

Canada's  
Amateur Radio  
Magazine

La Revue des  
Radioamateurs  
Canadiens

# THE CANADIAN AMATEUR

MARCH / APRIL – MARS / AVRIL 2020



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# TCA

The Canadian Amateur

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& APRIL  
2020

MARS  
& AVRIL

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*"Let me start, however, with a quick summary of the challenges we faced and what was accomplished. Recent advances in technology have made it possible for the practical use of sections of the radio spectrum which until recently were of little interest to users other than Radio Amateurs. This, of course, applies principally to a broad swath of the upper UHF and microwave ranges."*

– see page 28 for the rest of the story

*"The first international meeting to try to address this concern was held in 1903 and these meetings have continued in one form or another ever since. For a long time these conferences were organized for individual radio services – usually broadcasting – and were specific to certain regions of the world. However, international gatherings in which all users of the radio spectrum are participants date back to at least 1927."*

– see page 30 for the complete story

### ARTICLES WANTED

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

Please send them to the TCA Editor at [tcamag@yahoo.ca](mailto:tcamag@yahoo.ca).

The deadlines for the next three issues of TCA are March 15, May 15 and July 15.

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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.

**VA3LJU** – Linda Hardwick, of Hamilton, ON, at age 70, on October 20, 2019

**VA3SKF** – Sharon Fisher, of Dundas, ON, at age 78, on January 14, 2020

**VA7JGM** – Jim Mutrie, of Lions Bay, BC, at age 79, on December 23, 2019

**VE1ALY** – Fulton Green, of Blissfield, NB, at age 91, on January 13, 2020

**VE1ANH** – Bruce Smith, of Saint John, NB, at age 74, on December 15, 2019

**VE2MEH** – Marcel Blais, of Valleyfield, QC, at age 80, on December 2, 2019

**VE3AFB** – Vern Brown, of Kerwood, ON, at age 82, on December 5, 2019

**VE3BYD** – Ted Haynes, of Dorchester, ON, at age 83, on November 28, 2019

**VE3DFU** – Gil Finley, of Sarnia, ON, at age 94, on October 27, 2019

**VE3EBH** – Ebe Habing, of Brantford, ON, at age 88, on November 17, 2019

**VE3EBT** – David Tilley, of Ancaster, ON, at age 85, on October 9, 2019

**VE3EIX** – Harry Eix, of Elmira, ON, at age 90, on September 16, 2018

**VE3GE** – Wally Johnston, of Arnprior, ON, at age 88, on December 4, 2019

**VE3GGO** – Eric Olsen, of Cobourg, ON, at age 101, on January 11, 2020

**VE3HDR** – Ansil (Rocky) Rock, of Waterloo, ON, at age 71, on December 4, 2019

**VE3KAL** – Esko Laiho, of South Porcupine, ON, at age 92, on November 8, 2019

**VE3KHJ** – Jim Wickware, of Perth, ON, at age 70, on August 4, 2019

**VE3NQG** – Gordon Gibson, of Kitchener, ON, at age 82, on November 15, 2019

**VE3THQ** – Andre Desgroseillers, of Cornwall, ON, at age 81, on May 11, 2019

**VE3USO** – Don Jarvis, of Morrisburg, ON, at age 86, on May 9, 2019

**VE3XK** – Doug Leach, of Stittsville, ON, at age 81, on January 15, 2020

**VE4TLL** – Terry Lowen, of Winnipeg, MB, at age 77, on December 29, 2019

**VE4WEA** – Elliott Armstrong, of Winnipeg, MB, at age 80, on January 9, 2020

**VE6GRM** – George Morlidge, of Lloydminster, AB, at age 89, on March 15, 2019

**VE6NH** – Ed Back, of Kenai, AK, at age 91, on December 23, 2019

**VE6WCA** – Rene Matthijessen, of Boyle, AB, at age 76, on December 15, 2019

**VE7TRM** – Alan McKnight, of Kamloops, BC, at age 66, on December 11, 2019

**VE7WXN** – Bob Lowe, of Campbell River, BC, at age 72, on July 12, 2019

The following information has been corrected from the previous TCA:

**VA3BNC** – Robert Swift, of Elliot Lake, ON, at age 69, on May 31, 2019

**VE3CYZ** – Don Bunt, of Toronto, ON, at age 92, on October 16, 2019

**Note:** The list of Silent Keys is prepared by volunteers at RAC Headquarters. Please send obituary notices by email directly to [rachq@rac.ca](mailto:rachq@rac.ca) with a copy to: [ic.spectrumamateur-spectreamateur.ic@ic.gc.ca](mailto:ic.spectrumamateur-spectreamateur.ic@ic.gc.ca). For more information please visit: <https://www.rac.ca/silent-keys/>

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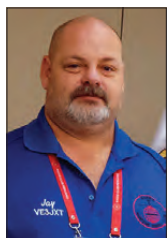
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**PRINCE EDWARD ISLAND**  
See the SM Nomination  
Notice on page 58 of the  
January-February 2020 TCA.

**QUEBEC**  
Vacant

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For complete Section News  
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# A MESSAGE FROM THE PRESIDENT / UN MESSAGE DU PRÉSIDENT

## “The Importance of Showing Up”

The 2019 World Radiocommunication Conference (WRC-19) concluded at the end of November in Sharm El-Sheikh, Egypt. As you can see on the front cover, in this issue of TCA we are showcasing this important event and Bryan Rawlings, VE3QN, RAC's Special WRC Advisor, has prepared two articles. The first article provides an overview of WRC-19 (see page 28) and the other is a more reflective piece on the International Regulation of Radio and the Amateur Radio Service (see page 30).



Glenn MacDonell, VE3XRA  
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I have had the good fortune to work closely with Bryan over the years, both in my roles as RAC Director and then as President, and have always benefitted from my discussions with him. He is an invaluable asset for RAC and indeed for Radio Amateurs around the world – and especially during the more than eight years he has served as RAC's representative, first at WRC-15 and then at WRC-19 this past November.

Bryan has been instrumental in developing Canada's position during the four-year long international process which includes the Preparatory Meetings and the Conference itself. He has also helped us all to have a better understanding of this significant event and its importance to Amateur Radio by providing articles in TCA, making presentations to Amateur Radio clubs and on social media using his now familiar #RACatWRC.

As we are about to begin another four-year process leading to the next Conference in 2023, Bryan has decided to step down to let another RAC representative start the process. On behalf of RAC members and indeed all Canadian Amateurs, I thank Bryan for his years of dedicated service and for showing up!

Our new Special WRC Advisor is Paul Coverdale, VE3ICV. Paul is very familiar with the International Telecommunication Union and international negotiations and is an active Radio Amateur. Those of you who are active in RAC's contests may have worked him on the air on many occasions as he has often been a member of teams operating the VA3RAC station in the Ottawa area. You can find more information about Paul on page 8.

It is only fitting that in this issue of TCA, RAC's International Affairs Officer, Serge Bertuzzo, VA3SB, also presents the 2019 DARF Annual Report, which provides an overview of how your important donations are contributing to the travel expenses of our delegate to these important meetings. It has made it possible for Canada to be one of the few countries that is able to provide ongoing representation throughout the process. I would like to sincerely thank our donors to this fund as they are providing a very valuable service to Amateur Radio today and in the future.

## Good Neighbours with Similar Interests

Shortly after I became RAC President in January 2016, I attended my first meeting of the Board of Directors meeting of the American Radio Relay League. At the meeting a new President, Rick Roderick, K5UR, was elected. Rick attended our Planning Meeting and Annual General Meeting in Moncton last September, renewing the past practice of one organization's President being welcomed as an observer at the other's Board Meetings. This practice had been interrupted when RAC was forced to cancel its in-person Annual Board Meetings as a result of financial difficulties almost a decade ago.

## « L'importance de se présenter »

La Conférence mondiale des radiocommunications de 2019 (CMR-19) s'est achevée fin novembre à Charm el-Cheikh, en Égypte. Comme vous pouvez le voir sur la couverture avant, dans ce numéro de TCA, nous présentons cet événement important et Bryan Rawlings, VE3QN, le conseiller spécial de RAC, a préparé deux articles. Le premier article donne un aperçu de la CMR-19 (voir page 28) et l'autre est un article plus approfondi sur la réglementation internationale de la radio et du service radioamateur (voir page 30).

J'ai eu la chance de travailler en étroite collaboration avec Bryan au fil des ans, tant en raison de mes fonctions de directeur de RAC que de président, et j'ai toujours profité de mes discussions avec lui. Il est un atout inestimable pour RAC et, en fait, pour les radioamateurs du monde entier. Pendant plus de huit ans, il a été le représentant de RAC, d'abord à la CMR-15 puis à la WRC-19 en novembre dernier.

Bryan a joué un rôle déterminant dans le développement de la position du Canada au cours du processus international de quatre ans qui comprend les réunions préparatoires et la conférence elle-même. Il nous a également aidés à mieux comprendre cet événement majeure et son importance pour la radio amateur en fournissant des articles dans TCA, en faisant des présentations aux clubs de radioamateurs et sur les médias sociaux et en utilisant son désormais familier #RACatWRC.

Alors que nous sommes sur le point d'entamer un autre processus de quatre ans menant à la prochaine conférence en 2023, Bryan a décidé de se retirer pour laisser un autre représentant de RAC démarrer le processus. Au nom des membres de RAC et de tous les amateurs canadiens, je remercie Bryan pour sa présence et ses années de service dévoué.

Notre nouveau conseiller spécial CMR est Paul Coverdale, VE3ICV. Paul connaît très bien l'Union internationale des télécommunications (UIT) et les négociations internationales. Il est un radioamateur actif. Ceux d'entre vous qui participent activement aux compétitions de RAC l'ont peut-être vu travaillé à l'antenne à plusieurs reprises, car il a souvent fait partie des équipes qui exploitent la station VA3RAC dans la région d'Ottawa. Vous pouvez trouver plus d'informations sur Paul sur la page 8.

Il est tout à fait approprié que dans ce numéro de TCA, le responsable des affaires internationales de RAC, Serge Bertuzzo, VA3SB, présente également le rapport annuel 2019 du Fonds pour la défense de la radio amateur (FDRA – DARF), qui donne un aperçu de la façon dont vos dons importants contribuent aux frais de voyage de notre délégué pour ces importantes réunions. Cela a permis au Canada d'être l'un des rares pays en mesure d'assurer une représentation continue tout au long du processus. Je tiens à remercier sincèrement nos donateurs à ce fonds car ils fournissent un service précieux à la radio amateur d'aujourd'hui et de demain.

## Bons voisins et similitude d'intérêts

Peu de temps après être devenu président de RAC en janvier 2016, j'ai assisté à ma première réunion du conseil d'administration de l'American Radio Relay League (ARRL). Lors de la réunion, un nouveau président, Rick Roderick, K5UR, a été élu. Rick a assisté à notre réunion de planification et à notre assemblée générale annuelle à Moncton en septembre dernier, renouvelant ainsi la pratique antérieure selon laquelle le président d'une organisation est accueilli comme observateur aux réunions du conseil d'administration de son vis-à-vis. Cette pratique a été interrompue

Our Planning Meetings are different from our previous annual Board Meetings. They occur every two years and focus less on regular day-to-day business and more on developing goals, priorities and strategies for the future. Like the ARRL Board Meetings, however, they bring together the leadership of our organizations. Although our participation is limited to extending greetings at the start of the meetings, it provides us with an opportunity to meet and talk with key individuals in each other's organizations and I have found these informal discussions very useful as we often face similar issues. I am very happy to report that at their Board meeting this January, Rick was reelected for a third term and he has already asked me when our next Planning Meeting takes place!

Many Canadian Amateurs are members of the ARRL and from time to time I'm asked why RAC doesn't do what the ARRL is doing on a specific issue. It isn't always obvious that many factors which influence the US approach may not apply in Canada. The differences between our organizations in terms of size and available resources should be easily apparent and any new initiative by RAC requires finding volunteers to do so.

Some issues also involve our very different regulatory systems. Canadian departments deal with the implementation of government decisions but also advise their Minister on changes to legislation. The United States has a much stricter division of responsibilities between Congress, as lawmaker, and departments as administrators. Canadian processes are less formal – we don't need lawyers to deliver a message to our regulator. Our regulations focus on results to be achieved rather than processes to be followed and so are less detailed and prescriptive. In one of the clearest examples, like most countries, Canada leaves band planning to Radio Amateurs. RAC develops band plans as recommendations to Amateurs to ensure the orderly use of our frequencies. In the US band plans are regulations. Fortunately, however, many of our interests do not require involvement with the government or changes to regulations and these are the areas where it is easiest to apply what has worked in other countries.

## The Youth Audience

One objective that is shared by all national Amateur Radio organizations is to attract more youth. In my previous Messages, I have described initiatives which are designed to showcase Amateur Radio to the youth audience such as through our Youth Education Program (YEP) and the Amateur Radio on the International Space Station (ARISS) Program. Our participation in the STEM Expo at the Canada-Wide Science Fair over the past three years is another excellent example. Thanks to the initiative of the Regina Amateur Radio Association in 2017, we have since participated in annual events in Ottawa in 2018 and in Fredericton in 2019 and thousands of students and their teachers and parents were able to visit an Amateur Radio exhibit. I'm happy to report that Amateur Radio clubs in the Edmonton Area will organize a booth at the STEM Expo in May at the University of Alberta. RAC will once again provide promotional material for the event and local Amateurs will staff the booth and greet the visitors. The Canada-Wide Science Fair organizers have decided to implement a three-year rotation for the event and it will once again be held in Ottawa in 2021 and in Fredericton in 2022 and we hope to continue our involvement in the future.

Radio Amateurs of Canada also provides grants and scholarships to worthy community programs and to young Canadian Amateurs who are studying at the post-secondary level in Science, Technology, Engineering and Mathematics (STEM) programs. We are very pleased to welcome Cassandra McBride, VA3MEW, as the new Chair of the RAC Scholarship Program.

lorsque RAC a été forcé d'annuler ses réunions annuelles du conseil en personne en raison de difficultés financières, il y a près d'une décennie.

Nos réunions de planification sont différentes de nos précédentes réunions annuelles du conseil d'administration. Ils ont lieu tous les deux ans et se concentrent moins sur les activités quotidiennes normales et davantage sur l'élaboration d'objectifs, de priorités et de stratégies pour l'avenir. À l'instar des réunions du conseil d'administration de l'ARRL, elles réunissent toutefois les membres dirigeants de nos organisations. Bien que notre participation se limite à adresser des salutations au début des réunions, elle nous donne quand même l'occasion de rencontrer et de parler avec des personnes clés dans les organisations des uns et des autres; j'ai trouvé ces discussions informelles très utiles car nous sommes souvent confrontés à des problèmes similaires. Je suis très heureux d'annoncer qu'à la réunion du conseil d'administration en janvier, Rick a été réélu pour un troisième mandat; il m'a déjà demandé quand notre prochaine réunion de planification aura lieu!

De nombreux amateurs canadiens sont membres de l'ARRL et, de temps à autre, on me demande pourquoi RAC n'imité l'ARRL sur certaines questions précises en particulier. Il n'est pas toujours possible que de nombreux enjeux qui influencent l'approche américaine puissent s'appliquer au Canada. Les différences entre nos organisations en termes de taille et de ressources sont très importantes. Toute nouvelle initiative de RAC doit compter sur la présence de bénévoles pour sa réalisation.

Certaines questions concernent également nos systèmes de réglementation très différents. Les ministères canadiens s'occupent de la mise en œuvre des décisions gouvernementales, mais conseillent également leur ministre sur les changements à apporter à la législation. Les États-Unis ont une répartition des responsabilités beaucoup plus stricte entre le Congrès, en tant que législateur, et les départements en tant qu'administrateurs. Les processus canadiens sont moins formels – nous n'avons pas besoin d'avocats pour transmettre un message à notre organisme de réglementation. Nos réglementations se concentrent sur les résultats à atteindre plutôt que sur les processus à suivre et sont donc moins détaillées et contraignants. Comme dans la plupart des pays, le Canada laisse la planification des groupes aux radioamateurs.

RAC élabore des plans de bande qu'il recommande aux amateurs pour assurer l'utilisation ordonnée de nos fréquences. Aux États-Unis, les plans de bande sont des réglementations. Heureusement, cependant, bon nombre de nos intérêts ne nécessitent pas d'intervention auprès du gouvernement ni de modification de la réglementation; ce sont des domaines où il est plus facile d'appliquer ce qui a bien fonctionné dans d'autres pays.

