hungry Amateurs at lunchtime. Greatly appreciated.

Plans are underway for the 2018 SMART which is tentatively scheduled for April 28, 2018. Keep checking the SMART webpage on the WestCumb ARC website <http://www.westcumb.ca/s-m-a-r-t> or the link from the Maritime Amateur website <http://www.maritimeamateur.ca/>

Bernie Leaker, VE7BR, presented with British Columbia Volunteer Award



Submitted by Ed Frazer, VE7EF

On April 6, Bernie Leaker, VE7BR, was presented with the 2017 Public Safety Lifeline Volunteer Award in Radio Communications. The award was presented by the Honourable Naomi Yamamoto, Minister of State for Emergency Preparedness for British Columbia, on behalf of Emergency Management BC and North Shore Emergency Management (NSEM). The ceremony was hosted by the Director of NSEM, Mike Andrews, VE7MPA, at their facilities in North Vancouver.

At the presentation, Nina Leemhuis, Chief Administrative Officer for the District of West Vancouver, representing the three communities who jointly sponsor and operate the North Shore Emergency Management, described the importance of volunteers in supporting the Emergency Program. The final speaker was Ed Frazer, VE7EF, who conveyed congratulations to Bernie from Radio Amateurs of Canada, the British Columbia Amateur Radio Coordination Council and his fellow Amateurs of the North Shore Amateur Radio Club.

Minister Yamamoto described Bernie's contributions as a volunteer with the North Shore Emergency Management Emergency Radio Communications team. Since 1998, he served several roles as radio operator, exercise planner, radio station manager and has been acting as a volunteer Deputy Radio Coordinator for the past four years.

Bernie participated in numerous exercises and training opportunities and provided operational radio support during the major 2005 Escarpment landslide in North Vancouver and other large disaster responses. Over the years, Bernie also provided free first-aid training for North Shore volunteers, a role he performs professionally on a part-time basis. He also served for many years in Director and leadership roles with the North Shore Amateur Radio Club of North Vancouver and is currently serving as its President, a role he has held since 2014.

Bernie worked for 35 years in various technical capacities with Translink, the Vancouver-area transit system. He retired in 2011 to spend more time with his family and his hobbies of hiking, cycling, traveling and, of course, Amateur Radio!

Bernie grew up on the North Shore where he met Diane, his wife of 36 years. They have a son and a daughter, both grown.

RAC SIMULATED EMERGENCY TEST

SATURDAY, OCTOBER 14



Note: In Ontario the Simulated Emergency Test will be held on Saturday, October 14 but at Emergency Operations Centres that are located in Municipal offices, that can't get access on the weekend, the SET will also be held on Wednesday, October 11.

This nationwide exercise is the chance to test your emergency operating skills and the readiness of your communications equipment and accessories in an emergency-like deployment.

RAC Field Organization Leaders at the Section and local levels, along with many other volunteers who are active in public service and emergency communications, are developing simulated emergency scenarios in consultation with served agencies.

To find out how you can step up and be a part of the local or Section-level activities, contact your Section Manager. You can find contact information for all RAC Section Managers on page 4 of any issue of *The Canadian Amateur*. Additional contact information may also be found on the RAC website.

The Amateur Radio Emergency Service (ARES) and the National Traffic System (NTS) and members of the RAC Field Organization will participate and practise emergency operation plans, nets and procedures.

The RAC Simulated Emergency Test is an ideal opportunity to demonstrate the capabilities of Amateur Radio.

Community and public service agency officials will learn first-hand by taking a role in the SET and by providing an objective evaluation afterwards from their perspective. Have designated stations originate messages on behalf of served agencies. Test messages may be sent simulating requests for supplies. Simulated emergency messages (just like real emergency messages) should be signed by an authorized official.

Formulate your plans around a man-made or natural simulated disaster. Possible scenes could be: a flood; a serious fire; a severe ice storm; a missing person; a serious accident (automobile, bus, aircraft); a broken gas line; or any other imaginable disaster. Elaborate on the situation by developing a scenario to be implemented during the SET.

In consideration of local and Section-wide schedules with agencies and many others, RAC Field Organization Leaders have the option of conducting their local or Section-wide SET on another weekend in the fall season. Check with your local RAC Field Organization leadership for the exact date in your particular area. Your help is needed and the RAC SET is a great way to get involved in emergency communications.

For more information on guidelines, preparing and reporting for a SET, forms for RAC Field Leaders are posted on the RAC website at:

<http://wp.rac.ca/simulated-emergency-test/>

Montreal ARC provides support to Annual St. Patrick's Day Parade

Matt Salenius, VE2MTA

The St. Patrick's Society of Montreal held its 194th annual St. Patrick's Day Parade in downtown Montreal on Sunday, March 19. The parade consisted of over 100 floats, vehicles and marching bands and took over two hours to pass along Saint-Catherine Street downtown. This is an annual celebration of Irish culture, music and dancing.

It has been the practice for many years for the Montreal Amateur Radio Club (MARC) to participate in this event by providing radio communications on the street and to the St. Patrick's Society headquarters Control Station at Le Nouvel Hôtel & Spa.

A commercial trunk communication system was used as primary since it allowed interoperability with other participants including parade marshals, professional security personnel and the Montreal Police Headquarters. We also had Amateur Radios tuned to local repeaters and simplex channels for private communication between Amateurs.

The commercial trunk system was supplied by Access Communications Company of Montreal and was operated by MARC members.

The control base station was located at the Irish Society's headquarters at the hotel and was manned by Marc-Andre Gingras, VE2EVN, Jim Hay, VE2VE and Joe Glover (member and representative of the Irish Society of Montreal).

Steven Faguy, VA2SMF and Matt Salenius, VE2MTA, walked with the parade on the street and reported the progress of the parade to the Control Station at the hotel.

This event was a classic example of Amateur Radio service to the community at its best.

The weather was ideal and much milder than in past years, which brought out a record size crowd and the streets were packed full of onlookers including several political dignitaries in the VIP review stand.

There were a few minor incidents when bystanders on the street were hit by snow falling from rooftops and medics were called to the scene but fortunately no serious injuries occurred.

The St. Patrick's Society of Montreal were extremely grateful for MARC assistance and offered all participants "traditional Irish liquid refreshments" when we returned to the hotel headquarters after the event.

We look forward to participating again in next year's St. Patrick's Day Parade (and to take in more "traditional Irish liquid refreshments").

Note: This article previously appeared in the April 2017 issue of the Montreal ARC's MarcOgram and is being reprinted with their permission. Thanks Nora! http://www.marc.qc.ca/mgram/2016_2017/mgram-201704.pdf



The control station was located at St. Patrick's Society headquarters at Le Nouvel Hotel and was equipped with three base station units and was manned by Marc-Andre Gingras, VE2EVN (at left), Joe Glover and Jim Hay, VE2VE.



Robbie Blatt of Access Communications Company handed out the portable radios to the Parade Marshals and participating Amateurs.



The layout of the control base station at Le Nouvel Hotel shows the three independent trunked radios and communication log sheets. The control base radio readout display (top photo in left column) shows our channel as "Security 2" and it also shows the ID of a portable street radio currently being received. The portable HTs that we used while following the parade (bottom photo in left column) were equipped with a GPS tracker system which displayed their exact location on a city map on a laptop computer. The communicators at the control station could see our exact location.

THE SPORTS PAGE

— THE CANADIAN CONTEST SCENE

Is Field Day a Contest...



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This topic has been

debated many times over the years, with strong arguments for both sides.

On one hand, we make lots of QSOs, call "CQ Field Day". We exchange a small bit of information: a signal report and our respective ARRL section. We keep a log of our QSOs and submit our respective scores to the sponsor. At the end of it all, results are posted, and winners are announced.

The argument goes: it *sounds* like a contest, it *looks* like a contest, therefore it probably *is* a contest.

On the other hand, logs are not submitted, just check sheets. There is no cross-checking and there is no post-contest log report of how we did.

The ARRL – the sponsor of the event – does not refer to Field Day as a Contest, rather as an "Operating Event". ARRL sponsors a number of contests so they should have a pretty important say in the matter.

My take on it is this: it does not matter if Field Day is a contest or not. It is an opportunity to get on the air, make some contacts and have fun doing it.

A few years ago I had an interesting conversation with a fellow contester at Dayton and he offered his take on the matter.

As testers, we could go to Field Day, sit down at the radio and make lots of QSOs. After all, that *is* what we do. It would help our respective team make a big score and help them "win" or at least place well in the standings. At the same time, it would miss a lot of what Field Day has to offer. He pointed out that many well-known testers first got hooked on contesting at Field Day! It was their first opportunity to run stations, learn logging, how to install antennas and what to do when things don't work as expected. Since Field Day was not a contest, there was not the usual pressure to do well. Instead, other operators were able to mentor the new folks, and offer suggestions on how to improve. Chalk up another reason for "Field Day is not a contest". During a major contest, that same learning opportunity is not there – at least not if the team expects to submit a competitive score. He suggested, rather than going to Field Day with a contesting hat on, go as a mentor. See what issues others are having and use it as an opportunity to pass along knowledge to others.

How would this work? Consider for a moment that you have probably installed a few antennas over the years. Some worked well and some not so well. Even when an antenna failed to work as expected, you learned from the experience. After a few years, you can probably look at an antenna and offer a reasonable expectation of how well it will perform, even before it is installed, based on your personal experience. A 40 metre dipole, 10 feet off the ground mounted horizontally will not be a great performer, no matter how well it has been installed. That same antenna mounted as a vertical or an inverted L – even with only one radial – will probably work much better. You could also offer advice on where to place various stations. Should the 15 metre station be located right next to the 40 metre station? Again, with your experience, you could suggest a better layout based on local terrain to minimize interaction issues between stations. Mounting some antennas horizontally, some vertically and installing antennas at right angles to each other will reduce coupling and unwanted interaction between stations. Lessons that we as testers have learned over the years.

Once the antennas are installed and the stations are ready to go, do the other operators need help copying the call signs and sections? As testers, we have lots of experience doing just that: copying call signs and exchanges under less than ideal conditions. By sitting down with other operators and offering whatever assistance they need, we can help them gain valuable on-air experience.

There are also a few hidden benefits that may not seem obvious at first glance. Other ops will have a chance to learn good operating procedures and techniques from you. That will increase *their* fun factor. By being part of Field Day, it will also up *your* fun factor and show others the fun we have contesting – even though Field Day is not a contest.

When I went to help out at Field Day in Winnipeg a few years ago, I also found some of the questions that were asked were not what I expected. As I pondered how to answer some of them, I found I had to dig deep into my own experience in order to offer an answer. Answering questions, helping out and being a mentor to others was a wonderful experience – one that I would challenge other testers to try at some point. If you remember back to your first contesting experiences, chances are someone helped get you started. Here is your chance to help the next generation of testers.

What if there is no local Field Day where you live, or it simply does not fit into your schedule? Get on the air and make some QSOs. Amateurs at other Field Day sites want to make contacts. Here is your chance to get on and have some fun.