## Le jeune public

Un objectif commun à toutes les organisations nationales radioamateurs est d'attirer plus de jeunes. Dans mes messages précédents, j'ai décrit des initiatives conçues pour présenter la radio amateur au public jeune par le biais de notre programme d'éducation des jeunes (PEJ – YEP) et celui de la radio amateur sur le programme de la Station spatiale internationale (ARISS). Notre participation à l'exposition STEM (science, technologie, engineering et mathématiques) à l'Expo-sciences pancanadienne au cours des trois dernières années est un autre excellent exemple. Grâce à l'initiative de la Regina Amateur Radio Association en 2017, nous avons depuis participé à des événements annuels à Ottawa en 2018 et à Fredericton en 2019. Ainsi, des milliers d'élèves et leurs enseignants et parents ont pu visiter une exposition radioamateur. Je suis heureux d'annoncer

Amateur Radio organizations in Europe have been organizing "Youngsters On The Air" (YOTA) camps for several years and there are now both summer and winter camps in many different countries. Following several successful summer camps, the European Youngsters On The Air organization created December YOTA Month in 2013 encouraging young Amateurs to get on the air and that activity has occurred each year in Europe since then. In November 2019, RAC was contacted by the Youth Working Group Chair of the IARU Region 1 and was invited to participate in the 2019 December YOTA Month. David Samu, VE7DZO, an active young Amateur from Prince George, British Columbia, agreed to participate and RAC obtained the special event call sign VE7YOTA so he could represent us in the event. David wrote the article "The Thrill of Amateur Radio from the Perspective of Youth", which was featured in the September/October 2019 TCA, and he is writing an article about his YOTA experience for an upcoming issue.

Cincinnati 2020, the first Youth On The Air Camp in the Americas, will take place from June 21-26. The camp participants and instructors will be Radio Amateurs between the ages of 15 and 25 and it "will focus on building strong relationships with peers and mentors and developing new radio skills". It will be modelled closely on the European camps. The organizers have received donations allowing them to keep costs of the event low and it is \$100 USD for the week-long camp including meals and accommodation. The RAC Board of Directors has agreed to support up to three Canadian participants and will cover their registration fees. We are also looking for other Amateur Radio clubs who may wish to help out in their areas. Please stay tuned to the RAC website for more information as planning for this event unfolds.

RAC continues to be involved in efforts to support the use of Amateur Radio in many of the university CubeSat Missions being supported by the Canadian Space Agency. We are not yet reviewing individual projects that will seek frequency coordination for their use of the Amateur bands, but we understand that most of the 15 projects are planning to use Amateur Radio. We have also heard reports that some universities that don't have Amateur Radio clubs are setting up courses for students to become Radio Amateurs to prepare for these Missions.

## RAC Amateur of the Year Award 2019

As previously announced, the RAC Board of Directors has selected Cary Rubenfeld, VE4EA, as the recipient of the RAC Amateur of the Year Award for 2019 in recognition of his tireless efforts to promote Amateur Radio in his home province of Manitoba, throughout Canada and internationally. Cary is a founding member of Radiosport Manitoba (RSM) which combines his passion for contesting and DX. Since its inception in 2013, he has served as its Vice-President and Education Coordinator and has recruited renowned guest speakers to present world class presentations remotely to the group.

Cary has organized and led the Winnipeg Amateur Radio Club's annual Field Day events for the past several years and has become the face of VE4 on the international scene. In 2019, Cary successfully spearheaded the effort to activate VE4WARC to commemorate the 100th Anniversary of the Winnipeg Amateur Radio Club. We look forward to presenting the award to Cary at an upcoming event. Stay tuned to the RAC website for additional information.

*Glenn MacDonell, VE3XRA – RAC President and Chair*



que les clubs de radioamateurs de la région d'Edmonton organiseront un stand à la STEM Expo en mai à l'Université de l'Alberta. RAC fournira une fois de plus du matériel promotionnel pour l'événement et des amateurs locaux occuperont le stand et salueront les visiteurs.

Les organisateurs de l'Expo-sciences pancanadienne ont décidé de mettre en œuvre une rotation de trois ans pour l'événement qui se tiendra encore une fois à Ottawa en 2021 et à Fredericton en 2022; nous espérons continuer notre implication à l'avenir. Radio Amateurs du Canada offre également des subventions et des bourses à des programmes communautaires et à de jeunes amateurs canadiens qui étudient au niveau postsecondaire en sciences, technologie, engineering et mathématiques (STEM). Nous sommes très heureux d'accueillir Cassandra McBride, VA3MEW, en tant que nouvelle présidente du programme de bourses RAC.

Les organisations radioamateurs en Europe organisent des camps « Jeunes sur l'air – Youngsters On The Air » (YOTA) depuis plusieurs années et il y a maintenant des camps d'été et d'hiver dans de nombreux pays. Après plusieurs camps d'été réussis, l'organisation « Jeunes Européens sur l'air – European Youngsters On The Air » a créé, en 2013 « le mois de décembre YOTA » pour encourager les jeunes amateurs à se faire entendre. Cette activité a lieu chaque année en Europe depuis ce temps. En novembre 2019, RAC a été approché par le président du groupe de travail des jeunes de la région 1 de l'UIRA et a été invité à participer au mois YOTA de décembre 2019. David Samu, VE7DZO, un jeune amateur actif de Prince George, en Colombie-Britannique, a accepté de participer et, afin de pouvoir nous représenter à l'événement, RAC a obtenu l'indicatif d'appel de l'événement spécial VE7YOTA. David a écrit l'article « L'engouement de la radio amateur pour la jeunesse – The Thrill of Amateur Radio from the Perspective of Youth », qui a été présenté dans le TCA de septembre / octobre 2019. Il y écrit un article sur son expérience YOTA; il sera présenté dans un prochain numéro.

C'est à Cincinnati en 2020, du 21 au 26 juin que le premier camp « Jeunesse sur l'air – Youth On The Air » dans les Amériques, aura lieu. Les participants et les instructeurs du camp seront des radioamateurs âgés de 15 à 25 ans et ils se concentreront sur l'établissement de relations solides avec leurs pairs et des formateurs dans le développement de nouvelles compétences radios. Cincinnati copiera le modèle des camps européens. Les organisateurs ont reçu des dons leur permettant de maintenir les coûts de l'événement à un faible niveau soit 100 \$ US pour le camp d'une semaine, y compris les repas et l'hébergement. Le conseil d'administration de RAC a accepté de soutenir jusqu'à trois participants canadiens et couvrira leurs frais d'inscription. Nous recherchons également d'autres clubs de radioamateurs qui pourraient souhaiter apporter de l'aide dans leur région. Veuillez rester à l'écoute du site web de RAC pour plus d'informations à mesure que la planification de cet événement se développera.

RAC continue de participer aux efforts visant à soutenir l'utilisation de la radio amateur dans de nombreuses missions universitaires CubeSat financées par l'Agence spatiale canadienne. Nous n'examinons pas encore les projets individuels qui visent à coordonner les fréquences en vue de leur utilisation des bandes radioamateurs, mais nous reconnaissons que la plupart des 15 projets prévoient d'utiliser la radio amateur. Nous avons également entendu des informations selon lesquelles certaines universités qui n'ont pas de clubs de radioamateurs organisent des cours pour que les étudiants deviennent radioamateurs afin de se préparer à ces missions.

– suite à la page 14

# Around the Corner: Radio Amateurs of Canada Announcements

## RAC Amateur of the Year Award 2019: Cary Rubinfeld, VE4EA

The RAC Board of Directors takes great pleasure in selecting Cary Rubinfeld, VE4EA, as the recipient of the RAC Amateur of the Year Award for 2019 in recognition of his tireless efforts to promote Amateur Radio in his home province of Manitoba, throughout Canada and internationally.

Through the RAC Amateur of the Year Award, Radio Amateurs of Canada recognizes the outstanding contributions made by Canadian Amateurs. The RAC Board considers nominations for the RAC Amateur of the Year Award and presents it if and when the nomination demonstrates the exceptional contribution made. If there are several nominations the best for that year is approved.

Cary is a founding member of Radiosport Manitoba (RSM) which combines his passion for contesting and DX. Since its inception in 2013, he has served as its Vice-President and Education Coordinator and has recruited renowned guest speakers to present world class presentations remotely to the group.

He was the driving force behind the organization and presentation of "The HF Experience" in 2016, which was an event targeted towards new and old Amateurs that provided a wide array of topics meant to encourage and entice participants to explore the HF bands.

Cary is a long-time member of the Winnipeg Amateur Radio Club (WARC) and has organized and led their annual Field Day events for the past several years. He realized that Field Day has often been many Amateurs first opportunity to get on the air and especially on HF. He has seized these opportunities to create a Field Day that encourages HF operation for those with little or no experience. To assist in this, he has successfully recruited top contesters from Alberta, Ontario and the United States to join the local contesters to act as mentors.

Cary has become the face of VE4 on the international scene. A regular attendee at Dayton and a guest at the last World Radiosport Team Championship (WRTC) event in Germany, he mingles and establishes a personal relationship with Amateurs from around the world. He was also a participant in the VE100VIMY special event in 2017.

In addition to his other volunteer efforts with the Winnipeg ARC, Cary has been instrumental in bringing new life and ideas to the club by seeking out new Amateurs and mentoring them along the path to become proficient operators. In 2019, Cary successfully spearheaded the effort to activate VE4WARC to commemorate the 100th Anniversary of the Winnipeg Amateur Radio Club.

Stay tuned to the RAC website for additional information about the presentation of the award once the plans have been finalized. For more information about the RAC Amateur of the Year Award visit: <https://wp.rac.ca/rac-amateur-of-the-year/>

Glenn MacDonell, VE3XRA  
RAC President and Chair



## RAC Welcomes new WRC Special Advisor Paul Cloverdale, VE3ICV

As we are about to begin another four-year process leading to the next World Radiocommunication Conference in 2023, Bryan Rawlings, VE3QN, has decided to step down as RAC Special WRC Advisor to let another RAC representative start the process.

Bryan has provided his final report on WRC-19 on page 28 and has also contributed an article about International Regulations. On behalf of RAC members and indeed all Canadian Amateurs, I thank Bryan for his years of dedicated service and for showing up!

Radio Amateurs of Canada is pleased to announce that Paul Coverdale, VE3ICV, is now the RAC Special Advisor at the World Radiocommunication Conferences and their Preparatory Meetings.

It is the job of a WRC to review and, if necessary revise, the Radio Regulations, the international treaty governing the use of the radio-frequency spectrum and the geostationary-satellite and non-geostationary-satellite orbits.

Paul was first licensed in 1965 as G3TJZ in England. Emigrating to Canada in 1974, he became VE3ICV. His Amateur interests are primarily HF DXing and CW contesting, with outdoor QRP operation in the summer. He also enjoys antenna experimentation.

Paul has been a member of the Ottawa Amateur Radio Club for many years, serving twice as its President, and is a member of Radio Amateurs of Canada.

Professionally, Paul spent 30 years with Nortel Networks, where he held a number of engineering and management positions related to the specification, design, verification and standardization of wireline and wireless products. He took early retirement in 2004 and since then has acted as a consultant in the area of Quality of Service / Quality of Experience of telecommunications networks.

Paul has been active for many years in international Standards Forums and has participated in many meetings of the International Telecommunications Union's Telecommunication Standardization Sector (ITU-T). He is a member of the Institution of Engineering and Technology (IET), Institute of Electrical and Electronics Engineers (IEEE), and is a registered Professional Engineer.

Going forward, Paul's main activity in participating in ITU Radiocommunication Sector (ITU-R) meetings as a RAC Special Advisor will be to monitor proposals, and lobby to protect Canadian and worldwide Amateur Radio interests, in the run-up to WRC-23, the next World Radiocommunication Conference.

Glenn MacDonell, VE3XRA – RAC President and Chair



# SIX METRES AND DOWN

## Everything you want to know about the “Magic Band”

### Our Future

Amateur Radio owes its very existence not only to the technologies and sciences of electromagnetics, but also to the *human* contacts between nations, governments and individuals. Never has this been so important than now as large corporations are trying to take chunks of spectrum to satisfy their stockholders. RAC Special Advisor Bryan Rawlings, VE3QN, at WRC-19 illustrates this in his article on page 28 of this issue of TCA. It is important for every Amateur to be vigilant, brave and stalwart in defending our spectrum by showing that there is a need for public access to spectrum for our future and by supporting your national Amateur Radio organization and contributing to the Defence of Amateur Radio Fund (see page 34).

Don't forget, as we move out further into space, to the Moon and to Mars beyond, Amateur Radio will be along for the ride. It will provide communication links between planets – but we need spectrum for that, for satellites, for ground-to-space and space-to-ground communications and more. Think about the possibilities – lets keep things evolving and alive!

### 3.5 GHz

Apparently, the United States is going ahead and releasing portions of the spectrum for use ahead of legislation to move existing users out of the band. This was spearheaded by the Citizens Broadcast Radio Service Alliance.

The American Radio Relay League has provided comments to the Federal Communications Commission (FCC) about the move and hopefully something will evolve that will allow our continued use of this area of the spectrum. The elephant in the room is of course what is happening here.

Maybe we can fire up our iPhones and work DX? Let's hope we can hold onto some of this spectrum down the band a bit from 3456.1 if necessary! The band fills a gap between 2 GHz and 5.7 GHz and the propagation is very good and antennas are really small! Hi.

### 10 GHz

W1GHZ has a set of boards available for under \$20 that will allow you to build a 10 GHz transverter. Hugh, VA3TO has a transverter working and showed it off at

our OVHFA meeting February 8. The design of these boards provides for a repeatable design and an operational transverter for a lot less than one of those nice German boxes. Check it out!



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### The Ontario VHF Association Activity Award

We are raising a ruckus here about the upcoming Ontario VHF Association's 70th Anniversary this year to get our readers to get radio active on VHF and Up. To support this we are offering a 70th Anniversary Award for those who work 70 Canadian stations above 30 MHz!!

The rules are available on the Ontario VHF Association website [www.ovhfa.org](http://www.ovhfa.org) and on our chat site [ovhfa@groups.io](mailto:ovhfa@groups.io).

This is a great way to stimulate activity across Canada and beyond, so please get on and work as many of your fellow Canadians as you can on our bands above 30 MHz; simplex modes only though.

Don't forget to put Canada on the map of our neighbours to the south and the folks in Europe/Japan/Australia/New Zealand and beyond!

Please feel free to contact me if you need assistance with the rules as well.

The VE7 VHF gang getting together: VE7XF, VE7HR, VE7DAY and VE7FC. Photo by VE7LOE.

Late news! Gedas, W8BYA, near Fort Wayne, Indiana has achieved 1st certificate by working 70 Canadians using 50, 144, 222 and 432 MHz and a combination of Tropo, meteor scatter and Sporadic E! Contacts included VE1, VE2, VE3 and VE4 stations! Congratulations!

### The ARRL January VHF Contest

This year, in Ontario the ARRL January VHF Contest was the scene of epic weather, crazy propagation, exhausted rovers and just plain winter fun.

Everyone was looking forward to the contest as it kicks off the new VHF season and you just never know what

	<b>ONTARIO VHF ASSOCIATION 70th ANNIVERSARY</b>
<b>VHF/UHF/MICROWAVE ACTIVITY AWARD</b>	
This is to certify that	
.....	
Has qualified for this award in accordance with the conditions set forth by the Ontario VHF Association by presenting evidence of contacts with 70 Canadian Amateur Radio Stations on the bands above 30 MHz	
January 7, 2020	
DATE	PRESIDENT



The VA3ELE Rovermobile somewhere in FN24.



The KF2MR Rovermobile somewhere in FN03.

conditions in winter will be like. Well this year we got wind, snow, rain, ice and all that goes with it!

While many of us were safely ensconced in a warm shack, as you can see from the photos, our intrepid rovers were out in their vehicles braving the elements and determined to make points on the move. VE3OIL/R, VA3ELE/R, KF2MR/R, VE3TFU/R and VE3CRU/R to name just a few of the stations locally.

Peter, VA3ELE, had worked on setting up his rovermobile for weeks before he and Hugh, VA3TO, hit the road for FN24/25 at the start of the contest, with a plan to work their way back west over the weekend. Well, old Mother Nature sure made it tough out on Highway 401 with blinding snow, howling wind, and crawling along behind snowploughs.

The guys did make it out to FN24 and FN25 and worked many Amateurs out that way, but also had to contend with bad noise conditions, poor propagation to the south and exhaustion. They in fact turned around and headed home arriving at about 3:30 am in Mississauga. After a good sleep, of course you can't keep a good rover down, so Peter headed for the four corners FN02/03/EN94/93 intent on dishing out more points to close down the weekend and that he did, hanging in right to the bitter end!

Russell, VE3OIL/R, meanwhile had faced the same conditions and when we caught up with him in FN03 at 2 am he was pretty tired out as well, but we managed 50 – 2304 MHz that night. Not sure why we didn't work on 3456, but at 2 am who knows eh? Fortunately, his rove was not quite as far east so he was in better shape and more so the next day as well.

Jarred, KF2MR/R, had been out with the guys in Western New York, but skipped the FN22 rover blitz near Syracuse due to the nasty weather, but got on from FN02 and FN03 on Sunday, and we were able to work him on 50 – 3456 MHz from FN02, thankfully.

Stephen, VE3TFU/R, braved the snow and rain and no hand key on Saturday to work out on the bottom four bands, and then on Sunday operated from home where we worked 50 – 3456 with him as well.

Bill, VE3CRU/R, headed out to FN04 at the peak of the storm and managed a few contacts from there before heading back to safer FN03. He commented that there were few vehicles on the road that day!

From home here in Toronto, we found conditions on Saturday pretty grim, with propagation over Lake Ontario at times



The VE3OIL Rovermobile somewhere in FN14.

very poor, in fact even UHF TV CH 17 from Grand Island disappeared here for a while! However, we hung in there despite that and managed somehow to pull out a good score which in fact was our best score over the last five years. I'm still trying to figure that one out!

Nice also to see the guys running a multiop effort from VE3MIS in FN03 EQ just north of the airport on the bottom four bands. The ops included Steve, VE3SMA, Andy, VA3CW, and Lali, VA3NE, and they made out very well for a first effort under less than ideal conditions. We hope to see more from them later this year.

It was also great to hear so many Western New York guys from the Rochester area on this year.

## Spring Sprints

The Spring VHF UHF Sprints are just around the corner. If you are looking for some mini contests to try out your gear here are the dates; all times are local:

- 1) 144 MHz Monday April 6, 7 am to 11 pm
- 2) 222 MHz Tuesday April 14, 7 am to 11 pm
- 3) 432 MHz Wednesday April 22, 7 am to 11 pm
- 4) Microwave Saturday May 2, 8 am to 2 pm
- 5) 50 MHz Saturday May 9, 2300Z through Sunday, May 12 0300Z

For more information on the Spring Sprints visit:

<https://www.sites.google.com/site/springvhfupsprints/home/2020-information>

Well that's it for this time. I'll have more reports in the next column as the warm weather comes back!

– 73, Dana, VE3DS



The Rochester VHF Group warming up during the contest: Ken, K2ET, Jarred, KF2MR, Tom, KV2X, Dave, AE2DM, Chuck, NR2C, Bruce, WA2TMC, Ron, N5BNO and Jim, WB2YJH. Photo by KF2MR.

# QUA – A TOPICAL DIGEST

As I write this column it is always good to think back over the enjoyable radio experiences I have had since writing the previous column.

While I like making contacts with stations that have very impressive antenna systems and often high power to match, I particularly like to hear and work stations with equipment more like my own. I suppose it comes from the QRP ethic of doing more with less.

In this regard I was especially pleased one afternoon to have two QSOs, one after the other, the first with a fellow operating portable from Tucson, Arizona (using a compromise antenna at 2 metres from the ground) followed by a call from a Japanese Amateur who was using a QRP radio. It is really encouraging, at this time of poor propagation, to see that contacts are still possible even with less than optimum equipment!

## Attenuators

In the November 2019 issue of the Radio Society of Great Britain's journal *RadCom*, I found a letter entitled "The attenuator may be our best friend" by Paul Roberts, G0OER, very interesting. He says "Like many Amateurs, I commonly have to deal with S8-S9 noise levels on the LF bands (80m and 40m, typically) and on modes like SSB and CW I need all the help I can get to fish signals out of the mire of noise".

He enumerates three significant problems that result from noise: 1) high noise swamps the band pass filters, allowing noise from outside the band to interfere

with and cross-modulate with wanted signals in the front end of the receiver; 2) the noise is hiding the wanted signals; and 3) it is using up a large part of the receiver's dynamic range. On using his attenuator to decrease signal and noise levels he found much improved readability and also that DSP algorithms in the receiver were much more effective.

I am very fortunate to have a low man-made noise level at my home, but like everyone else, I find times when band noise is very objectionable. My main transceiver predates DSP, but includes a PIN diode variable attenuator that allows easy adjustment of signal and noise levels. Using that and the RF gain control can really make a huge difference in readability and listening pleasure. Often the noise can be reduced to the point where it is almost eliminated while the signal level is easily heard.



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Narrow CW crystal filters work better at these lower levels too, with less ringing due, I expect, to fewer conflicting signals in their pass bands.

It's easy to think that ultimate sensitivity is a key feature of a receiver's specifications, but this is often not the case. In fact, using preamps when they are unnecessary, and not using attenuators when they could be helpful can make listening less effective and less enjoyable.

## NanoVNA

Recently I was introduced to a "NanoVNA" vector network analyzer by Charlie Gale, VY1CC. Charlie showed how he could tune a 70 cm band duplexer using this small device. I was really impressed by the capabilities of his NanoVNA so I ordered one myself. You can see a photo of my NanoVNA in Figure 1 above.

If you do an Internet search for a "NanoVNA", you will find quite a lot of information and many different sources from which they can be purchased. Typically, they cost about \$50 to \$60 including postage and come with SMA open, short and 50 ohm loads necessary for the calibration of the NanoVNA. Some come with SMA connector cables too, and it may be worthwhile to get these. I didn't and I then had to make adapters between the NanoVNA's SMA connectors and the BNC and PL-259 coax connectors of my other equipment.

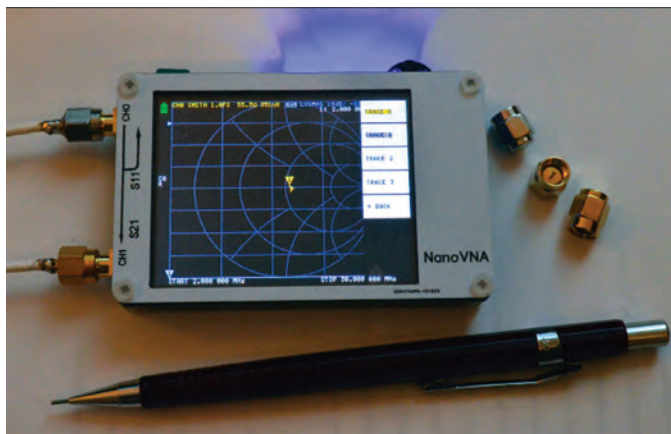


Figure 1: A "NanoVNA" with associated open, short and 50 ohm load calibration standards. NanoVNAs come in black or white colours but seem to be exactly the same internally. The NanoVNA shown above is operating on its internal battery, but it can also be connected to a computer with a USB cable for power and control.

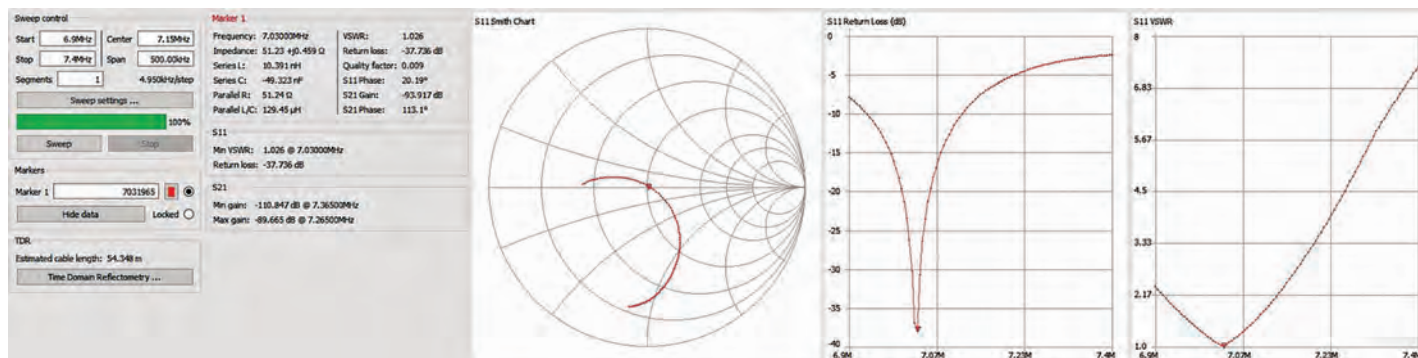


Figure 2: NanoVNA scan of an antenna showing the Smith chart, return loss and VSWR over the 500 kHz range from 6.9 MHz to 7.4 MHz. The marker is at 7.032 MHz.

The name “vector network analyzer” and the terminology around it sounds like it must be very complicated. The instrument and its software may be, but the measurement itself isn't, and you may already be familiar with a generally less able form of the instrument – the antenna analyzer.

The measurements a VNA makes include both magnitude and phase, hence the vector part of the name from the representation of the measured value in a “complex” plane of so-called “real” and “imaginary” numbers. With the NanoVNA two kinds of measurements are possible: 1) inserting a signal from the VNA into a circuit and measuring what sort of signal is returned; and 2) inserting a signal from the VNA into a circuit and seeing what comes out the other end.

The first kind of measurement is called an S11 parameter; a signal is input into port 1 and the return measured at port 1. The second kind of measurement is an S21 parameter; the signal is measured at port 2 after insertion at port 1. The “S” stands for scattering as in scattering parameter.

Note too how the order of subscripts indicates the type of measurement. Much more expensive VNAs can make measurements in reverse without reconnecting the VNA – for example, S12 and S22 parameters – and simultaneous measurements at additional ports such as S31 and others.

You can find an excellent explanation of the operation and uses of a VNA, by searching online for “Introduction to VNA Basics – Tektronix”.

## Using the NanoVNA

In operation, I found it difficult to work with the small touchscreen of the NanoVNA. It is workable (the point of a dull pencil works much better than a finger), but the various options provided on the screen are somewhat confusing. The NanoVNA comes with a USB connector, however, which allows it to be controlled from a PC and I found this arrangement to be much easier to use. I downloaded the free software from <https://github.com/mihtjel/nanovna-saver/releases> for this purpose. Other software is available too, but I haven't tried anything else.

VNAs have to be calibrated before use and the PC software mentioned has a really easy-to-use routine for this purpose. For S11 calibration the open, short and 50 ohm loads are required. I found the open and short loads worked well, but I had to use a 50 ohm dummy load instead of the provided SMA standard in order to get consistent results with subsequent measurements. I'm not sure why this was the case, but I think



**Figure 3:** An “ugly” constructed 5th-order Chebyshev low-pass filter. The 51 ohm resistor on the right was connected for an S11 scan but disconnected for the S21 scan results shown in Figure 4 below.

that cable lengths and connectors may have something to do with it. Perhaps a reader can tell me the reason?

As I have already mentioned, my first introduction to the NanoVNA was VY1CC's demonstration of how it could be used to tune a 70 cm band duplexer. I was also interested to see how it would perform in the HF region of the spectrum where I do most of my experimenting.

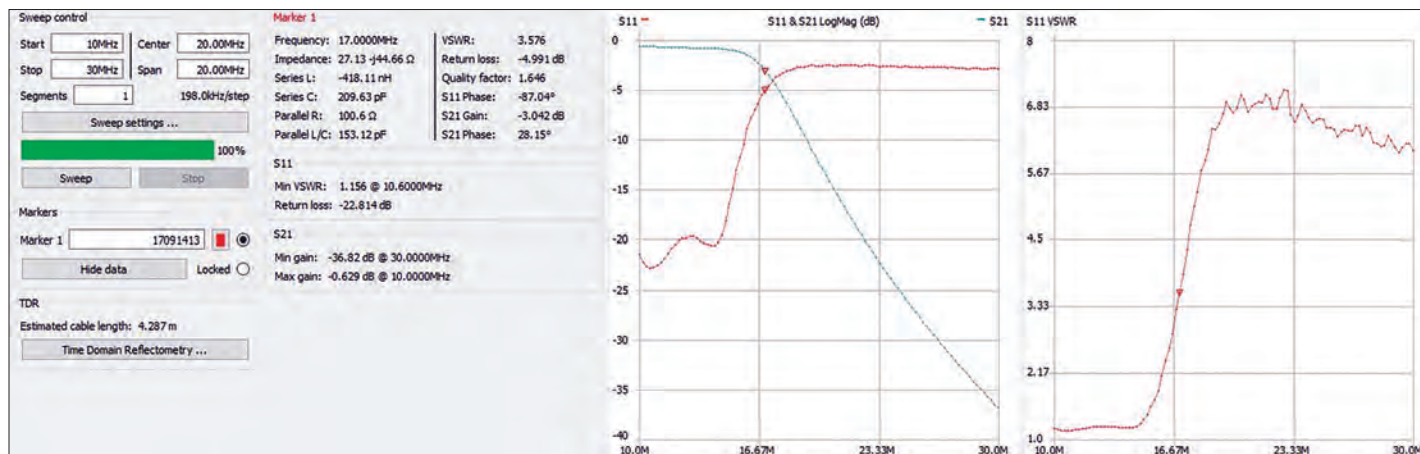
For initial tests I decided to try three different things:

- 1) an S11 scan of my antenna;
- 2) an S21 scan of a low pass filter; and
- 3) an S21 scan of a crystal filter.

### 1) S11 Antenna Scan

I use a doublet antenna fed with open wire line at its centre. This antenna requires a good balanced antenna tuner for multiband operation.

I used my normal antenna tuner setup procedure of connecting my MFJ-259B antenna analyzer to the input of my antenna tuner and then adjusting the tuner to achieve a low SWR at 7.030 MHz. I then disconnected the MFJ-259B and connected the NanoVNA in its place. Figure 2 shows the results I obtained with the VNA. As you can see from the Figure, the scan covered the range from 6.9 MHz to 7.4 MHz. The marker was placed at 7.030 MHz, but the actual measurement was at 7.032 MHz, the nearest sample point. By placing the marker at different frequencies, detailed information of L, C, impedance and so on can be obtained over the measured range.



**Figure 4:** NanoVNA scan of a 5th-order Chebyshev low-pass filter with cut-off frequency of 17 MHz.

## 2) Low Pass Filter Scan

For this test I made up a 5th order Chebyshev low-pass filter with a cut-off frequency slightly above the 20m band. The test filter is shown in Figure 3. As you can see, it is nothing very fancy, but has 50 ohm impedance input and output.

For this scan I set the range from 10 MHz to 30 MHz. When the scan was complete I placed the marker as close as I could to the S21 -3 dB point. As you can see from the "Marker 1" information, the cut-off frequency is 17.1 MHz. From the left-hand graph you can also see that both S11 and S21 information is graphed. Below, and until near the cut-off frequency, the S11 log magnitude is about -20 dB whereas afterwards it is close to -2 or -3 dB. In contrast, the S21 log magnitude – that is, the amount of signal arriving at the out port of the filter – is only down about 1 dB at frequencies below the cut-off frequency but decreases rapidly above that frequency.

To see how these NanoVNA results compare with the results obtained from a spectrum analyzer, I used an old Marconi 2370 spectrum analyzer and tracking generator to scan approximately the same range of 10 MHz to 30 MHz. Figure 5 on the right shows the result; you can see that the result is very comparable to the NanoVNA S21 log magnitude graph.

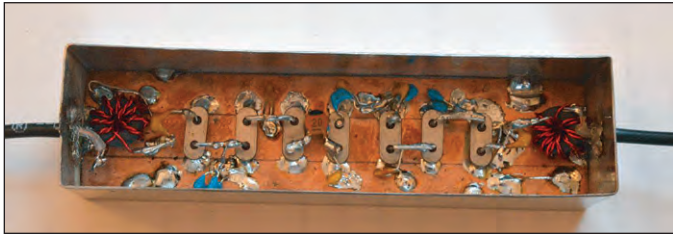


Figure 6: A 500 Hz crystal filter centred at 8.19 MHz.

## 3) Crystal Filter Scan:

For my last trial I used a 500 Hz crystal filter that I built some years ago using inexpensive 8.19 MHz crystals. This filter is shown in Figure 6 above. As was the case for the low pass filter, both the input and output were matched to 50 ohms.

For this filter the NanoVNA scan had to be set for a much smaller range, this time from 8.188 MHz to 8.191 MHz. The result of this scan is shown in Figure 7. As for the low pass filter, both the S11 and S21 parameters are shown and you can see how there is a strong reflection back to port 1 except in the pass band of the filter.