Here are a few upcoming events in addition to those listed in the Contest Calendar on page 57.

The **IARU Region 2 ARDF Championships and combined USA National ARDF Championships** will take place from July 31 to August 6 near Cincinnati, Ohio. These will be the 17th USA Championships and the 9th for IARU Region 2. The OH-KY-IN Amateur Radio Club is organizing the event. Radio orienteers from the US and abroad will participate in foxing, sprint, 2-metre, and 80-metre competitions. Individuals of any age are invited to participate; no Amateur Radio certificate is required. Practice sessions will take place the first three days, followed by the competitive events. American winners of the 2017 events will be considered for inclusion on ARDF Team USA and may have the opportunity to travel to the ARDF World Championships in Korea in September 2018. For more information visit <http://ardfusa.com/2017-championships/>

The **14th IARU World HST Championship** will be hosted by the Hungarian Radio Amateur Society. In 1995, the International Amateur Radio Union entrusted the Hungarian Radio Amateur Society with organizing the first High Speed Telegraphy World Championship, held in Siofok, Hungary. After 22 years, Hungarian Amateurs will once again host this event in September 2017 and are inviting the world's best telegraphers to show their skills and knowledge at the competition. It will be held in Esztergom, Hungary from September 8 to 12. For more information visit <http://hst2017.org/en/introduction>.

– 73, Tom, CG3CX



IARU HF WORLD CHAMPIONSHIP 2016

Call	QSO	Mult	Category	Score
VY2ZM	2,458	248	SOMIX HP	2,331,200
VE3AT	2,316	210	SOMIX HP	1,731,240
VE3EJ	2,124	236	SOMIX HP	1,700,616
VA2WA	1,745	267	SOMIX HP (U)	1,628,433
VE3UTT	1,882	203	MSHP	1,312,598
VO1MP	1,251	201	SOCW HP (U)	949,725
VA2EW	1,376	189	SOMIX LP	919,674
VE3DZ	1,391	177	SOMIX HP	818,979
VE3EID (N2WQ, op)	1,189	153	SOCW HP	621,639
VO1TTT (VE9AA, op)	922	171	SOMIX LP	533,178
VA7AAA	1,315	119	SOMIX HP	520,625
VE3XB	962	145	SOCW HP	432,970
VE3CX	1,261	110	SOMIX HP (U)	431,090
VE3BR	757	118	SOMIX LP	267,506
VE3RZ	496	141	SOCW HP (U)	215,166
VA3DF	440	142	MS LP	199,652
VE1DT	429	142	SOCW HP (U)	185,878
VE3IAE	452	102	SOCW LP	144,228
VA2EN	375	122	MS HP	139,202
VE3AXC/2	602	59	SOMIX HP (U)	138,060
VE3VN	350	123	SOCW LP	133,824
VE3FJ	400	94	SOCW HP	126,712
VE3NE	523	73	SOMIX HP (U)	122,421
VE3FH	394	102	SOCW LP	117,096
VE6EX	563	56	SOMIX LP	94,808
VE2FK	462	60	SOCW HP (U)	90,480
VE1WOW	274	102	SOPH LP (U)	89,046
VE7KW	387	70	SOMIX HP	81,410
VE2ZT	377	49	SOCW LP	63,357
VE2NTT	322	61	SOPH HP (U)	62,952
VA3MJR	229	101	SOCW LP (U)	61,711
VE3VV	211	91	SOCW HP (U)	55,055
VE3OM	191	86	SOCW LP	53,234
VE5MX	298	50	SOMIX HP (U)	49,300
VE2HIT	217	75	SOPH LP	47,175
VA7ST	322	49	SOCW LP	47,040
VE3MM	207	61	SOCW HP (U)	40,931
VA2ES (VE2AXO, op)	172	74	SOCW LP	39,664
VA3ZLNQ	187	68	SOPH HP	38,420
VE3TW	204	56	SOMIX LP	34,496
VE1JBC	166	48	SOCW HP	24,960
VE3ZY (VE3FFK, op)	185	46	SOCW LP	24,794
VA3GD	118	60	SOPH LP	21,000
VE6VS/3	145	51	SOCW LP	20,859
VE1SQ	113	52	SOPH LP	19,812
VE7JH	174	36	SOCW LP	19,080
VA3TPS	135	42	SOPH LP	17,178
VE3KTB	127	46	SOPH LP	16,606
VO1HP	112	47	SOCW LP	15,792
VE2GT	113	46	SOPH LP	15,226
VA3SB	115	40	SOCW QRP	14,440
VA2SG	165	28	SOCW LP	14,140
VA3IX	105	37	SOPH LP	12,691
VE2GHI	144	24	SOCW LP	10,176
VE3QN	79	43	SOPH HP (U)	10,105
VA3QV	117	28	SOMIX QRP	9,884
VE3GNI	80	43	SOPH HP	9,116
VA1MM	97	28	SOCW LP	9,100
VE6TK	101	28	SOCW LP	8,764
VE7IO	93	33	SOCW HP (U)	8,679
VE9BWK	81	35	SOCW QRP (U)	8,505
VE6SH	312	0	AC LP	7,752
VE3YV	73	31	SOPH LP (U)	7,037
VA3NGE	75	31	SOPH LP	6,541
VE1OP	87	23	SOCW HP (U)	6,509
VO1BQ	58	33	SOPH LP	6,204
VE2QV	65	31	SOCW LP	5,797
VE6KC	57	32	SOCW LP	5,088
VA7MM	54	23	MS LP	4,186
VE3IGJ	90	15	SOCW QRP	4,050
VE3MDX	48	27	SOCW LP	3,888
VE3JSQ	42	21	SOMIX LP	3,654
VE3CV	46	19	SOCW LP	2,736
VE3DQN	38	25	SOCW LP	2,550
VE7BGP	36	17	SOMIX LP	2,040
VA3PCJ	32	22	SOCW QRP	1,892
VE3LJQ	37	14	SOPH QRP	1,554
VA3FN	25	16	SOCW LP	1,136
VA3KVI	34	11	SOPH LP	1,122
VA2RIO	28	11	SOMIX LP	946
VE9OA	24	12	SOMIX LP	912
VE5DLDD	30	7	SOMIX QRP	644
VE1NSS	22	7	SOCW LP	476
VE2VIA	17	8	SOCW LP	424
VE3AJ	11	6	SOCW LP	186

AC – Administrative Council; U – Unlimited

RSGB IOTA CONTEST 2016

Call	QSO	Mult	Class	Score
XL2I	1906	255	IOTA DXPN M2 MIX 24H HP	3,689,850
VE3UTT	323	171	World SOA CW 12H HP	701,784
VE7ACN/7	789	73	IOTA FIX SOA MIX 24H HP	410,625
VY2OX	252	110	IOTA FIX SOU CW 24H HP	309,100
VE0ERC	497	36	IOTA DXPN SOU SSB 12H LP	111,060
VE3IAE	192	57	World SOU CW 12H LP	78,945
VE3MV	110	59	World SOA MIX 12H LP	69,620
VE3FH	131	53	World SOU CW 12H LP	63,494
VE3FJ	65	49	World SOU CW 12H HP	47,138
VE1DT	106	41	IOTA FIX SOA CW 12H HP	43,050
VE3BR	57	47	World SOU MIX 12H LP	38,352
VE3DZ	55	38	World SOU CW 12H LP	26,410
VA2AM	57	38	World SOA MIX 12H HP	25,080
VE7JH	201	20	IOTA FIX SOU CW 12H LP	24,900
VA2NDX	200	17	IOTA FIX SOU CW 12H LP	20,910
VE7YU	77	24	IOTA FIX SOU CW 12H LP	15,480
VA2EI	44	26	World SOA MIX 12H LP	13,442
VE2ZT	48	25	World SOU CW 12H LP	12,800
VE3CX	55	25	World SOA MIX 12H HP	12,500
VE2GT	43	22	World SOU SSB 12H LP	10,758
VE2NTT	51	21	World SOA SSB 12H HP	10,059
VE1ANU	34	23	World SOA CW 12H LP	9,637
VE1SQ	40	21	World SOU SSB 12H LP	8,778
VA6CV	40	18	World SOA SSB 12H HP	6,588
VE2FK	36	19	World SOA CW 12H HP	6,555
VE7BC	61	13	World SOU SSB 12H LP	3,952
VE6WZL	27	11	World SOU SSB 12H HP	2,596
VE5MX	12	10	World SOA CW 12H HP	1,800
VE9BWK	31	9	World SOA CW 12H LP	1,728
VE1NSS	15	8	World SOU CW 12H LP	1,176
VE7BGP	14	6	IOTA FIX SOU MIX 12H LP	780
VA3GUY	12	5	World SOU CW 12H LP	445
VE7/G0TPH/P	7	1	IOTA DXPN SOU CW 12H QRP	45

CQWW VHF CONTEST 2016

Call	QSO	Mult	Category	Grid	Score
VA2NQ/R	129	71	Rover	FN45 FN35	11,289
VE3SMA	111	65	Multi-Op	FN05	9,685
VE7IY	164	49	Single Op All	CO70	8,477
VE3DS	103	59	Single Op All	FN03	7,965
VE3EJ	99	53	Single Op All	FN03	5,883
VA3NW	99	43	Multi-Op	FN04	5,805
VE3KY	101	57	Single Op 6 Metres	FN25	5,757
VA7FC	131	41	Single Op All	CN79	5,576
VA3DX	72	35	Single Op 6 Metres	FN03	2,520
VE3IQZ	52	36	Single Op All	FN04	2,484
VE3RX	43	31	Single Op All	EN96	1,395
VE3EDY	35	25	Single Op 6 Metres	EN83	875
VA3QWW	29	27	Single Op All	FN04	837
VE2DSB	23	19	Single Op All	FN35	665
VE1SKY	23	22	Single Op All	FN74	616
VA2EW	30	19	Single Op 6 Metres	FN35	570
VE3VHB	24	23	Single Op 6 Metres	FN24	552
VE7AFZ/R	29	16	Rover	CN99 CN89	512
VA3WU	23	14	Single Op All	FN03	504
VE3VN	26	18	Single Op 6 Metres	FN25	468
VA3SY	23	15	Single Op 6 Metres	FN25	345
VE2HAY	15	8	Single Op All	FN35	208
VA2EN	16	11	Single Op All	FN35	198
VE3OIL	14	10	Single Op All	EN93	180
VE3JDF	14	11	Single Op All	FN02	154
VE2ZT	15	10	Single Op 6 Metres	FN35	150
VA1AVR	12	8	Single Op 6 Metres	FN74	96
VE3EG	9	8	Single Op All	FN05	80
VE9CB	3	3	Single Op 6 Metres	FN65	9
VE2GT	2	2	Single Op 2 Metres	FN36	8
VE3FJ	3	1	Single Op 6 Metres	FN03	3