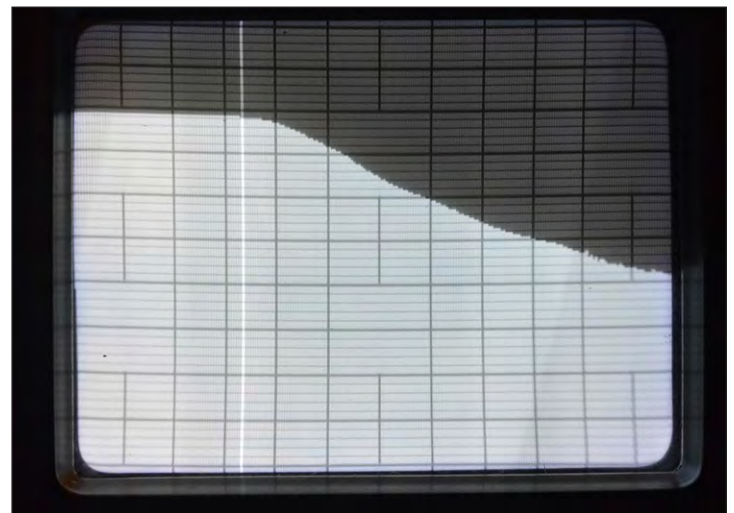
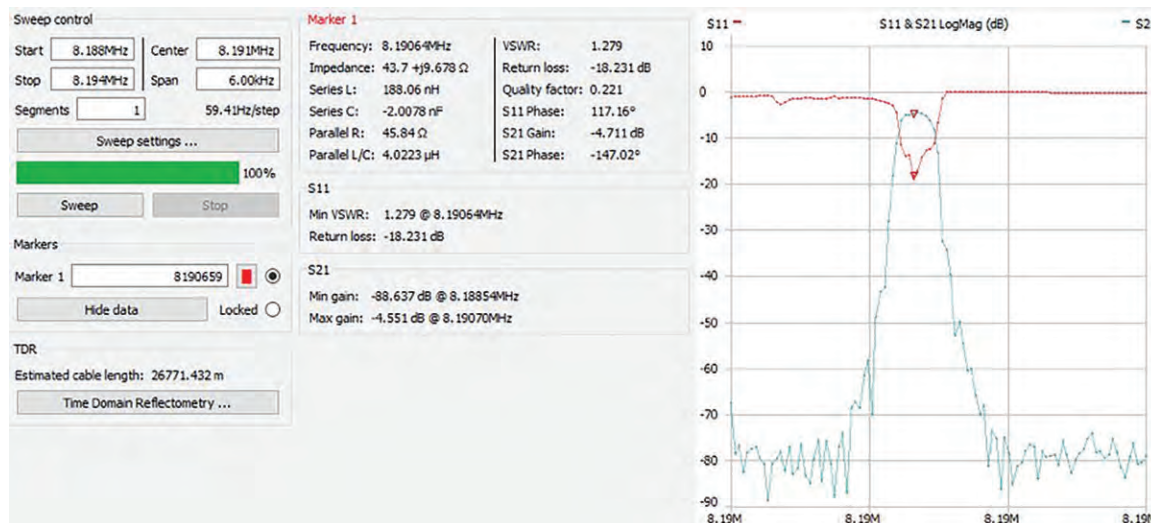


Figure 5: Spectrum Analyzer scan of a 5th order Chebyshev low pass filter. Horizontal scale: 2 MHz/ division, vertical scale: 10 dB/division. The bright line marker is at about 14.5 MHz.

Once again, I also scanned the filter using the Marconi spectrum analyzer and tracking generator. Setting this old instrument up for a narrow frequency scan as is required for a crystal filter takes patience. These instruments don't have the amazing capability of the Si5351 frequency synthesizer integrated circuit that is used in the NanoVNA and it is difficult to get exactly the right frequency range. Nevertheless, you can see what I found with the spectrum analyzer in Figure 8 below. There you will also get some idea of

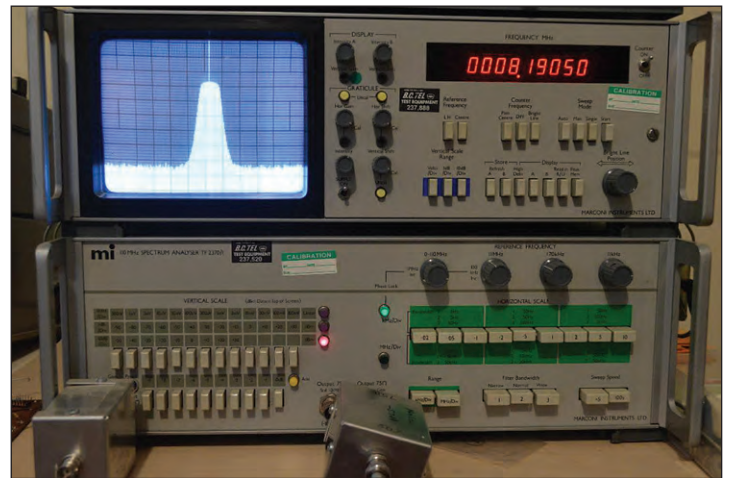


Figure 8 above:

Spectrum Analyzer scan of a 500 Hz Crystal Filter.

The horizontal scale is 0.5 kHz/division and the bright line marker at 8.19050 MHz.

Figure 7 at left:

NanoVNA scan of an 8.19 MHz 500 Hz crystal filter.

The marker is at 8.1906 MHz.

the relative size of the two instruments – the spectrum analyzer and tracking generator are large and heavy, certainly not the pocketable size of the NanoVNA, nor will they operate on batteries.

I haven't yet experimented with some of the other features included in the NanoVNA, like time delay reflection and testing of amplifiers, but I hope that from these preliminary experiments you will have a good idea of the potential of the NanoVNA. It seems to me that one of these instruments can make most of the measurements of a spectrum analyzer more easily and in more detail, the exception being the measurement of a transmitter's output spectrum.

As always, if you have any comments or suggestions, please contact me at [vy1kx@rac.ca](mailto:vy1kx@rac.ca).



## Message du Président, suite de la page 9

### Prix Amateur de l'année 2019 de RAC

Tel qu'annoncé précédemment, le conseil d'administration de RAC a choisi Cary Rubinfeld, VE4EA, comme récipiendaire, en 2019, du prix Amateur de l'année RAC, en reconnaissance de ses efforts inlassables pour promouvoir la radio amateur dans sa province natale du Manitoba, au Canada et à l'étranger.

Cary est un membre fondateur de « Radiosport Manitoba (RSM) » qui combine sa passion pour la compétition et le DX.

Depuis sa création en 2013, il en a été le vice-président et coordonnateur à l'éducation. Il a recruté des conférenciers de renom pour organiser à distance des présentations de classe mondiale au groupe.

Cary a organisé et dirigé les événements annuels « Field Day » du Club radioamateur de Winnipeg au cours des dernières années et est devenu « l'icône » de VE4 sur la scène internationale.

En 2019, Cary a dirigé avec succès l'effort visant à activer VE4WARC pour commémorer le 100<sup>e</sup> anniversaire du Club radioamateur de Winnipeg.

Nous sommes impatients de remettre ce prix à Cary lors d'un prochain événement. Restez à l'écoute sur le site web de RAC pour plus d'informations.

*Glenn MacDonell, VE3XRA – Président et directeur général de RAC*

– Traduction par Claude Lalande, VE2LCF



## Feedback: Our Readers Write...

**"My friend Alan McKnight, VE7TRM: the fellow Ham in my life..."**

Amateur Radio has been my #1 hobby since 1979 when I got my first "ticket".

My Dad, VE3CRW (SK), studied and got his ticket a number of years earlier.

My brother Rob, VE3PCP, is active in southwest Ontario.

Along the way, I have rubbed shoulders and have become friends with a lot of great Ham Radio people.



Each one has brought a unique outlook to the hobby. Many have become Silent Keys just in the last few years.

It seems that Hams get to know one or two other Hams who have similar interests and the styles shared kind of just "click". It's kind of like a resonant circuit; tuned to a particular frequency.

The fellow Ham in my life who best fits that bill has been Alan McKnight, VE7TRM. When he first got his Basic licence, he called "CQ" on 2m and I answered him. That was his first bonafide QSO. I sent him a filled-in QSL card and he kept it all these years. Who would have thought?

It didn't take long to become friends with Al, especially since we both enjoyed the CW part of the hobby. I was more into DXing and also threw my hat into the ring with some contesting. Al developed his CW skills through the avenue of message handling. Traffic Nets, such as BCEN and RN7 were the places he could be found if you wanted to hear Al's distinctive "fist". He learned to send using his left hand so that he could still write unimpeded using his right hand.

Then came Field Days and through the years Al and I were a couple of the first volunteers for the CW station. The learning curve was using the logging program, not operating the HF station. He was great at pulling out weak stations through QRM and QRN. Somehow, we seemed to get the night shift and early morning shift. Often, one of us was awakened from a good sleep to be told it was our turn to operate.

A couple of years ago, Al and I decided to do a Field Day operation in a local park. We used his 20m dipole antenna and we each brought our own rig to operate VE7NI as a 1B British Columbia station with CW QRP (5 watts) only. Conditions were up and down like the proverbial kite in a windstorm. It was about 30°C in the shade but we had brought lots of water to drink. Finally, after a few hours operating, we managed to log somewhere around 25 contacts. With a few bonus points achieved, the results were sent to ARRL HQ (visit the ARRL Field Day website at <http://www.arrrl.org/field-day> for more information).

My XYL showed up with our Border Collie mix named Buddy. Crystal played photographer and took the above photo of Al and I sitting at the table, each with our own QRP rig in front of us. Alan is wearing his wide brimmed hat and I am wearing my Salvation Army Team Emergency Radio Network (SATERN) shirt. Buddy had to greet us and make sure we were doing things right.

As my Dad used to say quite often when ending a QSO: 73 Old Man and I'll be clear on your final! Alan recently became a Silent Key (see link below).

*73 Alan – John Noakes, VE7NI, Kamloops, British Columbia*

<https://www.legacy.com/obituaries/kamloopsthisweek/obituary.aspx?n=alan-richard-mcknight&pid=194745721&fhid=16035>

# 120 Volt AC Wiring: What You Must Know & Should Know

Ken Grant, VE3FIT

## The Basics (What You Must Know)

In North America, 120 Volt residential electrical wiring has three colour-coded conductors: Live (black); Neutral (white); and Ground (bare or green). There is 120 Volts AC between the Live and Neutral conductors.

In a residential electrical service panel, the Live wire is fused (or monitored by a circuit breaker) for 15 or 20 Amps, while the Ground and Neutral wires are joined and connected to an outside earth ground.

Any electrical equipment with a three-prong plug has the Ground pin connected to the equipment's chassis or frame. In this way, all devices which are plugged into the system are at the same chassis potential.

Normally, current flows along the Live wire, through the load, and returns along the Neutral wire.

If an excessive load current is drawn for whatever reason – such as pinched wiring, a stalled motor or a shorted transformer winding – the fuse or breaker at the service panel will open and de-energize the circuit.

Some circuits may also be fitted with a Ground Fault Circuit Interrupter (GFCI). This device compares the currents in the Live and Neutral wires. Normally, they would be the same value and the GFCI would be inactive. If, however, a partial leak occurs (generally 4 to 5 milliamps or more) from Live to Ground, the Live and Neutral currents will be unbalanced and the GFCI will open the circuit.

A GFCI is fitted whenever an electrical outlet is in close proximity to a source of water (e.g., in a bathroom or near a kitchen sink). The copper water pipes are grounded and water is a good conductor of electricity. GFCI outlets are also required by code for all outdoor receptacles.

GFCIs are required so as to prevent shock or electrocution in wet areas where a person may be at risk if using a faulty electrical appliance.

The GFCI may be installed in the breaker panel or as a wall receptacle.

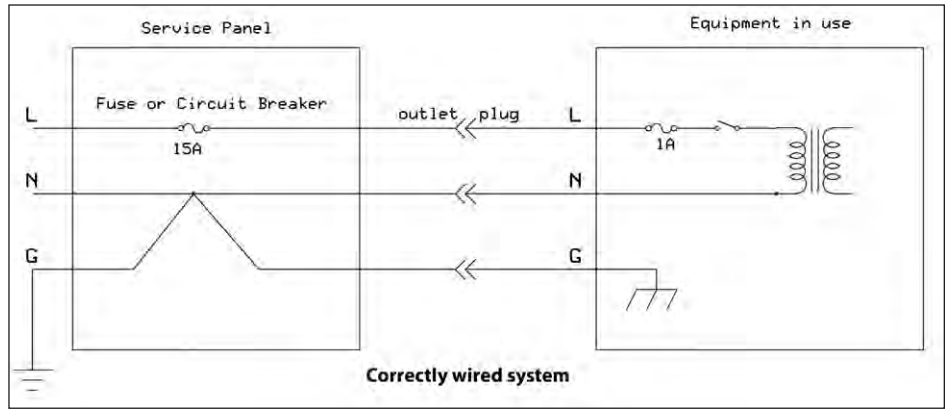


Figure 1: A correctly wired system for a three-wire (grounded) power cord.

## Equipment Wiring Practices

Electrical equipment must be wired in accordance with the Canadian Standards Association (CSA) requirements.

If the equipment has a three-wire (grounded) power cord, the general requirements are as follows (see Figure 1):

1) Unless a detachable power cord is used, the power cord must enter the chassis through a suitable strain relief. Internal 120 Volt wiring goes, where necessary, through grommets so as to avoid sharp edges.

2) The Ground conductor is connected to a dedicated point on the chassis as close as possible to the point where the power cord enters the equipment.

A solid electrical and mechanical connection (no paint or insulation!) to the chassis or metal housing must be made at this point.

3) The correct order in which power is wired once it's inside the chassis is:

a) The Live conductor is connected to the input terminal of the fuse holder (see Figure 2). This is so that the user won't accidentally touch the Live side of the AC line when inspecting or changing a fuse.

b) The output terminal of the fuse holder is connected to the ON/OFF switch.

c) The ON/OFF switch is connected to the load (transformer, pilot light etc).

d) The return leads from the load are connected to the Neutral conductor. In this way, any short circuit or overload that occurs inside the equipment will cause the equipment's protective fuse to open almost instantaneously.

A common practice nowadays is to use detachable three-wire female power cords and matching three-wire male chassis receptacles.

These are commonly referred to as IEC 320 connectors – the official name is 60320 – and are used on most computer equipment (see Figure 3).

Chassis receptacles are also available with built-in RF filtering.



Figure 2: The terminals of a fuse holder.

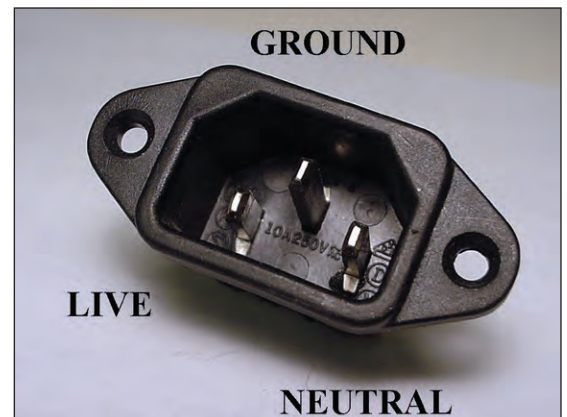


Figure 3: IEC 320 connectors

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## Jumper Cables



## Ground Braid

Radioworld stocks a wide variety of jumper cables, patch cords, grounding braid and high quality cables, connectors and tools.

See our website for details

The power cords are almost always moulded and will only fit one way (the correct way) into the receptacle.

The terminal designations L, N and G are usually stamped on the rear of the receptacle. If not (or if you can't make them out), remember that the centre pin is Ground and, when viewed from the front (as shown in Figure 3), the Live pin is counter-clockwise from the Ground pin.

## And now for something that you should know!

I was restoring a mid-1980s Brand "K" HF transceiver. It had a built-in power supply and IEC 320 power cord and receptacle. Looking at the schematic, it appeared that the AC fuse had been put in the Neutral leg! I inspected the chassis wiring and verified that this was, in fact, the case. If the power switch or transformer primary windings or associated wiring developed a short to the chassis, the transceiver's fuse wouldn't blow. The chassis would stay Live until the 15 Amp circuit breaker at the house's service panel tripped! Needless to say, this was corrected.

There are 12 possible combinations (which I can think of) in which the fuse holder terminals, switch and transformer primary could be wired. However, only one of them is correct (see Figure 1).

Don't assume that a piece of equipment has been wired correctly just because it was commercially manufactured (especially older equipment). Electrical equipment imported, made or sold in Canada must meet the applicable safety standards set by the Canadian Standards Association (CSA) even if it is tested and certified by another agency.

If you like to repair or restore old AC / DC transformerless radios, please take special precautions. Many of these radios use non-polarized two-prong power plugs and the chassis may become "live". Be safe and use an isolation transformer.

## Donations in Support of Amateur Radio

The following information provides a brief summary of how you can support Amateur Radio in Canada, individually, or through your Amateur Radio club.



To donate simply go to the RAC website and click on the above logo.

### Donation to the Defence of Amateur Radio Fund (DARF)

The Defence of Amateur Radio Fund (DARF) is a Trust Fund that was established to provide financial support for research, and to defray travel expenses of a delegate to World Radiocommunication Conferences (WRC) to defend the Amateur Radio bands. For more information please see the articles on pages 28 to 34 and visit <https://wp.rac.ca/wrc/> and <https://wp.rac.ca/darf/>.

### Donation to Radio Amateurs of Canada

Speaking on behalf of Canadian Radio Amateurs, RAC provides liaison with government agencies and carries the Amateur voice about regulatory and spectrum issues to the discussion table with government and industry leaders, nationally and internationally. RAC is the Canadian voting member society of the International Amateur Radio Union (IARU). The cost of the continuing advocacy efforts on behalf of all Radio Amateurs are over and above the normal overhead costs of RAC membership administration. You can also support the RAC Youth Education Program (YEP) by making a direct donation to RAC and directing it to the Youth Education Program.

### Donation to the RAC Grant and Scholarship Fund

Every year, through the RAC Grant and Scholarship Fund, Radio Amateurs of Canada provides grants and scholarships to worthy community programs and to young Amateurs who are enrolled at the post-secondary level in Electrical, Electronic and Software engineering. Students in Science, Technology, Engineering and Mathematics (STEM) programs are also considered on a case by case basis. For more information please visit: <https://www.rac.ca/grant-information/>

### Donation to support the RAC Amateur Radio Emergency Service

The Amateur Radio Emergency Service (ARES) is composed of certified Radio Amateurs who have voluntarily registered their qualifications and equipment for communications duty in the public service when disaster strikes.

ARES relies on the services of Amateur Radio operators who volunteer their time, equipment and expertise for the benefit of the community and the public good. For additional information please visit the RAC website at <http://wp.rac.ca/ares/>.

This article is dedicated to the memory of the late Roger Lee, a CSA inspector who, during my working career, made my day difficult on many occasions but who was always right. Thanks, Roger.

*Ken Grant, VE3FIT, retired after a 45-year career as an Electronics Technologist in the healthcare field. He lives in Scarborough, Ontario with his wife of 49 years, Marlene. Together, they have raised three sons. His non-ham interests include travelling, history, bicycling on his 1974 Raleigh ten-speed and a bit of gardening.*



# Former RAC Ontario North Regional Director Doug Leach, VE3XK SK

## Douglas E "Doug" Leach, VE3XK SK: In Memoriam

Former RAC Ontario North Regional Director Doug Leach, VE3XK, became a Silent Key on January 15, 2020 at age 81.

Doug became an Amateur in 1954 and he held several call signs over the years including: VE3DWG, VE2ATJ, VE3DWK and VE3XK.

Ralph Cameron, VE3BBM and Brian Jeffrey, VE3UU and previously worked with Doug and were long-time friends and shared his passion for Amateur Radio. Ralph provided the following tribute:

"Doug was a long-time personal friend. I met him in 1955 as I was graduating from what was then Ryerson Institute of Technology in Toronto (now Ryerson University). This was before and after his graduation from the course in Electronic Technology in 1958.



Doug at the RyeHam Amateur Radio Club station VE3RIT. Photo courtesy of the QCWA.

He was an early member of the RyeHam Amateur Radio Club, VE3RIT. Doug had attended Wingham District High School and after graduating from Ryerson was employed as an Electronic Engineering Technologist at the Defence Research Board (DRB) at Shirley Bay in Ottawa.

Doug left DRB to join Instronics Limited in 1966 to become their Marketing Support Manager, primarily to promote their "made in Canada" graphic digitizers. He quickly became the Vice President and General Manager of Instronics Techno-Products Limited (ITPL) and was responsible for the sales and service across Canada of professional electronic test equipment and digital systems imported from the United States and Europe.

He became the President of Wiltron Instruments Limited in 1975, a subsidiary of the US parent company Wiltron Company, and he organized it to sell and service Wiltron's family of electronic test equipment and computerized test systems. When the

company was purchased by a Japanese company in 1990 he became the President of Anritsu-Wiltron (Canada) Limited. During this period, Doug also graduated from the Canadian School of Management.

Doug was a consummate professional and he threw himself with dedication into anything he did."

Doug served as the RAC First Vice-President in 1997-98 and also served as Acting President for three months in 1999. He was the RAC Director for the Ontario North Region from 2001 to 2004.

In addition to serving on the RAC Board and Executive, Doug was the author and editor of several RAC publications and reports including: the RAC Operating Manual; the RAC Emergency Coordinator's Manual; the RAC Official Observer's Guide; the RAC Administration Manual; and the RAC Manual for Directors.

He was a member of Radio Amateurs of Canada, the American Radio Relay League, the Quarter Century Wireless Association, the Straight Key Century Club, the PODXS 070 Club, the Ottawa Amateur Radio Club and also the West Carleton Amateur Radio Club.

He served as a Vice-President for the West Carleton Amateur Radio club from 2008-2010 and 2015-2018.

Doug was a former Director and webmaster of the Quarter Century Wireless Association (QCWA) Chapter 70 and was awarded the QCWA Meritorious Award in 2007.

Norm Rashleigh, VE3LC, Secretary of QCWA Chapter 70, expressed his condolences on behalf of the organization:

"Doug was a most valued member of the QCWA Chapter 70 serving as Web Master since 2007 and Historian Archivist since 2010. He will also be remembered for his many technical presentations at Chapter meetings as well as several of the Ottawa area clubs which he was an active member.

Doug was a very active Radio Amateur until recent years, with experience on most Amateur allocations, 160 metres through to the microwave bands, having achieved multi-mode DXCC on most of the HF bands. His enthusiasm and contribution to Amateur Radio will be sorrowfully missed."

Brian Jeffrey, VE3UU, wrote:

"I can attest to Doug's technical ability as he accompanied me as a neophyte salesman on some early sales call in our working relationship. I recall one such call.



The RAC Ontario North Director attending the Annual General Meeting in Cornwall in 2004.



Doug representing the West Carleton ARC at the Ottawa ARC Hamfest in 2018. Photo courtesy of the Ontario Amateur Radio Service Net (ONTARS) website <http://www.ontars.com>

Having met the customer and listened to his measurement problem, Doug launched into one of his technical 'sermons' and had the rapt attention of the potential customer.

Solving the problem in 10 minutes, Doug commenced to provide solution number two, from a different approach. After that, the customer started to pale as Doug presented solution number 3. I quietly nudged him and whispered in his ear, 'Doug you already sold the customer', to which he just chuckled and said, 'There are a couple more ways to tackle this problem, but you've probably heard enough'. In spite of all, we did get the order.

I will remember him for his honesty, organizational ability, technical interests and business acumen."

Doug retired in 1994 and is survived by his wife Bev and two daughters, Karen and Alison. He and Bev sailed on the Ottawa River and then a 44-foot trawler based at Clayton, New York cruising the Thousand Islands. After retirement they cruised into the intracoastal waterway system, spending several winters around the Bahama Islands before returning to Canada.



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*Portions of this article appeared in "How To Use Linear Amateur Satellites" in the November, 2010 edition of Monitoring Times Magazine. Thank you MT!*

In previous columns, I've been discussing ways to find, track, listen for, and then communicate through our expanding fleet of Amateur Radio satellites. In this installment, I'll be introducing you to another (non-FM) type of satellite transponder called a "linear" transponder that is carried aboard many of our current Amateur satellites.

You'll remember from previous columns that a *transponder* is the circuit in a satellite that receives an uplink signal and then retransmits what it hears via its downlink transmitter – much like your local FM repeater does. However, unlike your local FM repeater (and most of our FM satellites), which has a specific input and output frequency, most so-called "linear" satellite transponders (sometimes also called "analog" transponders – the terms are often used interchangeably) receive and then retransmit a *whole band* of frequencies commonly called a *passband*.

What's more, linear Amateur satellite transponders come in one of two flavours. These transponders are usually classed as *inverting* or *non-inverting*.

A cooperative effort between the Japan AMSAT Association (JAMSAT) and the Japan Amateur Radio League (JARL), JAS-2 – which later became Fuji OSCAR 29 (FO-29) on orbit – is a linear transponder satellite that is shown here just prior to its launch in 1996. The satellite remains semi-operational to this day. (Courtesy: JARL)



# AMATEUR RADIO SATELLITES

## Using Linear Amateur Satellite Transponders

If the satellite has a non-inverting transponder, when an operator's uplink signal frequency is on the high end of the uplink passband, their downlink signal will also be in the high end of the downlink passband.

Conversely, in an inverting transponder, when an operator's uplink frequency is on the high end of the uplink passband, it will become "inverted" (hence the name) and come out on the lower end of the downlink passband. Put another way, inverting transponders make mirror images of the signals they pass. This also holds true for the sideband sense as well.

In a non-inverting transponder, the signals an operator sends up to the satellite (USB or LSB) will come out the same way on the downlink. However, in an inverting transponder, a USB uplink will be "inverted" and come out as LSB on the downlink. Conversely, an LSB uplink will be "inverted" and come out as USB on the downlink. The latter approach (USB signals on the downlink) is also what's most preferred by operators using our linear satellite transponders today. Fortunately, CW will be CW regardless of the transponder's variety!

Note that most linear transponder-equipped satellites currently in orbit – including FO-29, AO-73 and the XW series of satellites (more about them in a subsequent column) – use inverting transponders. The one exception is our old AO-7 satellite that was launched back in 1974 and which is still "sort of" operational. It uses a *non-inverting*, linear transponder.

As with the FM birds, common operating practice on Amateur satellites with linear transponders is to first listen for your own signal on the downlink.

### "OSCAR who?..."

Since 1961, some 100 plus "OSCARS" – short for Orbital (or Orbiting) Satellite Carrying Amateur Radio – have been built and launched by a number of Amateur Radio-related organizations worldwide. And just like their Hollywood counterpart of the same name, there are some very strict rules as to how our Amateur satellites get to be so honoured.

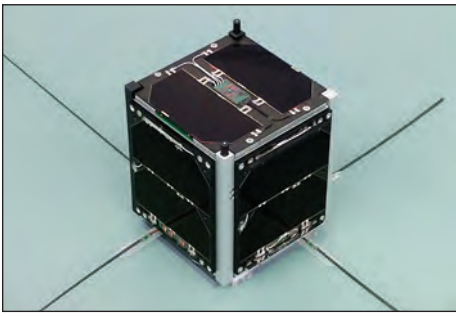
First, they have to be capable of transmitting and/or receiving in the Amateur Radio bands. They also have to successfully achieve orbit and be activated in space. And, lastly, the builders of the satellite have to formally request that an OSCAR number be assigned to their orbiting handiwork.



AMSAT-Germany's Phase 3-C satellite (which later became AMSAT OSCAR 13 (AO-13) on orbit) was a very popular linear transponder satellite that provided amateurs with near worldwide coverage prior to its (unplanned!) de-orbit in late 1996. (Courtesy: AMSAT-DL)

Today, by mutual agreement between AMSAT and the original Project OSCAR team who built and launched the very first OSCAR satellites, those requests go to AMSAT Board of Directors Member and Vice-President of Operations Drew Glassbrenner, KO4MA, who then passes judgment on the "amateurness" of the payload before he officially assigns an OSCAR number.

Most Amateur satellites have other names prior to launch. For example, AMSAT North America has chosen to use sequential alphabetic characters for their satellites. AMSAT's current, most popular FM bird, AO-91, was dubbed "Fox-1B" prior to its successful launch and activation on orbit. The latest satellite in that series, "Fox-1E" is (as of this writing) awaiting launch and may already be in orbit when you read this.



The flight model of AMSAT OSCAR 73 (AO-73) is shown here just prior to its launch in 2013. The satellite operates in its linear transponder mode primarily on weekends. (Courtesy: AMSAT-UK)

You'll remember from my previous columns that working through a satellite transponder is usually a *full duplex operation*, much like talking on a telephone. This means that others can usually hear you as well as you are hearing yourself.

Finding your own signal in the downlink passband of a satellite with a linear transponder the first few times can be tricky. However, I've found that placing your transmit frequency somewhere in the middle of transponder's passband and then sending a few "dits" of CW while tuning your *receiver* to find your own downlink signal works best. Once you've located your own signal, you're ready to try making a contact.

Unlike the FM birds, calling CQ on these satellites *is* acceptable and you'll usually find the convention of CW operations in the low end of the passband with phone operation in the upper part of the passband – an arrangement common to High Frequency (HF) Amateur Radio operation – generally also holds true for satellite work as well.

As I have also noted in previous columns, since a satellite is a moving target, its downlink signals will exhibit a pronounced *Doppler shift*, just like the changing pitch of a train whistle as it approaches and then passes. During a satellite QSO, the "old" – that is, prior to computer frequency control – so-called "one true rule" of thumb for linear satellite operation is that if the uplink band is *higher* in frequency than the downlink, you should slowly shift your *transmit* frequency on the uplink as the Doppler effect changes the frequency of your downlink signal.

Conversely, you should shift your *receive* frequency if the uplink band is lower in frequency than the downlink. Or, to put it another way, the highest frequency band in use (uplink or downlink) is what you should shift as Doppler affects your signals. This approach will usually help prevent an inadvertent shift of your conversation into someone else's on the transponder.

However, in the "heat of the moment" with everyone frantically searching through the passband for their own downlink signals, these conventions are often ignored.

## Keep The Power Down!

Because it is generated from the Sun, satellite power is a finite (and, therefore, scarce!) resource. That's why it is *very* important to use only enough power on your uplink transmissions to produce a readable signal on the downlink.

As I've said, you need to get used to the idea that satellite work is *weak signal work*. It's *not* like operating on HF (or terrestrial VHF or UHF) where the use of more power is usually "better". Besides being potentially harmful to a satellite's battery life by using more uplink power than is necessary, overpowering your uplink signal beyond the point of creating a discernable signal through the satellite's transponder on the downlink will *not* appreciably improve the overall strength of your downlink signal. To the contrary, such activity will do little more than "pump" the satellite's automatic gain control as it tries to compensate for the onslaught you are creating with your overpowered uplink signal. Such activity will only gobble up yet *more* of the satellite's precious available power, not to mention limiting the overall downlink power available for others using the transponder.

Unfortunately, all it takes is one overpowered uplink signal in the passband to drastically cut the strength of everyone else's downlink signal. As you might expect, such activity will not make you a popular camper on the satellites for *crocodiles* – those who operate with "all mouth and no ears" – are about as welcome on the birds as *lids* are elsewhere in Amateur Radio.

## FM Is Particularly Unwelcome!

In addition, because satellite power is such a scarce commodity, most linear satellite transponders are built to use the most efficient operating modes possible. Normally, this equates to Single Sideband (SSB) voice and/or Morse (CW).

Therefore, it should also come as no surprise that another big "*no-no*" is running FM through linear satellite voice transponders. FM signals occupy a much larger bandwidth and take a significantly greater portion of a transponder's precious output power to handle than do CW and SSB signals. And while some people have met with moderate success operating through linear satellite transponders by "simulating CW" – using the push-to-talk circuit on a 2 metre FM

## "OSCAR who?..." continued

The fleet of Japanese Amateur satellites uses "JAS" (Japan Amateur Satellite) followed by a sequential number for their Amateur satellites. Their current, semi-active Amateur satellite, FO-29, was called "JAS-2" prior to its successful launch in 1996.

Usually, the "O" part of the on-orbit designator stands for "OSCAR", while the number following it is sequentially assigned by Drew, depending on precisely when the satellite's transponder is activated on orbit. However, the first letter of the OSCAR designator can stand for many things. That letter is usually suggested by the satellite's builders or sponsors and often gives a hint about its heritage.

For example, the "F" in FO-29 stands for "Fuji" (for "Fuji OSCAR") while the "A" in AO-91 stands for "AMSAT" (as in "AMSAT – OSCAR 91"). However, the "A" in AO-27 stood for "AMRAD", the suburban, Washington, DC Amateur Radio group that built the Amateur Radio satellite payload and which was later launched aboard its commercial host (called "EYESAT") in 1993. The "S" in SO-50 stands for "SaudiSat" as a university team in Saudi Arabia sponsored the building and launch of that satellite.

Now, if this "alphabet soup" all sounds a bit confusing, that's probably because it is! Just remember that the letter "O" in a satellite's official, on-orbit name followed by a dash and then one or two numbers *usually* indicates that the satellite is one of our fleet of Amateur Radio (OSCAR) satellites.

radio for example – this approach often produces a wide (and *very* "chirpy") CW downlink signal. Either way, your FM signals will gobble up lots of downlink power and stick out like a sore thumb. Just imagine how obnoxious you'd sound running SSB signals through your local FM repeater and I think you'll agree that *all* use of FM should be avoided when operating through a linear satellite transponder.

## Wrap Up

That's all for this time. In future columns, I'll be discussing some more detailed aspects of this unique part of the Amateur Radio Service and bring you up to date on the (hopefully!) pending launch and activation of AMSAT's Fox-1E satellite, as well as a number of other Amateur satellites currently awaiting launch. See you then!

# A Microphone Audio Test Source For Your Ham Shack

Don Dorward, VA3DDN

During a QSO, have you ever had the other party comment on your audio quality or lack of it? For example: "...hey OM, you are not making it... your audio is weak! Get closer to the mic or turn up your mic gain!" Or the reverse: "...hey OM, your audio is really distorted. You are overdriving and spattering all over the band. Get further from the mic and/or turn down the audio gain!"

Embarrassing, yes! And the question is what to do about it?