MARCONI MEMORIAL HF CONTEST

Call	QSO	Mult	Class	Score
VE1OP	41	21	SOLP	4,221
VE1DT	30	21	SOHP	2,772
VE3IPS	3	2	SOLP	18

HAWAII QSO PARTY 2016

Call	QSO	Mult	Class	Score
VE7CV	19	15	SOLP Mix	615
VE3CWU	9	8	SOLP Mix	160
VA3RKM	4	4	SOLP CW	40
VE2GT	2	2	SOHP Mix	4

WAE DX CW 2016

Call	QSO	Mult	QTC	Category	Score
VY2ZM	1,788	524	1,793	SOHP	1,876,444
VE3AT	1,505	502	1,525	SOHP	1,521,060
VA2WA	1,439	523	1,408	SOHP	1,488,981
KL7SB/VY2	1,395	489	1,409	SOHP	1,371,156
VE9AA	1,150	473	1,168	SOLP	1,096,414
VA2EW	1,162	458	1,170	SOLP	1,068,056
VE3DZ	1,183	426	1,184	SOHP	1,008,342
VE3RZ	688	343	691	SOHP	472,997
VE2BWL	576	273	589	SOHP	318,045
VE3CX	383	319	399	SOHP	249,458
VE3UTT	421	261	427	SOHP	221,328
VE7JH	536	193	546	SOHP	208,826
VE3FJ	396	197	392	SOHP	155,236
VE3IAE	243	164	247	SOLP	80,360
VO1MP	195	187	202	SOHP	74,239
VE9BWK	167	141	177	SOLP	48,504
VE3OSZ	142	148	146	SOLP	42,624
VE1ANU	128	215	64	SOLP	41,280
VE2FK	186	109	186	SOHP	40,548
VE5MX	177	108	185	SOHP	39,096
VA7ST	117	123	120	SOHP	29,151
VE7IO	134	89	148	SOHP	25,098
VE3TW	80	99	82	SOHP	16,038
VE6EX	96	63	120	SOLP	13,608
VE9OA	78	82	81	SOLP	13,038
VA3SB	64	80	70	SOLP	10,720
VE2QV	55	68	56	SOLP	7,548
VE7RK	68	52	71	SOHP	7,228
VE3MV	83	69	0	SOLP	5,727
VO1AW	83	66	0	SOLP	5,478
VE3HEU	45	44	46	SOLP	4,004
VE2JR	31	52	0	SOHP	1,612
VE7BGP	22	26	0	SOLP	572
VE1NSS	6	15	0	SOLP	90

DL-DX RTTY 2016

Call	QSO	DXCC	Area	Class	Score
VE2FK (VA2RAC, op)	199	41	22	SO	156,240
VE2EBK	126	34	21	SO-6HR	83,325
VE6TK	140	22	24	SO	69,000
VE2NMB	90	22	18	SO-Dipole 6HR	39,400
VE3UTT	56	22	5	SO-6HR	22,275
VA7ST	76	10	18	SO	21,560
VA6YMM (VE6FRM, op)	36	16	4	SO	10,340
VE3AJ	35	8	13	SO	7,770
VA2MVC	9	1	6	SO	630

SCC RTTY CHAMPIONSHIP 2016

Call	QSO	Mult	Class	Score
VA2UP	206	123	SOAB HP	69,864
VE2CQ	228	115	SOAB HP	64,860
VA2ES	165	92	SOAB LP	40,112
VE3IAE	121	77	SOAB LP	24,024
VE5MX	148	61	SO20	22,875
VE6TK	105	68	SOAB LP	17,544
VA3SB	58	45	SOAB LP	5,670
VE2NMB	45	32	SO40	3,360
VE7BGP	22	20	SOAB LP	1,220
VE9BWK	19	19	SOAB LP	817

NCJ JULY NORTH AMERICAN QSO PARTY, RTTY 2016

Call	QSO	Mult	Class	Score
VA3DF	485	127	SOAB LP	61,595
VE3JI	384	118	SOAB LP	45,312
VE3TW	392	102	SOAB LP	39,984
VE3KI	319	101	SOAB LP	32,219
VE3CX	301	91	SOAB LP	27,391
VA3MRJ	272	100	M2	27,200
VE3MGY	243	92	SOAB LP	22,356
VA7ST	194	82	SOAB LP	15,908
VE7FO	170	75	M2	12,750
VA2QR	169	69	SOAB LP	11,661
VE3WPV	156	62	SOAB LP	9,672
VE2ZT	148	58	SOAB LP	8,584
VE7IO	137	51	SOAB LP	6,987
VA7AM	122	47	SOAB LP	5,734
VE3NRT	85	52	SOAB LP	4,420
VA5LF	76	51	SOAB LP	3,876
VA3SB	56	29	SOAB QRP	1,624
VE7BGP	38	29	SOAB LP	1,102
VE2EBK	43	25	SOAB LP	1,075
VE7FCO	36	21	SOAB LP	756
VE2EZD	19	16	SOAB LP	304

NCJ AUGUST NORTH AMERICAN QSO PARTY, CW 2016

Call	QSO	Mult	Class	Score
VE3EJ	866	191	SOAB LP	165,406
VE3CX	773	148	SOAB LP	114,404
VE3KI	722	158	SOAB LP	114,076
VA3DF	570	145	SOAB LP	82,650
VE4EA	584	127	SOAB LP	74,168
VE2FK	489	99	M2	48,411
VE3MGY	417	113	SOAB LP	47,121
VE9AA	394	116	SOAB LP	45,704
VE3VN	341	110	SOAB QRP	37,510
VE3UTT	360	100	SOAB LP	36,000
VA3EC	318	111	SOAB LP	35,298
VE3GFN	313	94	SOAB LP	29,422
VE7FO	317	91	M2	28,847
VE5SDH	287	90	SOAB LP	25,830
VE2ZT	247	96	SOAB LP	23,712
VE3DZ	246	90	SOAB LP	22,140
VE3MV	246	80	SOAB LP	19,680
VE7IO	224	78	SOAB LP	17,472
VA7ST	198	79	SOAB LP	15,642
VE3FJ	169	65	SOAB LP	10,985
VE3DQN	104	67	SOAB QRP	6,968
VA3RKM	112	60	SOAB QRP	6,720
VE9CB	97	57	SOAB LP	5,529
VA3PCJ	96	56	SOAB QRP	5,376
VE3AYR	97	50	SOAB QRP	4,850
VA3ATT	122	37	SOAB LP	4,514
VE7YU	122	37	SOAB LP	4,514
VE3HG	92	48	SOAB QRP	4,416
VA3FN	75	46	SOAB LP	3,450
VE3XD	56	33	SOAB QRP	1,848
VE7BGP	41	27	SOAB LP	1,107
VE3NRT	41	22	SOAB LP	902
VA3WR	36	23	SOAB QRP	828
VE2VIA	28	23	SOAB LP	644
VE2QV	21	14	SOAB LP	294
VO1BQ	15	8	SOAB LP	120
VE6JF	11	6	SOAB LP	66
VA7AD	5	4	SOAB QRP	20
VE2SSS	4	3	SOAB LP	12

NCJ AUGUST NORTH AMERICAN QSO PARTY, SSB 2016

Call	QSO	Mult	Class	Score
VE3CX	909	154	SOAB LP	139,986
VY2TT (K6LA, op)	645	105	SOAB LP	67,725
VA3DF	425	110	SOAB LP	46,750
VA3TIC	187	61	SOAB LP	11,407
VE3TW	157	62	SOAB LP	9,734
VE9OA	183	47	SOAB LP	8,601
VA7XNL	116	59	SOAB LP	6,844
VE3KTB	129	51	SOAB LP	6,579
VE3MXJ	85	47	M2	3,995
VE3IAE	88	34	SOAB LP	2,992
VE4DRK	72	38	SOAB LP	2,736
K2NV/VE3	61	36	SOAB LP	2,196
VE2HIT	61	33	SOAB LP	2,013
VE3AYR	64	28	SOAB LP	1,792
VE7BGP	40	29	SOAB LP	1,160
VE2GT	45	24	SOAB LP	1,080
VE3KJQ	43	20	SOAB QRP	860
VE7FCO	30	20	SOAB LP	600
VE3TU	27	17	SOAB LP	459
VA7AM	24	17	SOAB LP	408
VE7JRS	17	12	SOAB LP	204
VA3RKM	13	11	SOAB QRP	143
VE2PDT	14	10	SOAB LP	140
VE9CB	12	11	SOAB LP	132
VE8GER	13	8	SOAB LP	104

KANSAS QSO PARTY 2016

Call	CW	PH	DIG	Score
VE7CV	120	67	85	42,090
VE7JH	122	26	91	38,138
VE9AA	86	30	64	20,452
VE5KS	49	23	49	9,457
VA3ATT	60		44	7,920
VA3PCJ	20	6	21	1,512
VE2GT		33	18	1,288
VA3RKM	8		7	168
VE3YT	5		5	75

OHIO QSO PARTY 2016

Call	CW Q	CW Mult	SSB Q	SSB Mult	Class	Score
VA3EC	22	18			SOLP	792
VE7JH	15	10	2	2	SOLP	384
VE2GT			21	14	SOHP	224
VA3PCJ	5	4	5	5	SO QRP	135