I am sure some of us have found ourselves trying to whistle, or even "hum", into the microphone, while peering at the ALC meter on the rig in order to help judge and set the audio level. I don't know about you, but I don't hum or whistle very well so I thought it would be handy to have a simple audio test source or tone generator in a small box, with a small speaker, that can be picked up anytime, held in front of your mic and used to provide a repeatable reference audio "check" source. Such a device is shown in Figure 1.

Now that I have hopefully grabbed your interest, I will proceed to describe the device in more detail and explain how you should probably build it, but just a little bit differently!

The task of making a compatible audio test source is not as simple as it may seem as there are several different types of microphones that are used in many different ways.

The most common microphone types favoured by Amateurs are:

- 1) a handheld microphone on the end of a curly cord
- 2) a headset-mounted microphone
- 3) a desk-mounted communications microphone
- 4) a boom-mounted professional microphone

Types 1 and 2 above are what we might describe as "close-talking" microphones, where the distance from your mouth to the microphone is typically one to three inches (see Figure 2). These mics are especially suited for use in noisy operating environments.

Types 3 and 4, on the other hand, tend to be used where the distance from your mouth to the mic is typically six to 12 inches or more. They are best used in an operating environment that is quieter and more controlled, otherwise nearby sounds



Figure 1: Audio test source or tone generator.

— such as fan or A/C noise, background radio music, nearby conversations or worse! — may be picked up and broadcast.

## Voice Sound Pressure Levels and the distance to the Microphone

It seems to be well established that talking with a "normal" voice approximates a sound pressure level (SPL) of 70 dB, when measured at a distance of one foot. Note that the same "normal" voice, measured instead at two inches, becomes an SPL of 86 dB! This is because sound pressure level decreases in inverse proportion to the distance from the sound source to the measuring point (sorry, no square law involved!).

As shown in Figure 3 below, the graph of Voice SPL vs the Distance to Microphone can be readily derived from the simple

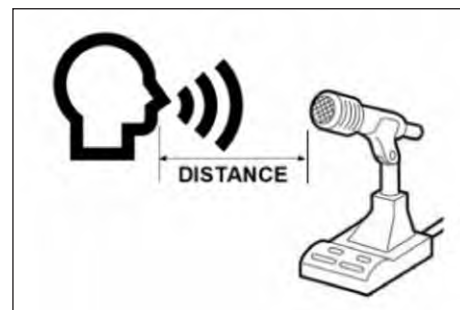
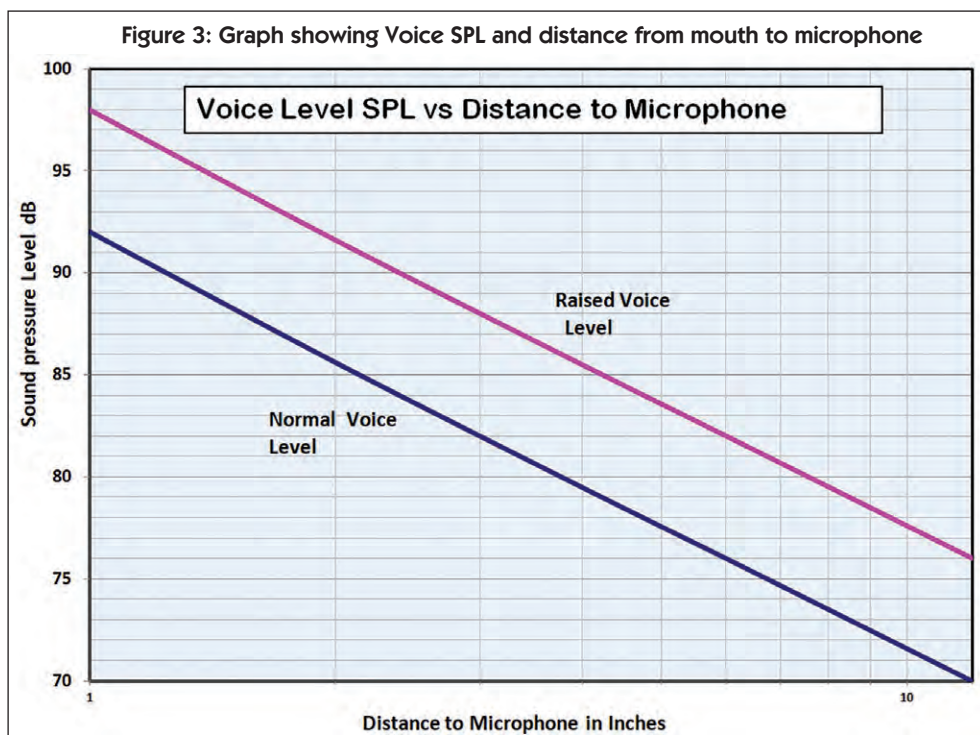


Figure 2: The optimum distance from your mouth to the microphone will vary with the type of mic.

70 dB at one-foot definition for a normal voice level. Now you can look at your own situation and decide what SPL you would like your reference source to emulate. For example, I decided that my audio reference source should emulate ~86 dB at a distance of two inches. This can also be measured as ~92 dB at a distance of one inch.

## How to create the tone

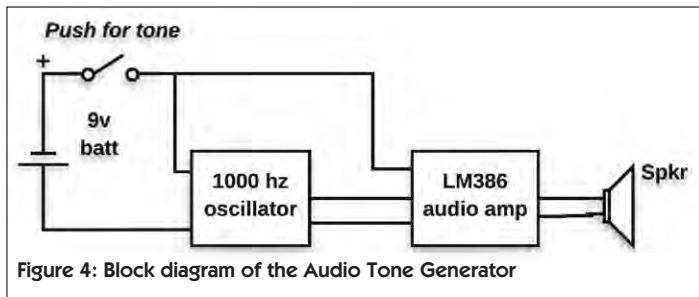
Someone is likely to suggest that there are audio oscillator applications that can be downloaded for free to a laptop, tablet or smartphone. This may be true, but there are several problems with using this kind of source: a) the chosen tone cannot be easily referenced or adjusted to a known sound pressure level; and b) the speaker found in such devices is usually tiny and quite directional. So when you get down to it, an ideal microphone audio test source should possess some basic characteristics in order to be useful.



- be stand-alone, be handheld and ready to go at the push of a button.
- have a low cost and preferably be something you can make by yourself
- couple to the microphone at a similar distance that you/your mouth does when speaking
- not be overly directional – we don't want a bench setup to be necessary for use
- have an audio level that is at least measureable and repeatable, using typical sound level meters available today

**Note:** The audio source described here is not intended to be a substitute for professional audio test instrumentation found in good laboratories. However, with care in the setup, it should allow the Amateur to make intelligent adjustments to microphone gain levels and avoid having to say things like “Hey ! I don’t know...!” if questioned re his mic performance.

In the block diagram shown in Figure 4 below, a momentary contact switch is used to key the tone generator. The switch I used was momentary if pressed halfway, but it would lock on if pressed fully. Note that an LM386 audio amplifier has been added to better match the low impedance speaker.

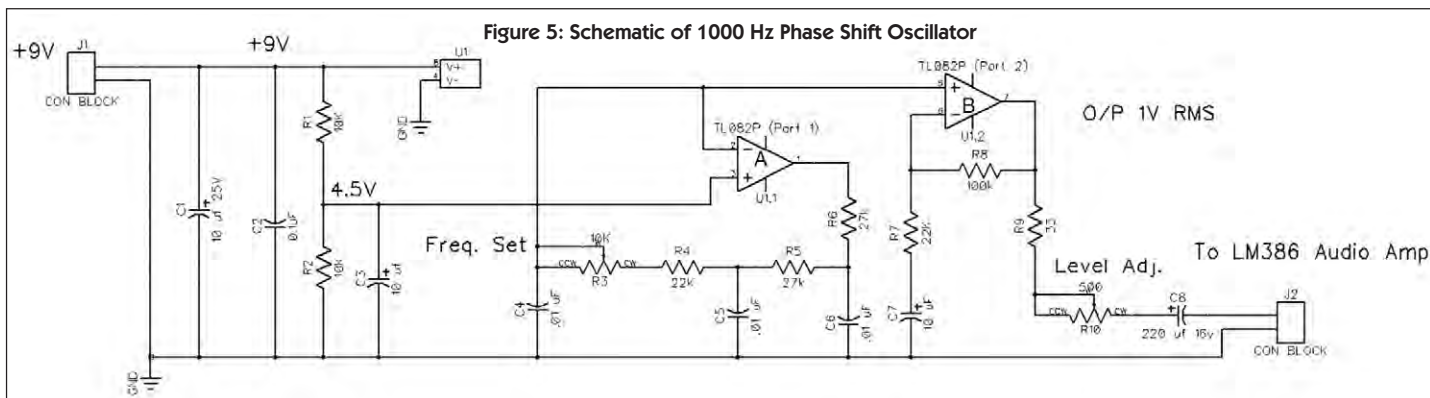


I think many of us perhaps have a favourite sine wave audio oscillator type; perhaps a Wien bridge, a twin-T, or something else that we always go to. My favourite is the lesser known single op-amp phase shift oscillator shown in Figure 5 below (see Reference 2) that I have used in the past and in this project.

The phase shift oscillator has some advantages like simplicity, frequency stability, reliability and relatively low distortion.

The main proviso is to use components that are sufficiently stable themselves (see the above Parts List).

The oscillator is formed around a basic phase shift network consisting of three RC sections which provide a steep change in phase with frequency. These are: R6(C6); R5(C5); and R4+R3(C4). The third section is fitted here with a variable R (R3) in order to allow setting the frequency closer to 1000 Hz.



Either a TL082 or the LM358 dual op-amp will work well, and as a bonus provide a second op amp in the same package. I used the second amp as a buffer and a simple 5X amplifier so that the output is boosted to approximately 1V RMS (2.8V pp).

**Note:** The three most important voltage or amplitude measurements are the peak (p), peak-to-peak (pp), and the root mean square (rms) voltages.

If gain adjustment is to be done on the LM386 amplifier, then R10 is not needed and can be replaced by a fixed resistor (for example: 100 ohms), since the value is not critical. Running the tone generator from a fresh 9-volt battery is convenient or better still from a regulated 9-volt "wall wart".

## LM386 Audio Amplifier

As an alternative to building up your own LM386 circuit, consider purchasing it ready-made. The LM386 audio amplifier IC and its basic application circuit has become almost a de facto standard, and is available at low cost, as a ready-made module, from several vendors online and at hamfests and fleamarkets.

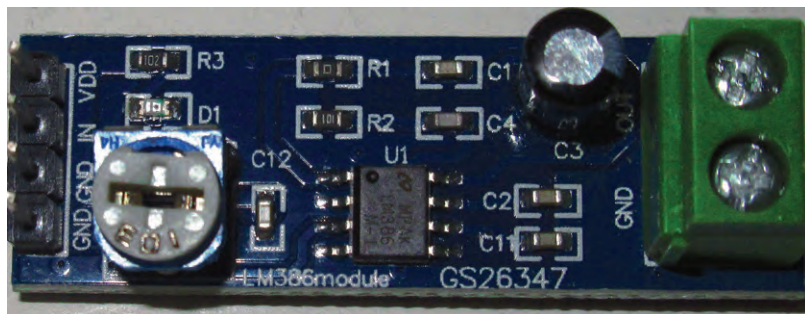


Figure 6: LM386 audio amplifier module

The minimum parts count version, with a gain of 20, is more than sufficient for use in this project. However, if you can only get the version described as the 200X Gain module, you can easily remove a few of the parts to convert it back to the basic 20X Gain module. Figure 6 shows the 200X version, where you should remove C1, C2 and R1. Also D1 is an LED which you may not wish to have so you should remove it.

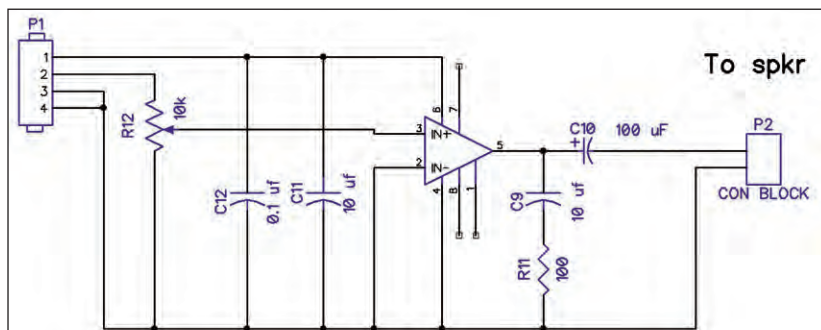


Figure 7: Schematic of the x20 LM386 audio amplifier module

## Choice of Speaker

I tested a range of potentially suitable audio transducers or speakers with the oscillator and soon discovered that the op amps like TL082/LM358 are not suited to directly drive low impedance speakers; ie; 8 to 30 ohms.

Figure 8 on the right shows some of the speakers I tested, including several taken from low-cost computer/airline headsets and even a typical Amateur Radio desktop speaker.



Figure 8: Types of speakers tested for the project

## Sound Level Meters and Reference Calibration Sources



Today there are environmental laws about maximum permissible sound levels in workplaces. As a result, good quality and low-cost sound level meters have become almost commonplace. You may be able to borrow one if you ask around.

The above photo shows two meters that I have in my lab. On the left is the Scott Laboratories 453A-1 that I purchased on eBay, and on the right is the Radio Shack 33-2055. The Scott sound level meter even came complete with a well-made audio tone calibrator module (pictured in the centre) that can be used to verify the meter reading at 94 dB, 1 kHz. I was both pleased and surprised to find that both meters measured to within +/- 0.5 dB of the calibrator setting.

## Construction details

The oscillator is simple enough to build on a piece of stripboard. From an earlier project, I had made a custom printed circuit board (PCB; see Reference 3) which you can see in Figure 9 on the next page. The LM386 amplifier is shown above it. A small plastic case holds both PCB assemblies and the switch, with the RB-Spa-704 speaker mounted on the front as shown in Figure 1 on page 20.

For easy access, the 9V battery is mounted outside the case using hook and loop fasteners. Figure 9 shows the unit without the back cover which is normally installed. Be sure to include an adjustment hole in the back cover to allow easy setting of the output SPL.

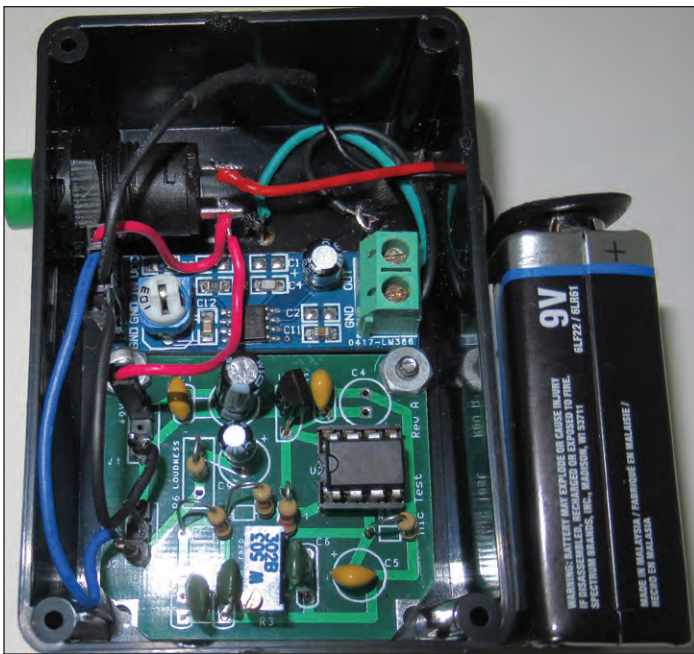


Figure 9: A view inside the plastic case. The 9V battery is mounted outside the case using hook and loop fasteners.

## Setting the SPL Level

In order to adjust the sound pressure level, it is necessary to “cobble” some kind of mount for both the meter and the tone generator. Take care to line up and centre the speaker on the tone generator with the pickup microphone on the sound level meter. I used a small camera tripod for the sound level meter and a stand made from an old microphone base to hold the tone generator (see the elastic band in both Figures 10 and 11).

In order to minimize errors from pickup of reflections etc, its best to set up in a relatively open area with 1 inch spacing distance microphone to speaker. Set the SPL meter to the “A” weighting, fast response. With the oscillator on, carefully adjust the alignment for maximum SPL on the meter.

Finally, adjust the gain trim-pot on the LM386 amplifier for the SPL you want to use. (at 1”, 92 dBA normal voice or 98 dBA raised voice, or in between as you choose)

## Using the Tone Generator

Now you no longer have to try and hum or whistle when setting your rigs audio level. Just pick up the Tone Generator, key it on and bring it in line with your microphone at the distance you have chosen.