CONTEST CALENDAR FOR JULY, AUGUST AND EARLY SEPTEMBER 2017

Contest Name	Start	End	Web Address
RAC Canada Day Contest	0000Z Jul 1	2359Z Jul 1	http://wp.rac.ca/canada-day-contest-rules/
Venezuelan Ind. Day Contest	0000Z Jul 1	2359Z Jul 1	http://yv5rcv.org/reglasindep.aspx
FISTS Summer Slow Speed Sprint	0000Z Jul 1	0400Z Jul 1	http://fistsna.org/operating.html#sprints
DL-DX RTTY Contest	1100Z Jul 1	1059Z Jul 2	http://www.drcg.de/dldxrtty/dl-dx-rtty-english.html
Marconi Memorial HF Contest	1400Z Jul 1	1400Z Jul 2	http://www.arifano.it/contest_marconi.html
Original QRP Contest	1500Z Jul 1	1500Z Jul 2	http://www.qrpcc.de/contestrules/oqrpr.html
FISTS Summer Sprint	0000Z Jul 8	0400Z Jul 8	http://www.fistsna.org/operating.html#sprints
IARU HF World Championship	1200Z Jul 8	1200Z Jul 9	http://www.arrl.org/iaru-hf-championship
DMC RTTY Contest	1200Z Jul 15	1200Z Jul 16	http://digital-modes-club.org/index.php/en/dmc-rtty-contest
North American QSO Party, RTTY	1800Z Jul 15	0600Z Jul 16	http://www.ncjweb.com/NAQP-Rules.pdf
CQ Worldwide VHF Contest	1800Z Jul 15	2100Z Jul 16	http://www.cqww-vhf.com/
RSGB IOTA Contest	1200Z Jul 29	1200Z Jul 30	http://www.rsgbcc.org/hf/rules/2016/riota.shtml
10-10 Int. Summer Contest, SSB	0001Z Aug 5	2359Z Aug 6	http://www.ten-ten.org/index.php/activity/2013-07-22-20-26-48/qso-party-rules
European HF Championship	1200Z Aug 5	2359Z Aug 5	http://lea.hamradio.si/~scc/euhf/euhfcrules.htm
North American QSO Party, CW	1800Z Aug 5	0600Z Aug 6	http://www.ncjweb.com/NAQP-Rules.pdf
WAE DX Contest, CW	0000Z Aug 12	2359Z Aug 13	http://www.darc.de/referate/dx/contest/waedc/en/rules/
Maryland-DC QSO Party (Part 1)	1600Z Aug 12	0400Z Aug 13	http://mdcqsoparty.w3vpr.org/Documents/Maryland_QSO_Party_Rules_2014.pdf
Maryland-DC QSO Party (Part 2)	1600Z Aug 13	2400Z Aug 13	http://mdcqsoparty.w3vpr.org/Documents/Maryland_QSO_Party_Rules_2014.pdf
SARTG WW RTTY Contest	0000Z Aug 19	1600Z Aug 20	http://www.sartg.com/contest/wwrules.htm
ARRL 10 GHz and Up Contest	0600* Aug 19	2400* Aug 20	http://www.arrl.org/10-ghz-up
North American QSO Party, SSB	1800Z Aug 19	0600Z Aug 20	http://www.ncjweb.com/NAQP-Rules.pdf
Hawaii QSO Party	0400Z Aug 26	0400Z Aug 28	http://www.hiqsoparty.org/Rules/HQP/HQPRules.html
SCC RTTY Championship	1200Z Aug 26	1159Z Aug 27	http://lea.hamradio.si/scc/rtty/rttyrules.htm
YO DX HF Contest	1200Z Aug 26	1200Z Aug 27	http://www.yodx.ro/en/english
Kansas QSO Party (Part 1)	1400Z Aug 26	0200Z Aug 27	http://ksqsoparty.org/rules/KSQPRules2016.pdf
Kansas QSO Party (Part 2)	1400Z Aug 27	2000Z Aug 27	http://ksqsoparty.org/rules/KSQPRules2016.pdf
Ohio QSO Party	1600Z Aug 26	0400Z Aug 27	http://www.ohqp.org/index.php/rules/
All Asian DX Contest, Phone	0000Z Sep 2	2400Z Sep 3	https://www.jarl.org/English/4_Library/A-4-3_Contests/2017AA_rule.htm
Colorado QSO Party	1300Z Sep 2	0400Z Sep 3	http://ppraa.org/coqp
Tennessee QSO Party	1800Z Sep 3	0300Z Sep 4	http://tnqp.org/rules/
MI QRP Labour Day CW Sprint	2300Z Sep 4	0300Z Sep 5	http://www.qsl.net/miqrpclub/contest.html
WAE DX Contest, SSB	0000Z Sep 9	2359Z Sep 10	http://www.darc.de/referate/dx/contest/waedc/en/rules/
ARRL September VHF Contest	1800Z Sep 9	0300Z Sep 11	http://www.arrl.org/september-vhf
North American Sprint, CW	0000Z Sep 10	0400Z Sep 10	http://ncjweb.com/Sprint-Rules.pdf

Note: In the above chart an * indicates Local Time. For more contest information check out these sites: <http://www.hornucopia.com/contestcal/>; <http://www.contesting.com>; <http://www.sk3bg.se/contest/>; <http://www.arrl.org/contests/>; <http://www.arrl.org/contests/calendar.html>; <http://www.arrl.org/dxcc>; http://www.cq-amateur-radio.com/cq_contests/index_cq_contests.html. The "Contest Calendar" 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.

ARRL 10 GHz AND UP 2016

Call	QSO	Calls Wdk	Distance Pts	Category	Score
VE3SMA	85	31	9,923	UP	13,023
VA3ELE	77	22	9,141	10G	11,341
VE3WJ	54	22	5,196	UP	7,396
VE3MSC	41	18	4,488	10G	6,288
VE3FN	20	14	3,562	UP	4,962
VE3NYZ	24	16	1,978	10G	3,578
VE3OIL	17	7	2,679	10G	3,379
VE3EG	22	7	2,252	UP	2,952
VE2JWH	9	7	1,982	10G	2,682
VE3KH	18	6	1,558	10G	2,158
VE4MA	5	4	94	UP	494
VE2GT	3	2	162	10G	362

SARTG WW RTTY CONTEST 2016

Call	QSO	Mult	Class	Score
VA2UP	614	161	SOAB HP	1,282,365
VE3FJB	396	82	MO	446,490
VE2FK	271	68	SOAB HP	240,040
VE7IO	261	72	MO	218,160
VE6RAJ/XE3	219	79	SOAB HP	193,945
VA3MJR	180	87	SOAB LP	192,705
VE6TK	199	63	SOAB LP	146,160
VA7ST	151	67	SOAB LP	117,920
VE2NMB	123	65	SOAB HP	93,925
VE3FJ	99	40	SO 20	55,600
VA7AAA	97	35	SOAB HP	39,025
VE5MX	79	32	SO 20	28,640
VE3WPV	45	33	SOAB LP	18,975
VA7XNL	28	25	SOAB LP	9,500
VE7SAR	30	25	MO	8,625
PT7BL/VE3	10	10	SO 20	1,750

BRITISH COLUMBIA/YUKON:

SM Acting Bill Gipps, VE7XS
 A/SM Ron McFadyen, VY1RM
 A/SM Neil King, VA7DX
 STM Al Ross, VE7WJ
 SEC Gursimran Gill, VA7GUR
 SEC Terry Maher, VY1AK (Yukon)
 OBM Bill Foster, VE7WWW
 OOC: Dennis Wight, VE7IJJ
 ACC: Karla Wakefield, VA7KJW
 Web: <http://wp.rac.ca/ares-british-columbia/>

MARCH-APRIL SM REPORT:

In my last report I provided an update on the Distracted Driving front and think it is important enough to repeat it. The Province of British Columbia completed their stakeholder engagement and published a new document which clearly spells out we can use "push to talk" buttons, on our Amateur Radios, while operating in our motor vehicles. Once again, thanks for everyone's patience and input!

You can find link to that document along with links to regulations throughout Canada on the RAC website at <http://wp.rac.ca/distracted-driving-regulations-update/>. I encourage you to print it out and keep a copy with your driver's licence in your glove box.

Ed Frazer, VE7EF, reports that on April 6, Bernie Leaker, VE7BR, was presented with the 2017 Public Safety Lifeline Volunteer Award in Radio Communications.

The award was presented by the Honourable Naomi Yamamoto, Minister of State for Emergency Preparedness for British Columbia, on behalf of Emergency Management BC and North Shore Emergency Management (NSEM).

The ceremony was hosted by the Director of NSEM, Mike Andrews, VE7MPA, at their facilities in North Vancouver.

For more information please see the article in the Public Service / ARES column on page 51.

Public Service Honour Roll

March:

VE7XLH: 111; VA7MPG: 101;
 VE7GN: 140; VE7WJ: 81;

April:

VE7XLH: 140; VE7GN: 120;
 VE7WJ: 88; VA7MPG: 310.

– Bill Gipps, VE7XS

MESSAGE FROM THE RAC COMMUNITY SERVICES OFFICER

Working within the Incident Command System

My CSO Message in this issue of TCA provides information about working in an Incident Command System (ICS) environment. This is a summary for use by ARES personnel and it is intended to provide only a basic understanding of terminology and concepts associated with ICS. It does not replace or supersede formal ICS training in your region provided by your served agencies.

During smaller incidents, a subset of ICS's full structure will likely be used. In some regions, ICS is modified or combined with other protocols and there are significant deviations from standard ICS practices.

About ICS

The Incident Command System is an organizational system, which is used to help manage planned or unplanned events that require a response by emergency service or disaster response personnel to minimize loss of life or damage to property or natural resources.

The system features a standardized approach to incident management, a modular, scalable organizational structure and common terminology and practices. It develops from the top down, based on the size and complexity of the incident. In fact, ICS is used to manage incidents ranging from small, everyday events, to massive disasters.

The system increases the efficiency and effectiveness of mutual aid while maximizing safety and minimizing opportunities for confusion. It also provides for an orderly escalation, if needed. ICS can be scaled up to include several thousand people without compromising effective supervision.

Unified command

The Incident Commander (IC) sits at the top of the IC organizational structure. The IC manages the incident and defines operational objectives. The IC has overall responsibility for the incident, though some duties may be delegated to others.

Unity of command

Unity of command means that each worker has only one supervisor. This eliminates confusion and the possibility of conflicting orders.

Span of control

Span of control means that no one individual is required to supervise or manage more than seven other individuals (and, ideally, only five).

Chain of Command

Chain of command means that there is a clear line of authority, with lower levels subordinate to and connected to higher levels. In most cases, the chain of command consists of:

- Command
- Resource

As responses expand, the chain of command also expands to include, from the top down:

- Command
- Sections
- Branches
- Divisions or groups
- Units
- Resources



CFSO Doug Mercer, VO1DTM
 Email: vo1dm@rac.ca
 (see page 4 for contact info)

Unified command and multiple jurisdictions

Unified command allows multiple jurisdictions to agree on objectives and strategies. ICS makes this possible without any loss of authority, responsibility or accountability.

Under unified command there is only one IC for any event and a single, coordinated Incident Action Plan (IAP) is used which includes the following elements:

- What are the objectives of the team or what do we want to do?
- Who is responsible for accomplishing what tasks?
- How does the team communicate?
- What is the team safety plan or how do we take care of the injured?

One Operations Section Chief will have responsibility for implementing the IAP.

One Incident Command Post (ICP) will be established.

In my next CSO Message we will continue with "Working within the Incident Command System".

I hope you are enjoying the summer with your family.

Doug Mercer, VO1DTM
 Community Services Officer

ALBERTA:

SM: Garry Jacobs, VE6CIA
 SEC: Brian Davies, VE6KCK
 STM: Jack Humphries, VE6JRH
 OO: Don Momen, VE6JY
 Web: <http://wp.rac.ca/ares-alberta-yellowknife-nwt/>

MARCH-APRIL SM REPORT:

Lloydminster and Area ARES Dwayne Friedrick, VE6FRD

The Sask Alta Radio Club (SARC) continued to be actively involved in the local Emergency Measure Operations (EMO) stakeholders' meetings. We did a presentation on Winlink capabilities, which included a demonstration that also

showed the automation that one of the members had developed for filling in the ICS 213 form. Part of the presentation also included the SARC coverage map. We are currently inventorying our members capabilities for 2m voice, digital and HF phone to be provided to the local EMO for planning.

In expanding our local emergency communications services, we have established a communications asset to share with the regional hospital. We continue to develop this as another communications backup between the local hospital and the EMO centre. This link will be set up for digital use.