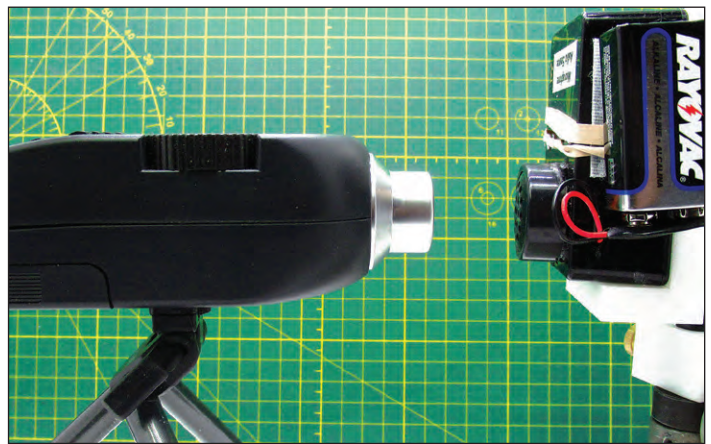


Figure 10: Side view of SPL meter and Audio Tone generator setup. Note the elastic band in the top right.



Figure 11: Top view of SPL meter and Audio Tone generator setup.

With the small 8 ohm speaker described, some care is needed to point it correctly. This is especially true using it with a hand held microphone where the pick-up “hole” may be off to one side.

**Note:** I found that if I used a larger diameter speaker (like the MFJ-281 shown in Figure 8 on the previous page), then directional effects were much less critical. The downside is of course the loss of portability.

## References:

- 1) Engineering Toolbox: [www.engineering toolbox.com](http://www.engineeringtoolbox.com)
- 2) “Design of Op Amp sine wave oscillators”, by Ron Mancini, in the August 2000 issue of the Texas Instruments Incorporated's *Analog Applications Journal*.
- 3) Please contact the author about the oscillator PCB. A limited quantity is available at a low cost.

Don Dorward, VA3DDN, has had 43+ years experience in the electronics industry including vacuum tube manufacturing, semiconductor and component testing, R&D, ISO Quality Systems, Regulatory Affairs, UL/CSA/EU/CE/EMC compliance, Environmental testing, Standards & Calibration.

Don has been an Amateur Radio operator since 2002. He is a Life Member of the Institute of Electrical and Electronics Engineers (IEEE) and is a member of the American Radio Relay League (ARRL), Radio Amateurs of Canada (RAC) and the Radio Society of Great Britain (RSGB).





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# RADIO MAGIC

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## Magic, Myth and Marconi: Part 2

*Note: Part 1 of this series appeared in the January-February 2020 TCA*

### “Everyone...”

*“Everyone steals in commerce and industry.” – Thomas Edison*

At the dawn of the 20th century, the fledgling commercial wireless world of Guglielmo Marconi was in total turmoil. He was no longer an idealistic and carefree teen “playing” wireless in his backyard with his brother. He was now in his late twenties, facing a stern, bearded Board of Directors and panicky principal investors who weren’t too happy because his company continued to bleed red ink, and was now hunted by ravenous packs of domestic and international competitors – like a wounded rabbit on the run.

To make matters worse, his relationship with the British Postal Service (BPS) – with its considerable funds and support and politically powerful Director William Preece – ended on a sour note when he formed his own wireless company. Preece wrote derisively about this in *Page’s Engineering Weekly* (issue 2):

*“Unfortunately, Mr. Marconi was captured by a financial syndicate, and his relations with the Post Office were severed. Nearly six years have elapsed, and yet the system has not yet reached the practical stage. It is still experimental. Marconi’s ambition is evidently to conquer great distances. It is not wanted across great oceans – it is wanted across narrow, rocky channels, and between tide swept island homes.”*

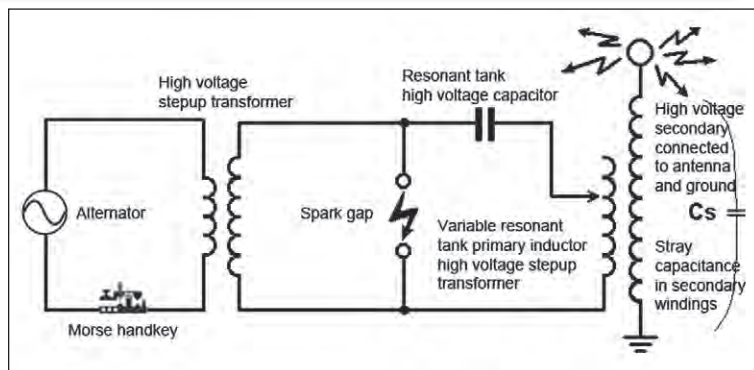
Even a 14-year contract with Lloyd’s of London to only use his wireless equipment at their lightship and land signal stations wasn’t a big enough “bandage”. Marconi’s Wireless Telegraph Company was heading slowly but surely towards the rocks with

only about 80 vessels, mainly British and Italian navy warships, plus a handful of ocean liners carrying his equipment and operators, and subscribing to his wireless service.

Wireless, itself, was no longer a “backyard activity” – it had gone global. Many conflicting patents were being issued on top of other countries’ existing patents because each rival nation favoured their own native sons. In early 1900, Marconi’s famous four sevens “7777” British patent was granted even though it was based on the total obfuscation of any prior knowledge of other known works. But when he tried the same stunt on this side of the Atlantic, it was rejected outright because the US patent office noted, somewhat incredulously, “Mr. Marconi’s *pretended ignorance* of the ‘Tesla oscillator’ was a little short of absurd.”

The Tesla oscillator (“Tesla coil” to us), invented by Nikola Tesla in 1891 (see Figure 1), was the most powerful spark gap transmitter on the planet, and capable of transmitting electrical energy or messages using telluric (Earth) currents or ether (Hertzian) waves. Tesla believed the first method was the future for wireless applications while Marconi believed it was the second. But Tesla convinced himself that his opponent also planned on using telluric current transmissions and his Tesla coil transmitter to steal his thunder as he had done to Lodge. He was mostly correct, except he didn’t know when and from where Marconi would make the attempt. A combined game of blind man’s bluff, poker and chess was about to be played by the two to determine who would rule the wireless “kingdom”.

A wireless “arms race” also began for dominance in this new technology among the British, French, German and Russian Empires versus American Manifest Destiny.



**Figure 1: Tesla oscillator/coil spark gap transmitter.** It could be tuned from very low (VLF) to medium frequencies (MF) and generated large amounts of radio frequency (RF) energy. Tesla “borrowed” the idea for it from the “spark-excited resonant transformer” invented in 1889 by Physicist Henry Rowland.

Adolf Slaby – a study buddy of Heinrich Hertz, who just so happened worked with Preece and Marconi during wireless signalling experiments across the English Channel – recognized its (military) significance, and everything he learned and observed while in Britain was duly and dutifully reported to a very interested German Kaiser and his Imperial War College. On the homefront, Oliver Lodge went on a tirade after Marconi “borrowed” his coherer design a few years earlier (see Part 1 of this series) and formed his own wireless company to go head to head against him. But, I digress...

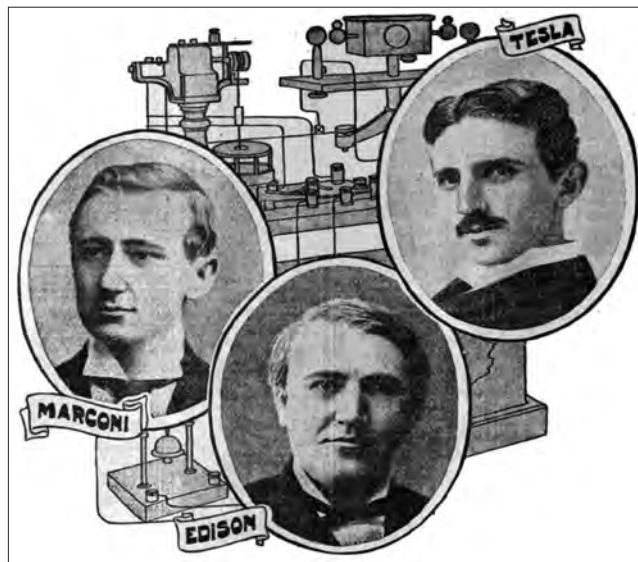
Because of the US patent office rejection, “William” Marconi (his first name anglicized) had a tenuous toehold in America, going up against regional telegraph landline-turned-wireless companies all jousting for the same investor capital, and they didn’t take too kindly to this foreign “page boy”. In “My Father, Marconi”, Degna Marconi writes: “After father went to England he became rather a dandy, but even London tailoring failed to disguise his youth. Reporters wrote, when he arrived in New York for the first time, that ‘he looked the student, with dreamy eyes’.” – Ouch! It didn’t help that her father was naturally shy and reserved, and was not at all comfortable in the limelight.

Tesla also dressed the part of a high society dandy, but he was flamboyant, confident, gregarious, tall and swarthy with a macho-man moustache. More importantly, he was a naturalized US citizen ("one of us"). Everyone knew the three major "combatants" involved and their intertwined relationships with each other (see Figure 2). Tesla had bested the "Wizard of Menlo Park" (Thomas Edison) in their famous "War of the Currents" and everyone expected Tesla would put down the "usurper" Marconi. The dark clouds of a "wireless war" had now formed on both sides of the Atlantic.

### "They"

The cable companies had the most to lose in this "war". At the time, they controlled a global telecommunications money making empire (see Figure 3), and they were doing their very best (or worse) to sabotage any wireless interlopers by using their considerable monies, legal and political clout to thwart any attempts to buy property and build near, and/or operate in their territories. They weren't going to give up without a long, expensive and drawn-out fight to the bitter end.

The mercantile maritime world was the primary user of telegraph systems. Any ship's captain, at any major world port could easily, quickly, and confidentially communicate back and forth with his company and/or agent(s) using the



transoceanic cables and landline telecommunication systems that encircled the globe.

In just five years, spark gap Morse code wireless distances had increased to an amazing 200 kilometres, but because there was no transoceanic wireless communication capability, any wireless messages received and needing to go overseas had to be transferred over to a competing cable company, which then added a hefty handling surcharge.

Wireless had to break the domination of the cable companies and drive down messaging costs so it could compete for customers and the only way to do this was to hit them in their Achilles heel – the very high cost of laying down new and continually repairing old undersea cables each year (millions in today's dollars). This cost was only more than offset by the tremendous amount of two-way revenue messages generated between Europe

Figure 2: The King and the Princes. Edison would do everything in his power to thwart Tesla and see Marconi seated on the wireless "throne". Credit: The Topeka State Journal, "Latest Discoveries in Wireless Telegraphy", January 1, 1901.

and America. They would only be "dethroned" if and when wireless signals were successfully sent and received across the Atlantic.

### The Tesla Factor

Unlike Marconi, Nikola Tesla wasn't born under a lucky star with a silver spoon in his mouth. He was born in 1856 during a fateful and frightful lightning storm with a crazy-scary genius and Nostradamus-like gift of prophecy. A self-made man, he left his native Serbia with a few dollars in his pocket and a letter of reference that got him hired by Edison. But two geniuses under the same roof was one too many and they soon had a "failure to communicate" – allegedly over money owed Tesla, but more likely over Edison's direct current (DC) versus Tesla's alternating current (AC) power generating and distribution systems.

Tesla left to go it alone, but his short-lived AC electric power company failed so he joined forces with Edison's archenemy, George Westinghouse (Westinghouse Electric), and the "War of the Currents" was on.

Tesla "weaponized" Westinghouse using his AC patents and later forgave a fortune in owed royalties so it could hold the line against Edison. Tesla truly believed his inventions should be for the benefit of humanity, not for the benefit of his bottom line. When Westinghouse won the contract to light up the famous 1893 World's Columbian Exposition in Chicago, Illinois, using AC power, Edison yielded the field and retreated. But it was a Pyrrhic victory. The "dethroned" Edison would never forget, nor forgive Tesla's "treachery"; he would have his revenge.

*"When you strike at a king you must kill him."* – Emerson.

Because of his philosophy and all too trusting nature, Tesla was often very vulnerable to everyone not as altruistic or utopian as he was, which was just about everyone else in the industry! Another chink in his armour was the fact he just couldn't keep quiet or his cards close to the vest and not telegraph his ideas and/or plans for everyone to openly steal. But he just said "I don't care that they stole my idea; I care that they don't have any of their own."



Figure 3: Telegraph landline and cable map. A small segment of a world map with already over 320,000 kilometres of telegraph landlines and undersea cables encircling the globe by 1901. Credit: Norman B. Leventhal Map & Education Center Collection, Boston Public Library.

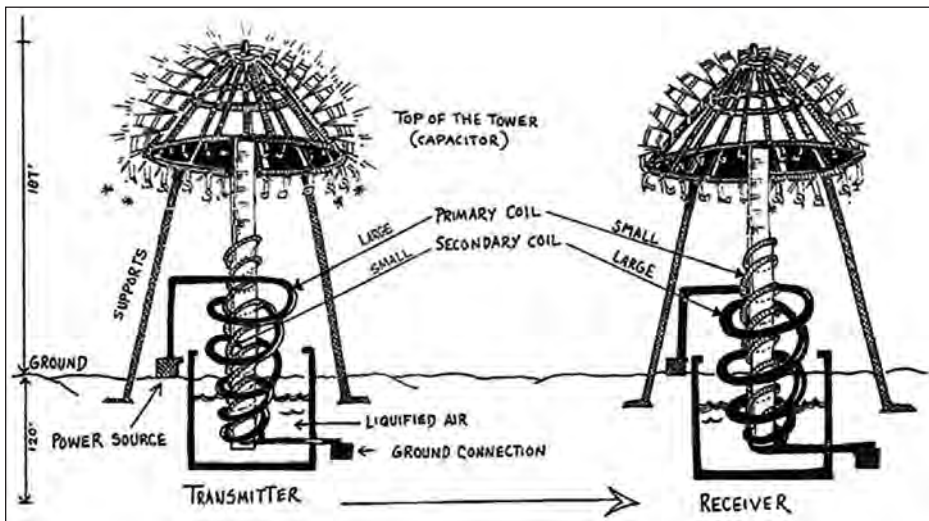


Figure 4: Tesla's real plan. The envisioned worldwide "wireless" telluric current electric power generating, distribution and telecommunication system, but he was never able to develop it beyond a short-range working model. Credit: Nikola Tesla, ca. 1893.

And so, in early 1901, Tesla boasted loudly and boldly (and too often) in the press that he would be the first to send wireless signals across the Atlantic within the year from his soon-to-be-built Wardencllyffe Tower, near Manhattan, New York (see Figure 4).

Perhaps it was a feint to force his opponent's hand because he knew Guglielmo was back on his heels, playing defence, and needed a jolt to come out of his castle keep.

But Marconi stayed put, kept quiet, and bided his time waiting for everything to be ready before he acted on his own secret plan. Then an unexpected blow struck

suddenly when a major US wireless company offered cheap, speculative "get rich quick" stocks based on what Tesla said in large and bold advertisements (see Figure 5), which quickly siphoned off badly needed money away from Marconi's US-based company; he couldn't afford to wait much longer – it was now or never!

### A Hill to Die On

Marconi lacked Tesla's raw genius but he had the business acumen and ruthlessness of an Edison combined with the instincts and tactics of a Napoleon, plus he had the very best of the very best "electricians" (electrical engineers) working in his camp.

Figure 5: US wireless stock promotion. The Federal Wireless Telephone and Telegraph Company operated on the US Eastern Seaboard.

A small subsidiary of the American Telephone and Telegraph Company (AT&T), it was involved in a stock swindle that left investor's with worthless paper.

Credit: *The Washington Times*, October 27, 1901.

**A PHENOMENAL RECORD!**  
**WIRELESS TELEGRAPHY STOCK** will soon be difficult to secure at any reasonable figure.  
**Your Opportunity is Now.**  
**50 cents** a Share  
 Until November 1.  
 It is Predicted by Eminent and Well-informed Financiers that Stock in the  
**FEDERAL WIRELESS TELEPHONE AND TELEGRAPH COMPANY**  
 Will Advance in Price to Several Dollars a Share Within the Next Few Months.  
**THE ONLY QUESTION FOR YOU TO DECIDE.**  
 The Cream of the Whole Territory in the United States is Absolutely controlled by the **FEDERAL WIRELESS TELEPHONE AND TELEGRAPH COMPANY.**  
**The Whole World is Talking About Wireless Telegraphy.**  
 The inventor of this system, in an interview in the "New York Journal" on August 20th, states that he has no more doubt that he will in a short time be sending wireless messages across the Atlantic Ocean than he has that cars run up Broadway. **A Most Marvelous Invention!**  
**Don't Delay. The Opportunity is Yours. Will You Grasp It?**



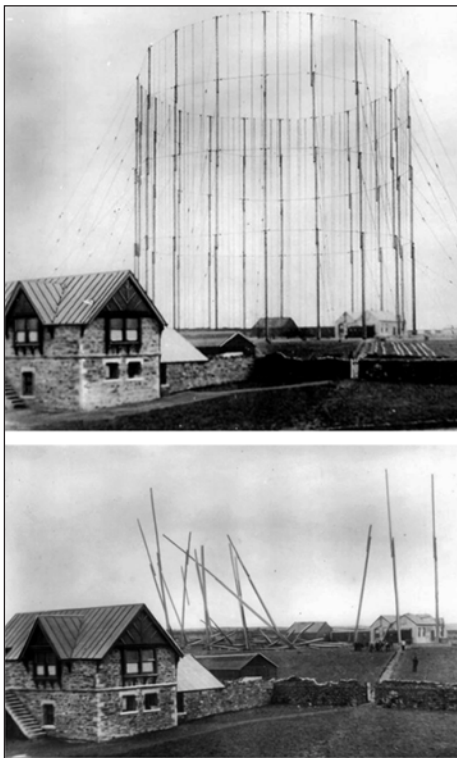
Figure 6: Marconi and Kemp. Still frame from the first silent film about wireless. George Kemp's (seated) hand is on a "grasshopper" key next to a spark gap transmitter while Marconi reads a Morse register paper tape. Credit: Biograph Company, 1902.