The SARC had an information table at a local trade show to generate interest with the public for new members and ARES. We demonstrated radio to text message capabilities. Hopefully we will have some new Amateurs in the future.

The SARC network was expanded with an additional repeater at the Moose Mountain tower site north of Elk Point. This is giving our network very dependable access into the Cold Lake Alberta area. Our ARES weekly nets are now having steady checkins from that area.



Peace Country Amateur Radio Club ARES (PCARC-ARES)

Lee Johnson, VE6XE

We have had only one callout this year, but it usually increases as summer activities increase. In 2016, we were on eight searches where we provided communications and also used APRS to track those out in the field. APRS is greatly appreciated by the search personnel as it allows them to keep track of where everyone is as well as to conduct a more coordinated search.

The one search we were called out for was east of Spirit River almost to the British Columbia border which is quite common for us to be at a distance from Grande Prairie. There is no repeater access in a lot of these areas that we are in. To get around this problem we have gone to PACTOR for our long-range communications. We have a truck with a unit on it that allows us to use VHF, UHF, HF and AIR frequencies with air popup masts on the back. There is also a completely equipped 26-foot trailer as a second base. The truck, trailer and base in Grande Prairie are equipped with PACTOR 4 units and work very well.

We usually train about twice a month and have so far put in about 200 hours this year.

We were at Slave Lake on April 29 for the "Provincial Scale Mock Search" with both the truck and trailer and five Amateur operators. We supplied communications for about one-half of the searchers on the exercise. We usually work with Technical Search and Rescue (TSR) in Grande Prairie and supply all of their communications. We were very surprised to find that we were the only ARES group or any communication group in the whole of Alberta that were at a provincial-wide exercise. The operators who were at Slave Lake were: VE6NOC, VE6KJG, VE6MJC, VE6ATC and VE6XE.

Red Deer and Area

Stephen Lee, VA6SGL

The exercise connecting Red Deer Red Cross station VE6RCR and Medicine Hat Red Cross station VE6RCM, during their respective disaster management meetings in each location in March, went well. Contact was made via IRLP first, then we moved to 80 metres. There was no detectable voice either way on HF, but switching to CW worked out and contact was established in both directions proving it is a useful mode when the bands (or maybe antennas) are poor. The Red Cross staff and volunteers were appreciative of our demonstrating what we could

provide them in a disaster, if other communications were affected.

Thanks for the reports from all those who responded.

– SM Garry, VE6CIA

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).
ECs: Ron Willisroft, VE4QE (Selkirk and District); Bill Boskwick, VE4BOZ (RM of Grey, RM of Dufferin & Town of Carman); Jason Coombe, VE4JYC, (Brokenhead ARES); EC Grant Delaney, VA4GD (LGD of Pinawa and surrounding municipalities)
Web: <http://wp.rac.ca/ares-manitoba/>

MARCH-APRIL SM REPORT:

Well we missed the bullet on this year's spring flooding but I see that other parts of the country did not. The Winnipeg ARC's Spring Fleamarket was held on Sunday, April 23 at Heritage Victoria Community Centre, 950 Sturgeon Road in Winnipeg. This is a great event and many thanks to the organizers and volunteers. I was one of the sellers this year and had a lot of fun. The only problem is that I was too busy to visit with others. Summer is upon us so that means severe weather will be on the horizon. Let's all hope for a safe and enjoyable summer.

Education Report

Rob Striemer, VE4SHS

Twenty-five students wrote the basic qualification exam on Saturday, March 25 and 21 students passed with honours (80%+). This is a tremendous result! Only one student did not pass and he was very close. Congratulations to a dedicated group of students. We hope to hear you on VE4WPG very soon.

Among the four high school students who certified are two international students who attend Shaftesbury High School. Diego and Matteo, from Spain and Italy respectively, now have Canadian call signs. Students and teachers from River East Collegiate and Garden City Collegiate also received their call signs. These schools are part of the growing number of schools with high altitude balloon (HAB) projects that use Amateur Radio (APRS) for tracking their high-flying science and engineering experiments (see page 18 for more information).

Peter and Rob briefed the students on the importance of RAC, WARC, MRS and ARES. Cary Rubenfeld,

VE4EA, briefed the students on HF and DX. Bill Fleury, VE4BEF, provided the students with passes to the Manitoba Amateur Radio Museum (MARM).

Thanks are due the BSC13 course instructors: Adrian Deakin, VA4AMD, Rob Striemer, VE4SHS, Don Menzies, VE4DFM, Peter Toth, VE4TTH, Bruce Feaver, VE4BDF, Mark Havens, VE4MWH and Bob Jacobs, VE4RCJ. A special thank you is extended to Mark who came through with short notice and Bob who gave up two Saturdays (as usual), teaching and administering the exam. Another special thank you goes to Catherine Birch, the Principal of Shaftesbury High School who, in essence, provided us with the venue. She looked after the paperwork involved in booking the classroom and providing the IT and custodial services at no cost to WARC and the students. Finally, I'd like to thank David Rosner, VE4DAR, for all his help and encouragement during my stint as Chief Instructor. Thanks David!

Winnipeg ARES

Jeff Dovyak, VE4MBQ

Thanks to Walter Bezpalko, VE4VB, for reprogramming our Kenwood UHF Mobile yet again (MER frequency change). Thanks to Glen Napady, VE4GWN, for reprogramming our dual-band HTs for the same reason and thanks to Don Gerrard, VE4DWG, for reprogramming some radios at VE4EMO.

Fifteen Amateur operators provided support for the Scouts Canada Klondike Derby at Camp Amisk on March 4-5. The open water condition of the Lasalle River required several route/checkpoint relocations and provided a level of reality that is most often absent – usually the river is still frozen. Thanks to Richard Kazuk, VE4KAZ, for coordinating the event.

Our volunteers were VE4s: JAH, MWH, DXR, TRO, WX, JFK, CLK, CIB, CDM, GWB, FDM, GWN, SIG, TTH and KAZ.

We participated in a planned activation of VE4EMO on Friday, March 10. One of our goals was to check connectivity with rural EOCs that are Amateur Radio equipped or Amateur Radio capable. Unfortunately, the HF antenna at VE4EMO was broken so no HF testing could be carried out on exercise day. Only the municipal EOC in Winkler was staffed and there was an ARES member parked outside the municipal EOC in Springfield. A replacement HF antenna has arrived at VE4EMO so another test will be arranged. Participants were VE4s: GLS, NQ, AOG, CRK, ADS, DWG and MBQ.

Sixteen Amateurs representing four communities took in Spotter Training on Saturday, March 18 in Morris. Thanks to Warning Preparedness Meteorologist Natalie Hasell and Decision Support Meteorologist Robyn Dyck for presenting the training session. Thanks to Morris Volunteer Fire Department for letting us use the Firehall for our session and thanks to Gord Snarr, VE4GLS, for getting everything organized. Door Prizes were donated by CoCoRaHS (Tiffany Taylor) and Environment & Climate Change Canada (Natalie Hasell). Laminated wallet cards covering "What to Report" and the unlisted 1-800 number were provided by Winnipeg ARES (Jim Sutton).

Participants were: VA4s: CQD, PNO and RAD. VE4s: WX, SO, MHZ, NQ, DJS, VD, HQ, GKS, CDM, SIG, VID, GLS and MBQ. 2017 Spring Flood Operations have not called on Winnipeg ARES or any other ARES unit in Manitoba. Several Winnipeg ARES members offered or loaned contingency equipment (power supplies and antennas). Thanks to VE4s: RDO, GWB, SE and DLA.

A few ARES members in Manitoba volunteered for GO Teams and VE4EMO but were not pressed into service. Thanks to VE4s: VID, PER, SIG, HAZ and JNF.

Thanks to Mark Havens, VE4MWH, who was willing to be part of a contingency team for a Reception Centre. We had equipment for setting up three temporary stations but were never tasked by the City of Winnipeg Emergency Preparedness Program.

Personally, I was logging in to WebEOC multiple times per day to keep a handle on provincial operations.

Hamish Donaldson, VE4JDH and his crew looked after the Winnipeg ARES Silent Auction at the recent WARC Fleamarket. Thanks to table staff VE4s: YYL, MMW, PEH and JDH.

Thanks to the following donors: St. John Ambulance; Reliance Products; Micro HighTech Communications; Tom and Ruth Mills, VE4SE and VE4XYL; Glen and Rosi Napady, VE4GWN and VE4YYL; Hamish Donaldson, VE4JDH; and Nicki Albus, VE4MMW.

The winners of the four lots were: Greg Bilinsky, VE4GMB; George Scott, VE4GWS; Ed Oakes, VE4OAK; and Kent Haase, VE4KEH.

Greg Jabusch from Run2Believe attended our April General Meeting to provide a thumbnail sketch of the September 10 event and to take in a Winnipeg ARES meeting (Greg is a prospective Amateur).

Jack Peters, VA4PNO, took a very serious subject, Triage, and provided us with a very entertaining but very educational presentation at our April General Meeting.

— Jan Schippers, VE4JS

Traffic Totals

March: 0

April: 3

ONTARIO NORTH:

SM: Allan (Al) Boyd,

VE3AJB

ve3ajb@vianet.ca

STM: Patrick (Pat)

Dopson, VE3HZQ

dopsonp@vianet.ca

SEC: Stiig Larsen

VE3LBX

slarsen@vianet.ca

OBM: Paul Caccamo,

VA3PC

va3pc@ciinet.org

Web: <http://ontario.racares.ca>

MARCH-APRIL SM REPORT:

Killarney District

Manitoulin Island and North Shore

Of the 40 registrants for the recent Basic Amateur Radio course hosted by the Manitoulin ARC in the First Nation community of Aundeck Omni Kaning, on Manitoulin Island, 22 sat the exam with 21 successfully achieving their goal of obtaining their Amateur certification. Al Boyd, VE3AJB, Chief Instructor; Rusty Auxier, VE3WVA, Assistant Instructor; Jim McLean, VE3LJM, Course Coordinator; Lorraine McLean, VE3LMJ, Assistant Coordinator; and Pat Dopson, VE3HZQ, Technical Assistant.

We would also like to acknowledge Roger Lloyd, VA3REL, for donating the VHF HT unit for the draw, and the following Amateurs for their support during the course: Mike Maciuk, VE3UKI, Mike Bauer, VE3OLC, Brian Dixon, VE3BHD, Herne Steelegrave, VA3HWS, Martin Connell, VA3MFC and George Dickieson, VE3GMD.

If I have omitted someone's name, it is not intentional as there were so many who did visit. From this group of successful Amateurs, 16 elected to join the Manitoulin Amateur Radio Club, swelling our membership total to 131.

— Allan Boyd, VE3AJB

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DECs Reporting:

VA3s: PC

VE3s: JX and LJM

ECs reporting:

VA3s: AJV, SPT

VE3s: EGC, LJM, OTL, MXJ, SUT

ONTARIO – GREATER TORONTO AREA:

SM: Rick Harrison, VA3NV

SEC: Rick Harrison, VA3NV

MARCH-APRIL SM REPORT:

GTA ARES quarterly meetings continue to be well attended. These meetings provide an opportunity for management teams from each of the 13 ARES groups in GTA to meet and discuss past events, upcoming events, public service opportunities and training activities. Reps from ARES teams outside of GTA regularly attend giving us the opportunity to get to know neighbouring groups that we may be working with should a large-scale disaster befall us.

CANWARN season and the related training sessions are approaching. This is a very valuable program and provides assistance and valuable real-time information to Environment Canada. Amateur clubs, ARES teams and individual Amateurs should consider attending a training session and becoming involved.

The GTA Section's upcoming annual Spring Simulated Emergency Test is scheduled for Saturday, May 27 this year. While

each participating ARES team will be testing their ability to provide communications for their served agencies we will be further exploring the use of HF. Given that the GTA Section is geographically quite small we've never entertained the idea that HF would be useable in emergency operations locally. However, recent tests on 40 and 60 metres using NVIS antennas seem to indicate otherwise. We will continue to investigate.

GTA West – DEC Kevin Andrews, VA3KRA

See the Halton and Peel reports below.

Halton Region

Burlington ARES – EC Kevin Andrews, VA3KRA

The Burlington ARES EC attended both the Burlington ARC general and Board of Directors meetings in March and April and provided ARES reports at each meeting.

On March 5, Burlington ARES was one of five different radio groups who assisted with communications for this year's Chilly Half Marathon. The event raised funds for the Joseph Brant Memorial Hospital. 27 radio operators from the various groups took part. Both repeater and simplex operations were conducted. A total of 2,351 runners took part in the half-marathon and 744 runners participated in the associated 5K run. In addition to regular event communications Net Control handled three 911 calls and dispatched four minor medical calls to participating St. John ambulance units.

Thanks to the following operators who helped: Gary, VE3TTO, Rob, VA3WXR, Mark, VA3FLC, John, VA3BL, Joan, VE3JNX, Jack, VE3ITM, George, VE3OGP, Bob, VA3RHH, Shawn, VA3MFD, Peter, VA3PRE, Glenn, VE3CEZ, Janusz, VE3OKZ, Peter, VA3PRS, Judy, VA3JDA, Dave, VA3DDA, Phil, VE3RD, Stan, VA3SBB, Paul, VE3EQB, Rod, VE3ISO, Ken, VA3PRF, Jeff, VE3COJ, John, VE3JLE, Tom, VA3TM, Tomas, VE3FKN, Hugh, VA3AYR, Rick, VA3NV and Kevin, VA3KRA.

The Burlington EC attended the South Halton ARES meeting on March 19 and the Halton Region Emergency Communications Team meeting on March 29.

Burlington ARES participated in four Hamilton ARES nets, four Burlington ARC nets and four HRECT nets in March.

South Halton ARES (Oakville/Milton) – EC George Davis, VE3OGP

South Halton ARES (SHARES) members volunteered time and

radio equipment in support of the Chilly Half Marathon held in Burlington on March 5.

The SHARES monthly meeting was held on March 19. Discussion topics included plans for Field Day, the use of social media to disseminate information and the GTA Spring SET.

SHARES reps attended the March 29 HRECT meeting.

Four South Halton ARES nets were held in March. SHARES members also participated in four Halton Region Emergency Communications Team (HRECT) nets that took place in March.

Peel Region

Brampton/Caledon ARES – EC Richard Upfield, VA3RMU

Brampton ARES conducted five nets in March and four nets in April.

Mississauga ARES – EC Brian Herling, VE3XBH

Mississauga ARES held their meeting on March 16 at the Red Cross Ontario Zone office in Mississauga. A summary of the recent GTA ARES quarterly meeting was presented. Additional discussion topics included the GTA spring SET and provision of communications for the Mississauga MS Walk and the JDRF Walk.

The group set up an ARES display and a demonstration of digital modes at the HAMEX fleamarket on March 18.

Their April meeting was held at the Red Cross OZONE office on April 20. Locations for NCS and HF operations for the GTA Spring SET were decided upon. Additional details about the two upcoming public service events were considered and upcoming CANWARN training dates and location information was provided to attendees. The distracted driving/Bill 118 situation was discussed.

A new Winlink/digital net will be held on the first Tuesday of each month following the Mississauga ARC net.

ONTARIO EAST:

SM: Michael Hickey, VE3IPC
Email: ve3ipc@gmail.com
SEC: Michael Hickey, VE3IPC
STM: Vacant
OBM: Vacant
Web: <http://wp.rac.ca/ares/>

MARCH-APRIL SM REPORT:

I do hope April was not too wet for you. In Eastern Ontario and other parts of Ontario, including some parts of Western Quebec, we experienced "monsoon" rain in April and May. Rivers were very

high with breaking records and the ground was fully saturated with rain. It is a wonder that there were so few mudslides reported. With the help of several volunteers, many families fought to save their homes from the very high Ottawa River and others. Now that summer is finally here let's hope we have warmer and drier times.

I trust that many of you participated in Field Day. Great fun, much camaraderie and good food is the normal course of the 48-hour annual event. I hope your Field Day experience involved overcoming challenges from which your club/group gained from lessons learned that you can put into practice for a better experience next year. May you all have a great fun-filled summer.

ARES EmComm Group reports:

*Submitted by Ottawa ARES
AEC Mike, VE3FFK*

The **Ottawa ARES/EMRG Group** conducted their monthly repeater test on March 1. All repeaters checked out fine. Test time was about 70 minutes. This was longer than usual due to the high turnout: Dave, VE3KMV (net controller), Don, VA2EEK, Tyler, VA3DGN, Tim, VA3PYC, Jeremy VA3ZTF, Jean, VE2OCQ, Sandy, VE3AAC, Roger, VE3NPO and Geoff, VE3YCB. Tracy, VA3TXN and Donna, VA3TTE, were at Ottawa Red Cross, with GC Richard, VE3UNW.

The Red Cross radios worked on some repeaters but not on others. The problem appears not to be RF but wrong tone settings. GC Richard, VE3UNW will arrange to fix this. The group's local packet systems were also working as usual.

The repeater test on April 5 also went well, with usual minor anomalies. Participants were: Dave, VE3KMV (net controller), Tim, VA3PYC, Mike, VA3TEC (at Ottawa Red Cross), Tracy, VA3TXN, Jeremy, VA3ZTF, Jean, VE2OCQ, Paul, VE3CPH, AEC Mike, VE3FFK (also at Ottawa Red Cross) and Stuart, VE3SMF. After some quick reprogramming, The Red Cross radios seem to be working well, except for some interference on UHF, suspected to be from a commercial radio system nearby.

AEC Mike, VE3FFK, adds that on April 29 some coverage testing was done in preparation for the Lanark Highlands Forest Rally event on May 6 and 7. This year, instead of just being on the same weekend as the CN Cycle for the Children's Hospital of Eastern Ontario, the two events run on the same day. It will be interesting to see how well Amateurs can support two simultaneous events.

*Submitted by RCW-ARES
GC Bob, VE3YX*

The **Renfrew County West (RCW)-ARES Group** Coordinator reports that the group held five Wednesday evening ARES nets in March and four in April, all at 9 pm.

In March GC Bob, VE3YX, sent letters to municipal CEMCs in the RCW-ARES area asking for letters of ARES support to send to RAC's North/East Director Allan Boyd, VE3AJB, to use in support of RAC's efforts to pressure the Ontario Ministry of Transportation to create a permanent exemption for Amateurs in the distracted driving legislation.

On April 19, the Joint Traffic Control Centre for the Nuclear Plan held a setup exercise inside the Petawawa Civic Centre. The exercise didn't involve any communications with the outside world, however, RCW-ARES took the opportunity to set up a voice/packet station and send a few messages. It was our first use of a new antenna that we installed on the Civic Centre last summer. As a result, RCW-ARES now has antennas at two widely separated areas in the Civic Centre allowing the group members to be conveniently located for different uses of the centre. All went well and we were able to use the voice and digital repeaters on VE3NRR, VE3STP, VA3RBW and VE3UCR. RCW-ARES members in attendance were: Dwight, VE3ZLO, George, VE3GPD and GC Bob, VE3YX.

*Submitted by Northumberland
ARES GC Paul, VE3KBI*

On March 22, the **Northumberland County ARES Group** met with the members of the Tri-County Amateur Radio Club for our first meeting of the year which was held in Madoc. At the meeting there were discussions on the training of ARES members that will start later this spring. It was suggested that practical field exercises be combined within the training. All members agreed that this should be done.

ARES members will be given their respective outlines on the upcoming courses in order for them to research some of the background that will be necessary for the courses.

In regard to the Northumberland ARES repeater, members were informed that Brian, VE3HQR and GC Paul, VE3KBI, have now linked the 2 metre and 70 centimetre repeaters that allow connections through the Internet to other repeaters. The 2 metre duplexer was fine-tuned to allow better reception from greater distances. The transmit side of the repeater will be fine-tuned at a later date.

Additional firefighters and members of the public are also participating in online training to become Amateur Radio operators and hopefully members of the ARES group.

*Submitted by SD&G-ARES
GC Earle, VE3IMP*

The **Stormont, Dundas & Glengarry (SD&G)-ARES Group** Coordinator (GC) reports that the Ontario Bulletins continue to be read each Monday, at 7 pm local, on the club's 2m net conducted on VE3SVC (147.180 MHz+). Amateurs are also asked to then check in on the VE3MTA (UHF) repeater. Occasionally we also call for checkins on a new ARES repeater located in Cornwall (VE3VSW) and VE3SVR in Morrisburg. This process confirms the serviceability of nearby SVARC repeater systems at least once a week should they be required by SD&G ARES.

The GC also reports that for the 5th year, SVARC/SD&G ARES was asked to participate and support St. John Ambulance Brigade 103 Cornwall with communications for the 45th Annual Raisin River Canoe Race. The Race was originally scheduled for Sunday April 2 but was delayed for one week as there was still ice in the river above Martintown and above the finish line in Williamstown.

Fourteen club members operated the various Checkpoints and assignments interacting with other agencies including South Glengarry Fire Department and the Ontario Provincial Police. Those volunteering from SVARC were: Ed, VE3EAH, Elizabeth, VE3EZH, Doug, VE3HTR, Leonard, VE3OLB, Stan, VA3JSF, Hermanna, VE3UNV, Hal, VE3HWG, Andre, VA3RDI, Art, VE3AIH, Suzan, VE3EXN, Chris, VA3CRR, Don, VA3NC, GC Earle, VE3IMP and Tom VE3PVI. A post-race meeting was held on April 12 in Martintown.

– 73, Michael Hickey, VE3IPC

Districts Reporting:
Eastern Ontario and Severn ECs (GCs) or Assistants reporting: VE3FFK, VE3IMP and VE3YX.
DECs reporting: VA3LP.
OBS reporting: VE3YX, VE3FFK, VE3KII and VE3IQZ.

MARITIMES:

SM: Craig Seaboyer, VE1DSS

MARCH-APRIL SM REPORT:

The following report was provided by K. Scott Wood, VE1QD, about the Halifax Amateur Radio Club. Other clubs wishing to contribute reports, please forward them to ve1dss@rac.ca.

Halifax Amateur Radio Club

One of our hobby's most important functions is to provide emergency and public service communications under a variety of circumstances. In our Halifax region, with the Halifax Amateur Radio Club (HARC) acting as a Secretariat, there has recently been a reorganization of Amateurs from three local ARCs to provide these emergency services through a new organizational structure.

The Halifax Auxiliary Telecommunications Service, or Halifax ATS, is an operational vehicle through which we contribute to emergency telecommunications when a man-made or natural disaster strikes our community. This service is a joint effort in the Halifax Region of the Dartmouth, Halifax and Eastern Shore ARCs, and it functions under the direction of the Halifax Emergency Management Office. We are governed by Memoranda of Understanding between our respective Clubs and Halifax EMO as well as an articulation of operational relationships that are written into the Halifax Master Emergency Plan.

It is our responsibility to recruit, train and organize skilled telecommunications specialists. The training prepares our members to operate in a unique emergency management environment, using procedures that are understood by the wide range of agencies and services that will be involved in any real emergency.

The Amateur Radio community constitutes the core of the Halifax ATS, but may at times also include non-Amateur telecommunications operatives who act as coordinating links between various parts of the emergency management environment such as neighbourhood Joint Emergency Management (JEM) Sites.

Our HARC monthly meeting on May 17 dealt with the topic "Emergency Communications and Public Service as Key Drivers in the Growth of Amateur Radio". While the topic shed further light on the role of the Halifax ATS and how our membership can become involved, it also placed our role in a larger context related to the growth of Amateur Radio. I was the presenter.

Annually, many Club activities relate to providing communications for various events as a Public Service, e.g., the MS Walk-a-thon, MS Bike-a-thon, Ledwedge Car Rally, support for the scouting activities, etc. These events offer valuable practical experience for members as they develop the

communication's skills that will be needed in an emergency – and it is very good public relations for Amateur Radio!

Our establishment and operation of the Wireless Room at the Maritime Museum of the Atlantic (MMA) deserves special mention, since it is dedicated the role of radio communications at sea for both normal traffic and emergency communication purposes. Our display of vintage and modern gear and a number of interactive opportunities – such as learning enough Morse code to send one's name – have proved to be wildly popular with the thousands of people visiting the MMA. Our appearance several times each week continues to provide an opportunity to promote Amateur Radio and to emphasize the critical role it plays in emergency situations. The station, VE0MMA, can also serve as an important downtown communications node in an emergency.

*K. Scott Wood, VE1QD
Coordinator, Halifax Auxiliary
Telecommunications Service (ATS)
Email: scott.ve1qd@gmail.com or
ve1qd@rac.ca*

In the Public Service / ARES column on page 51, Jim Langille, VE1JBL, describes the 2017 Symposium of Maritime Amateur Radio Technicians (SMART), which was hosted by the WestCumb ARC in Amherst, Nova Scotia on Saturday, April 29.

This year's event was held at the Dr. Carson and Marion Murray Community Centre in Springhill, Nova Scotia. There were 90 Amateurs who registered online before the event and 85 attended. We also had two walk-ins for a total of 87 Amateurs.

Plans are underway for the 2018 SMART which is tentatively scheduled for April 28, 2018.

NEWFOUNDLAND-LABRADOR:

SM: Boyd Snow, VO1DI

MARCH-APRIL SM REPORT:

The end of March usually means that spring is near, but here in VO-land that does not always hold true. Our winters generally start a little later and end later than most. This year was no exception, and March saw some very nasty Wx hit the section.

The Island portion of the section started their VE100VIMY portable operations on March 5. Things had pretty much gone as planned, with lots of operators taking to the airwaves to mark the 100th Anniversary of the Battle of Vimy Ridge. Band conditions were very good starting the week, but worsened around mid-week.

The last day certainly played out as one never to be forgotten for sure.

The Baccalieu Amateur Radio Klub group were to operate on March 11, with a WX forecast calling for very high winds. The group had planned a get-together at the QTH of yours truly for that afternoon, to mark the end of the VO1 portable operation.

The morning was quite calm, the sun even came out and winds were very light. However, by early afternoon, the forecast came true. Winds in the 160-180 kph range battered the island. Power was out in many areas, including the area in which I live.

After making an emergency run to the local marina to save some boats from certain disaster, including my own, Dean, VO1VB and I returned to a powerless shack. We went to work getting the generators up and running and operated for several hours on emergency power. Dean even managed to put together a delicious pot of moose stew. All in all, we had a memorable end to the Vimy event here in VO1, with no damage at this QTH.

Other areas were not so lucky. Frank, VO1HP, reported that the tower for the VO1FN Transatlantic Beacon Receive site had come down in the wind. The Innova LFA-Q yagis were both damaged. While Frank was in France operating at Vimy, John, VO1BE and I repaired them both.

Doug, VO1DM, also reported that the tower at VO1BT repeater didn't survive either. The guys from the Society of Newfoundland Radio Amateurs (SONRA) have been at the site and made some temporary repairs until a new tower can be installed. There were no other communication breakdowns reported as a result of the storm.

There it is, as I have it, for this time around. Please remember that our wonderful hobby is meant to be enjoyed by all who participate. If there is a club or ARES group in your area, join in, or at least support their efforts. Please keep up the good work and keep the news coming.

– Boyd Snow, VO1DI

Newfoundland-Labrador

Traffic Totals

March

Cod Jigger Net: 347
Evening Traffic Net: 1097
VHF Caribou Net: 519

April

Cod Jigger Net: 378
Evening Traffic Net: 1068
VHF Caribou Net: 566



DISTANCE RECORD FOR APRS BY DAVE THOMSON, VA7THO

Dave Thomson, VA7THO, set a distance record for APRS (Automatic Packet Reporting System) on March 28. The contact covered a distance of 3,224 kilometres and was between VA7THO in White Rock, British Columbia and Jerry, W8LR, of Middletown, Ohio.



They each used a Kenwood TH-D72 and Arrow antennas. The International Space Station digipeater was the "go-between" at that time and ran at a frequency of 437.550, but has since returned to its usual frequency of 145.825. This is a great achievement from one of our own. Congratulations Dave!

APRS can be used to exchange messages via satellite, sometimes over long distances.

Dave is a member of the White Rock Amateur Radio Club in British Columbia. The *AMSAT Journal* will carry a note about VA7THO's record, possibly in the May/June issue.

A list of Satellite Distance Records can be found on the AMSAT website at http://www.amsat.org/?page_id=4751.

*Stuart Lyster, VA7QB/VA7CRH/VE6CRH
Secretary – White Rock Amateur Radio Club
White Rock, British Columbia (club call sign VE7DB)*

RAC FIELD ORGANIZATION REPORTS

National Traffic System (NTS) Net Reports

Net (Manager)	Sessions	QNI	QTC
March 2017:			
Alberta ARES	12	386	17
APSN (VA6IX)	31	1764	54
Aurora (VE7GBO)	31	2082	24
BCEN (VE7XLH)	31	254	9
BCYTN (VE7WJ)	31	370	21
CECA (VE7AKE)	4	64	5
MEPN (VE4JS)	31	614	0
MMWXN (VA4GD)	31	453	0
MRS (VE4HK)	9	290	0
MSMN (VE4AEW)	23	676	0
April 2017:			
Alberta ARES	8	151	17
APSN (VA6IX)	30	1654	54
Aurora (VE7GBO)	31	1802	21
BCEN (VE7XLH)	30	217	20
BCYTN (VE7WJ)	30	516	29
CECA (VE7AKE)	4	84	11
MEPN (VE4JS)	30	632	3
MMWXN (VA4GD)	30	506	0
MRS (VE4HK)	9	329	0
MSMN (VE4AEW)	20	636	0

ARTICLES WANTED

We would love to receive your articles – both non-technical and technical. Please send them to the TCA Editor at tcamag@yahoo.ca. The deadlines for the next issues of TCA are July 15 and September 15.

COMING EVENTS

THE HAMFEST AND FLEAMARKET CALENDAR

The following events are listed by date. Some dates and details are tentative. For more Hamfests and Fleamarkets please go to: <http://rac.eton.ca/events/upcoming.php>

54TH INTERNATIONAL HAMFEST

Date: Saturday, July 8.
Place: Beausejour, Manitoba; at the US Lodge in the International Peace Garden south of Brandon on the Canada-US border, ROE 0C0 PO Box 1011.
Description: Fleamarket, Rabbit Hunts, Mobile Judging, Homebrew Contest, Prizes, Food Concession, Sat night Dance, Free Saturday Lunch for those registered. Mike Cizek, W0VTT, will be checking QSL cards.
Cost: \$20 per person.
Info: Richard Holder, VE4QK, ve4ihf@mts.net 204-268-1702.
Web: www.internationalhamfest.ca

ONTARIO HAMFEST

Sponsor: Burlington Amateur Radio Club
Date: Saturday, July 8.
Time: Vendors use Robert Street Gate: Inside & Commercial Vendors 7 am, Tailgate Vendors 8 am; Public 9 am at Thomas Street Gate only.
Place: Milton, Ontario; 118 Robert Street.
Description: The Ontario Hamfest started in Elora Gorge in 1974 and has been at the Milton Fairground Location for the past 30 odd years. Great location, lots of room for Tailgaters, always something for the Radio Amateur, computer enthusiast or Hobby involving Electronics. Hamburgers, Sausage on a Bun, and Pop will be Available. As always, Coffee is Free.
Cost: \$8 per person; Children 12 or under admitted free with adult accompaniment. Inside Vendors \$8 per person plus \$20 per table. Tailgating Vendors \$8 per person plus \$8 per single width vehicle space. Pre-registration not required for Tailgating Vendors.
Talkin: 146.520 MHz.
Info: Public: ontariohamfest@barc.ca; Vendor tables: ontariohamfesttables@barc.ca.
Web: <http://www.barc.ca>

PARRY SOUND HAMFEST

Sponsor: Parry Sound Amateur Radio Club
Date: Saturday, August 12.
Time: Vendors 7:30 am; Public 8:30 am.
Place: Parry Sound/Nobel, Ontario
Description: Tailgate and indoor arena. Free coffee.
Cost: Indoor \$10 (includes table); Indoor \$7 (table not included); Tailgate \$5.
Talkin: VE3RPL 145.49 156.7 pl.
Info: Contact psarc@ve3rpl.com
Web: <http://www.ve3rpl.com>

SASKATCHEWAN HAMFEST

Sponsor: Parkland Amateur Radio Club Inc. and Saskatchewan Amateur Radio League
Date: Saturday, August 12.
Time: Public 9 am.
Place: Yorkton, Saskatchewan.
Cost: Public \$10 / Students Free. Register before May 31, only \$5. Tables \$15.
Talkin: 145.490- MHz (Yorkton Repeater) 447.500- MHz (Portable Freq. to be used at the Event).
Info: Contact Parkland_Amateur_Radio_Club_Inc@hotmail.com
Web: http://nonprofits.accesscomm.ca/parc/Sask_Hamfest_2017.html

SPARC-FEST 5

Sponsor: Sun Parlour Amateur Radio Club
Date: Sunday, August 13.
Time: 9 am.
Place: Leamington, Ontario; 1002 Mersea Road 4.
Description: 5th annual Hamfest of the SPARC and the only Hamfest west of London. Outdoor trunk sales, ham radio exams, a true small town friendly event! Annual SPARC summer BBQ.
Cost: Free admission.
Talkin: 146.970 MHz, 118.8 hz pl
Info: Bill, VE3ES, at ve3es@yahoo.com

9TH ANNUAL JUNK IN THE TRUNK HAMFEST

Sponsor: Ontario Swap Shop
Date: Saturday, August 26.
Time: 7:30 am to 11:30 am.
Place: Newmarket, Ontario; at the Newmarket Theatre parking lot, 505 Pickering Crescent.
Description: Bring any or all of your surplus radio related items only.
Cost: Public free admission; Vendors \$5 Per space per car; additional spaces \$5. All money is donated to the Theatre group.
Talkin: 146.520 Simplex or the local repeater 147.225.
Info: Contact Mike, VE3MKX, at mxx@bell.net.

VANCOUVER ISLAND HAM HAPPENINGS

Sponsor: Cowichan Valley Amateur Radio Society
Date: Sunday, August 27.
Time: Vendors: 8 am; Public: 9 am to 12 noon.
Place: Duncan, British Columbia; 2687 James Street, Island Savings Centre
Description: The largest Swap Meet on Vancouver Island. Commercial vendors, door prizes and refreshments.
Cost: Admission: \$5; Tables: \$15.
Talkin: 145.470 127.3.
Info: To reserve a table please email Gabor, ve7jh@rac.ca or call/text 250-715-8634.
Web: <http://www.cvars.com>

OTTAWA (CARP) 21ST ANNUAL HAMFEST

Sponsor: Ottawa Amateur Radio Club, Inc.
Date: Saturday, September 9.
Time: Commercial Vendors: 7:30 am Private Vendors: 8 am; Public: 9 am to 12 noon. RAC Annual General Meeting: 1 pm (tentative).
Place: Ottawa (Carp), Ontario; Carp Agricultural Fairgrounds, 3832 Carp Road, in the W. Erskine Johnston Arena at north end of the fairgrounds.
Description: The region's largest fleamarket and hamfest. All of the big Amateur Radio retailers are going to be there! Major door prize draws. Breakfast, coffee and snack concessions. Volunteer organizations and displays including RAC, ARES, QCWA, etc. Onsite Amateur Radio licence exams. Get your licence or upgrade during the hamfest! Note: if you are upgrading, bring the 11-digit certificate number on your licence to speed processing. We are also pleased to host the RAC Annual General Meeting (see pages 7, 8 and 11).
Cost: General Admission \$6; \$14/table (plus admission). Please book tables early to reserve your preferred table location.
Talkin: VE2CRA, 146.94-, 100 Hz
Info: Ed, VE3WGO; fleamarket@oarc.net.
Web: <http://www.oarc.net/fleamarket>



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VHARA SWAP MEET

Sponsor: Victoria-Haliburton Amateur Radio Association
Date: Saturday, September 16.
Time: Vendors 6:30 am; Public 9 am to 11:30 am.
Place: Bobcaygeon, Ontario; 96 King Street E., Bobcaygeon Legion, corner of Highway 36 and King Street.
Description: A new location for this years VHARA Swap Meet is the Bobcaygeon Legion. New and used Amateur Radio equipment and supplies. Ample parking, nearby.
Cost: Public \$5; Vendor \$17 for a 6-ft or 8-ft table. Payment in advance.
Talkin: 147.195 +.
Info: Bill, VE3WAH, at ve3wah@gmail.com.
Web: <http://www.vhara.ca>

LONDON ARC 40TH HAMFEST

Sponsor: London Amateur Radio Club Inc.
Date: Sunday, September 17.
Time: 9 am to 12 noon.
Place: Dorchester, Ontario; 4939 Hamilton Rd. at the Dorchester Fairgrounds.
Description: We will have food available at a cost. Back Bacon on a Bun for \$5. As well as coffee and muffins. We will also have a Bring and Buy table for selling one or two items for you.
Cost: Public \$8 admission; Tables \$7 and \$5 each for additional tables.
Talkin: VA3LON, 147.060 PL 114.8
Info: Contact: LARChamfest@gmail.com
Web: <http://www.larc.ca>

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ONTARIO NVIS EVENT

Sponsor: Peel & Ottawa Amateur Radio Clubs

Date: Sunday, September 24.

Time: 1 pm to 6 pm EDT

Description: The goal of the event is to make contacts and talk to other operators using NVIS techniques. No restrictions on operation, just get on the air and operate with your best NVIS antenna. Bands of interest are 40, 60, and 80, depending on conditions. We suggest this identifier when calling to make it easier to identify participants: CQ NVIS Ontario "call sign".

Talkin: SSB: 3.700-3.750, 5.3305, 5.3465, 5.3570, 5.3715, 5.4035, and 7.040-7.070
CW: 3.550, 5.3305, 5.3465, 5.3570, 5.3715, 5.4035 7.030.

Info: Visit the Peel Amateur Radio Club website at <https://ve3xr.wordpress.com/>
Email contact: parc.esec@gmail.com

Web: <https://ve3xr.wordpress.com/>

41ST YORK REGION HAMFEST

Sponsor: York Region ARC

Date: Saturday, November 4.

Time: Vendors 6:30 am to 9:30 am.

Commencing at 7:30 am a covered indoor admissions/socializing area opens for the general public, with free coffee and tea. Doors open to the sales area at 9 am.

Place: Markham, Ontario

Directions: <http://www.markhamfair.ca/canadas-largest-4-day-agricultural-fair-6/greetings/how-to-get-here/>

Description: Vendors galore, plus a separate hall for admissions and socializing. Breakfast available onsite. Free coffee and tea.

Wide aisles for scooters and wheelchairs.

Exhibits and demonstrations. Lots of parking.

A "WHISPER" (WSPR) FOR CANADA C3: COAST TO COAST TO COAST

An Epic Journey to Celebrate Canada and Connect Canadians: June 1 to October 28



A Canada 150 Signature project, **Canada C3** is a 150-day expedition (June 1 to October 28) from Toronto to Victoria via the Northwest Passage. It will inspire a deeper understanding of our land, our peoples and our country.

The Canada C3 organizers have kindly permitted a group of enthusiasts under the leadership of **Barrie Crampton, VE3BSB**, to install a WSPR (pronounced "whisper") beacon on the Canada C3 vessel, the *Polar Prince*. This provides a unique

opportunity to track the vessel on its 150-day sailing voyage around the Canadian coast – the longest coastline in the world.

Stopping at a different location every day, Canada C3 will visit 50 coastal communities, 36 Indigenous communities, 13 National Parks and 20 Migratory Bird sanctuaries. Canadians are encouraged to join the adventure as a virtual expeditioner, tracking the voyage online via website updates and museum hubs.



The WSPR project will be part of science experiments and research to be carried out on the voyage. The location and frequencies for the WSPR, CG3EXP, may be viewed at: <http://wsprnet.org/drupal/wsprnet/map>

Many of the locations to be visited by Canada C3 lie in areas where radio communication is difficult. Phenomena such as "arctic flutter" and disturbances from the aurora have traditionally been a problem in the north. Very few, if any, of these locations will have a WSPR beacon and are thus, until now, outside the worldwide WSPR network. The gathering of information on radio propagation simultaneously by several receiving stations will be of scientific interest – and it will also be fun. The WSPR network of stations meets this need comprising, as it does, a series of receiving sites and stations capable of reporting, in real time, the reception of, and location, of the beacons.

A tracking link, generated by QRP-labs, the supplier of the tracking hardware, has been activated. It is being hosted in Canada by Jeff Milne, VE3EFF, and can be found online at: <http://www.qrp-labs.com/c3.html>. The track will be shown on the map by a series of red dots to draw a continuous track line. The location is based on the smallest maidenhead grid square locator code.

Radio Amateurs of Canada is providing communications and operational support to the WSPR event organizers during the historic expedition. Stay tuned to the RAC website at <http://wp.rac.ca> for updates as the *Polar Prince* continues its journey from coast to coast to coast. For more information visit: <https://canadac3.ca>; https://twitter.com/canada_c3; and <https://www.facebook.com/CanadaC3/>.

Great door prizes. Grand Prizes. DXCC, WAS and VUCC Card Checking. Licensing Examinations (register with Hamfest Coordinator prior to the event to ensure we bring enough exams). **Cost:** \$8 admission for vendors and members of the general public. This includes a free door prize ticket. Children 12 of years of age and under are admitted free. Table rental is \$27 per table.

Talkin: VE3YRA 145.350 MHz(-) T: 103.5 Hz and VE3YRC 147.225 MHz (+) T: 103.5 Hz.

Info: Contact yrarc.hamfest@gmail.com

Web: <http://www.yrarc.org>

MAPLE RIDGE SWAP MEET

Sponsor: Maple Ridge Amateur Radio Club

Date: Sunday, November 5.

Time: Vendors 7:30 am; Public 9 am.

Place: Pitt Meadows, British Columbia; 12460 Harris Road. One block south of the Lougheed Highway in the old REC Building.

Open For pancake breakfast 8:AM

Description: Come one come all! Ham Radio & computer Swapmeet. The largest in the Fraser Valley. Great prices lots of stuff.

Pancake Breakfast 8 am to 9 am. The concession will remain open during the event.

Cost: Tables \$20 includes one entry and a chance to win a radio. Entry \$5 includes a chance to win a radio.

Talkin: 146.800 -600 + Tone 156.7.

Info: Call Nick 604 465-9476 or email ve7te@mrarc.net.

Web: <http://www.mrarc.net>

– Please let us know if your club has an upcoming Canada 150 event: tcamag@yahoo.ca –

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- 9 hours Operating time 1,950 mAh Li-Ion Battery
- Frequency Ranges: RX 136 - 174 MHz, 400 - 480 MHz + FM Broadcast 65 - 108 MHz
- TX 144 - 148 MHz / 430 - 450 MHz

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VHF Commercial Grade
2m Handheld Transceiver



**5 W 2m
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- Three TX Power settings (5 W / 2.5 W / 0.5 W)
- 9 hours Operating time 1,950 mAh Li-Ion Battery
- Frequency Ranges: RX 136 - 174 MHz and FM Broadcast band 65 - 108 MHz
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