One was the ramrod straight, ex-Royal navy engineer and instructor George S. Kemp, who just so happened to work for the BPS and was assigned by Preece in 1897 to mentor the young and inexperienced Marconi in his wireless quest. Kemp was Guglielmo's ever-loyal lieutenant; he became like a second older and protective big brother (see Figure 6). The two men would work together for the next 35 years (until Kemp's death) – much longer than Marconi's two marriages!

Another was John Ambrose Fleming, who just so happened was a former Edison-employed engineer. He was contracted to design and build the required "weapons" for the Poldhu wireless station in the south Cornwall coast of England – namely the AC power plant and high-powered spark gap transmitter (connected to a massive vertical antenna array).

When Marconi's Board of Director's was told of his plan and cost, they were absolutely horrified because its failure would mean financial ruin for him and for his company (and them, too) if any word leaked out to the press and stock market because the BPS (Preece) or Lodge or some other wireless conglomerate(s) would strike for the "kill". They knew Tesla was a well-known braggart who was all too prone to over-exaggeration ("all show and no go") so let him to try first because he most likely would fail in spectacular fashion and that would be the end of that.

But Marconi realized it was really a coin toss because the sword of destiny swings both ways and Tesla could just as easily succeed in spectacular fashion, and that, indeed, would be the end of that! Twenty-seven year old Guglielmo steeled himself to go out in a "blaze of glory" and gambled

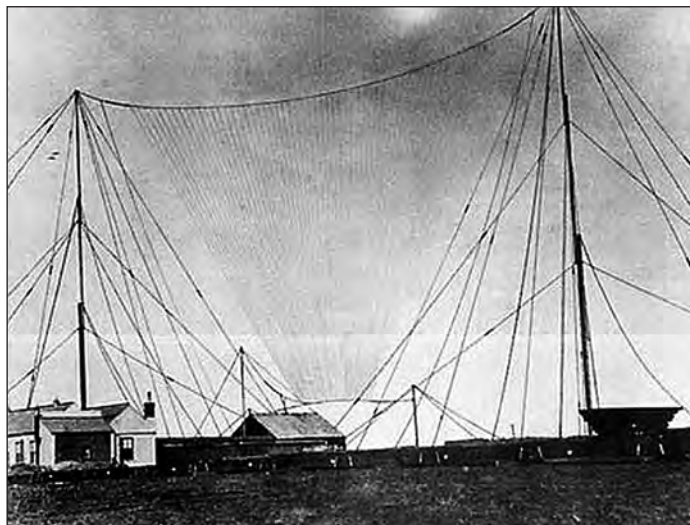


**Figure 7A:** Poldhu original antenna before and after. A Marconi design consisted of a ring of 20 50-metre tall spar masts using 400 wires (!) in an inverted cone shape. Credit: Archive of Marconi Corporation, PLC.

the staggering sum (even for then) of 50,000 British pounds sterling (today 15+ million dollars) to be the first to do what many thought was impossible – “when pigs fly” – to cross the Atlantic Ocean with a spark gap generated Morse code wireless signal.

He intended to sail from England to the United States (Cape Cod, Massachusetts) taking only the loyal Kemp and another trusted employee (Percy W. Paget). His Board of Directors demanded that everything must be done in strict secrecy. No third party witnesses whatsoever were to be present; his word of honour as a “proper” gentleman would suffice – if he

**Figure 7B:** Poldhu replacement antenna. A Kemp design consisted of 55 wires in a fan shape supported by an insulated triatic stay strung between two 48 metre tall spar masts spaced 60 metres apart, according to Marconi. It was orientated broadside to the ocean. Credit: Archive of Marconi Corporation, PLC.



succeeded. And he must notify them immediately so they (and principal investors) could buy company stocks before the general public press release increased their value. *Note: At the time, insider trading was perfectly legal in Great Britain and considered an Executive “perk”.*

Everything was ready at Poldhu by early September 1901, as was the intended receiving station constructed at Cape Cod (about 4,800 kilometres from England). Then another hard blow was struck – a raging storm demolished Poldhu’s antenna (see Figure 7A). And incredibly, the Cape Cod antenna, which used the same (structurally unstable) design, collapsed during another windstorm shortly thereafter!

If Tesla suspected Marconi was up to something, he must have thought there was no way his “wounded” adversary would be able to recover until the next year. He was dead wrong! A replacement antenna was hurriedly erected at Poldhu by late November (see Figure 7B) albeit far less capable than the first. Still fearing Tesla would make an attempt before year end (the “fog of war” now engulfed both sides), Guglielmo decided not to delay and sailed for St. John’s, Newfoundland, (about 3,700 kilometres from England), instead of Cape Cod. He also released a carefully crafted cover story to explain away his overseas trip to the press (see Figure 8).

Unbelievably, he did this even though he knew there was only an abandoned ramshackle building at the site chosen, called “Signal Hill”, and that he had to take everything needed with him, then quickly set up and improvise on-the-fly, leaving only a few days to catch “flying pigs” wireless signals transmitted from

## MARCONI WILL TRY THE NORTH

**Celebrated Inventor to Experiment in Newfoundland**

**Special Dispatch to the Call**

London, Nov. 23.—Marconi will sail Monday for St. John’s, Newfoundland to carry out some interesting scientific experiments. As it would be tedious and expensive work to erect a huge mast at each spot selected for an experimental station Marconi takes with him two balloons of 20,000 cubic feet capacity. These balloons will be used to suspend aerial wire from the shore station. Ordinarily the balloons will be kept about 150 feet in the air, but may be up about 300 feet.

The sea station will be on a steamer equipped with a pole 120 feet high. The effect of rocky shores, enclosed bays and fogs will be studied. Electrical disturbances at present form one of the most aggravating obstacles to distinct and uninterrupted communication.

“It is quite possible that the result of our trip will be nil,” said Marconi. “It has been claimed that there are certain atmospheric conditions more favorable to wireless telegraphy than others.”

“Do you expect to reach a greater distance by making experiments from a balloon?” asked The Call correspondent.

“No. I think the present maximum of say 200 miles, is as far as communication is likely, at least for some time to come.”

**Figure 8:** The cover story. Credit: *The San Francisco Call*, November 23, 1901.

Poldhu before he was found out! With no other options, no time or money left, “William” would raise his standard on Signal Hill. On that hill he must conquer or die. There was no try.

### My Final

Part 3 concludes this series with George Kemp’s first person account of the events on Signal Hill, and with Marconi speaking, in 1909, about the events on Signal Hill and afterwards.

It was a time when wireless was all the “teenage rage” of the Edwardian Age, when early Amateurs blazed their own trail through the ether and sparked a second “wireless war”.

It was a time when everyone knew his name because it was synonymous with wireless and its new name “radio”.

Even today everyone still knows he “invented radio”, and once a myth is written into the fabric of society it can’t be unwritten whether it’s true or not. – 73

# World Radiocommunication Conference 2019: We Showed Up!

**Bryan Rawlings, VE3QN**  
**RAC Special Advisor**

As briefly summarized in the January/ February 2020 TCA, the 2019 World Radiocommunication Conference (WRC-19) concluded at the end of November in Sharm El-Sheikh, Egypt. In this article I hope to give you a glimpse into the experience of this international gathering – one of the few ever held outside of the International Telecommunication Union (ITU) facilities in Geneva, Switzerland.

Let me start, however, with a quick summary of the challenges we faced and what was accomplished. Recent advances in technology have made it possible for the practical use of sections of the radio spectrum which until recently were of little interest to users other than Radio Amateurs. This, of course, applies principally to a broad swath of the upper UHF and microwave ranges.

Radio Amateurs currently enjoy a wide choice of allocations in the frequency ranges between 430 MHz and 256 GHz, and until quite recently we were usually left alone to use it. However, with the exception of a few small slivers of primary allocation, almost all of this Amateur spectrum is allocated on a secondary basis. Technology is now catching up with the challenges of using these frequencies, not only in terms of the cost and reliability of equipment but also more efficient and, significantly, more shareable means of delivery.

The desire of Radio Amateurs to hold on to contiguous stretches of spectrum to use with any and all modulation schemes – such as voice, CW, digital and broadband – and the insistence that we be able to do so down to and even below the noise floor, puzzles some who don't understand the nature of Amateur Radio, and who question why we can sometimes seem difficult when it comes to sharing our spectrum with their more robust service-specific communication technologies.

After long and very difficult negotiations in the Conference just ended, Amateurs in ITU Region 1 attained their first-ever frequency allocation at 50 MHz in the International Radio Regulations.

**The Canadian Delegation at WRC-19. Photo by Daniel Gratton of the Canadian Space Agency.**



It is for two megahertz, 50 to 52 MHz, and is secondary, which means Amateurs in Region 1 may have to accept interference from other users in this spectrum. That said, 14 European administrations have agreed to a footnote by which their Amateurs may use the 50 to 50.5 MHz portion as primary users.

To an existing footnote in the Radio Regulations which has given nine African countries a primary allocation in 50 to 54 MHz, 17 African and Middle Eastern countries have added their names. Now, a total of 29 African and Middle Eastern countries will have a primary allocation in six metres including a few countries which have limited the allocation to one or two megahertz.

Canadian Amateurs who have enjoyed the full four megahertz in 50 to 54 MHz for decades might think these outcomes a bit disappointing. In this age of intense

competition for spectrum, however, it is the best that Amateurs may hope for, and it will lead to increased six metre activity from our Region 1 colleagues which will benefit us all.

I cannot close this discussion of the 50 MHz allocation without saluting my European colleagues in International Amateur Radio Union (IARU) Region 1 who have laboured through this very difficult task for the past four years. I must also mention by name Dale Hughes, VK1DSH, who chaired the WRC-19 Sub-Working Group on this agenda item. Dale again demonstrated his infinite patience and determined stewardship to make this happen when many of us might have succumbed to despair.

As for our 6 centimetre secondary allocations in 5650 to 5925 MHz, the best summary would be to say that Canadian Amateurs should see no change. There were prolonged discussions regarding more spectrum and higher powers at lower frequencies in the 5 GHz range but, for us, our spectrum is essentially unchanged.

As expected, in the midst of the very contentious search for spectrum for 5G International Mobile Telephony (IMT), our 6 millimetre allocation in 47 to 47.2 GHz was spared. Amateurs who value this – one of our very few primary allocations in the microwaves – will be well advised to be prepared lest it be coveted in a future Conference.

The agenda item on Wireless Power Transfer for electric vehicles passed, highlighting the recommended frequency ranges of 19 to 25 kHz for high power and 79 to 90 kHz for medium power.





The final disposition of this agenda item emphasized the importance of undertaking additional studies to ensure that the appropriate limits are set so that existing and future wireless services are protected from spurious emissions.

Intense discussions surrounded the part of the Conference which set the agenda for the next Conference scheduled for 2023. While there is no specific “amateur” agenda item (fine with the IARU team), there will be several agenda items which will require careful preparation over the next four years.

Two agenda items seek additional spectrum for International Mobile Telephony (IMT) in the 3300 MHz and 10 GHz bands where Amateurs are secondary users. There is an agenda item seeking additional spectrum for the aeronautical mobile service. While 144 to 146 MHz is no longer part of this consideration, it will bear watching. There is a proposal for Earth Exploration radars based in space operating on 45 MHz. It includes a provision highlighting protection of our six metre band but it will have to be followed. Finally, after a long and contentious debate in WRC-19, there will be a review to study concerns the operators of the Galileo GPS system have with the Amateur use of our 23 centimetre band.

Now, a few thoughts about the Conference venue and its hosts. For those of you who might wonder, Sharm El-Sheikh is Egypt's premier tourist complex and is located on the Sinai Peninsula about 60 kilometres north of the

**Delegates from the African Regional Group.**  
Photos courtesy of the ITU.



peninsula's tip facing the Gulf of Aqaba across from Jordan and Saudi Arabia at the point where the Red Sea narrows. While the WRC-19 activities took place in the newly-expanded Sharm El-Sheikh International Conference Centre, delegates stayed in over a dozen luxury hotels and a transportation system, whose frequency and reliability rivaled Toronto and Montreal at their best, shuttled us back and forth around the clock.

The statistics tell the story of the organizational and logistical challenge which the Egyptian organizers faced and overcame: 3,400 delegates from 163 Member States for four weeks of meetings; most running concurrently with simultaneous translation into the six official UN languages and with on-screen English captioning. As in Geneva, the meetings are essentially paperless relying upon a very robust, reliable and secure Wi-Fi infrastructure.

That problems were minimal and were quickly overcome speaks to the effort the Egyptian organizers, working with ITU staff from Geneva, brought to this monumental undertaking. I must also add that no one I encountered at the Conference, at the hotel, on the transportation network or, for that matter anywhere in Egypt, was anything but



**Justine Sider, Spectrum Engineering with Innovation, Science and Economic Development Canada (ISED), of the Canadian Delegation.**

friendly and helpful. Clearly, Egypt set out to prove that they could do this with efficiency, security and a smile – and that they did.

Finally, I would like to give a shout-out to the Canadian delegation – 29 strong, including six Radio Amateurs – mostly from our regulator Innovation, Science and Economic Development Canada but including, as always, participants from Canada's major telecom stakeholders as well as Radio Amateurs of Canada. They dealt with many matters which, let's be frank, were of greater import to them than the Amateur Radio Service. That said, I was extended every courtesy and consideration as our issues were dealt with throughout these four long weeks.

It was an honour to again represent Canadian Amateurs and our national association, Radio Amateurs of Canada, at this Conference – my third. I am sure my successor in these endeavours will continue to “show up” for Canada and Canadian Radio Amateurs.

*Ma'a Salama and 73.*

For more information about World Radiocommunication Conferences please see the article on the next page and visit: <https://www.rac.ca/wrc/>



# The International Regulation of Radio and the Amateur Radio Service

**Bryan Rawlings, VE3QN**  
**RAC Special Advisor**

The International regulation of the radio spectrum was a necessity from the very earliest days. Radio waves don't respect borders, and if the spectrum you use for your police and emergency services is the same as your neighbour is using for broadcasting you are both going to be in trouble.

The first international meeting to try to address this concern was held in 1903 and these meetings have continued in one form or another ever since. For a long time these conferences were organized for individual radio services – usually broadcasting – and were specific to certain regions of the world. However, international gatherings in which all users of the radio spectrum are participants date back to at least 1927.

The International Radiotelegraph Conference held in Washington in 1927 was the first of these truly global gatherings. It was an important meeting for the Amateur Radio Service as initiatives were defeated which would have severely limited Amateur access in the HF spectrum. Amateurs had only recently discovered the ability of these short-waves to carry radio signals across great distances. Other such conferences were held in Madrid in 1932, in Cairo in 1938, in Atlantic City in 1947, and then in Geneva beginning in 1951.

The 1979 World Administrative Radio Conference (WARC79) – memorable for the allocation of our 30, 17 and 12 metre bands – could be said to be the first of the truly modern world conferences.

In the mid-nineties, shortly after the founding of Radio Amateurs of Canada, RAC initiated an arrangement whereby a resource would be made available to our regulator – currently Innovation, Science and Economic Development Canada (ISED). The resource, an active Radio Amateur, would be available to the Department to provide counsel on agenda items being studied for an upcoming World Radiocommunication Conference (WRC). Our regulator, in turn, would arrange for the RAC resource to join the Canadian Delegation at the upcoming WRC. In time this also came to include attendance at WRC Preparatory Meetings with the Canadian Delegation at the International Telecommunication Union in Geneva, Switzerland.

The purpose of a WRC is the formal amending of the Radio Regulations, a group of documents which set out the



**The International Amateur Radio Union (IARU) Delegation at the World Radiocommunication Conference in Sharm-El-Sheikh, Egypt. Photo by Daniel Gratton of the Canadian Space Agency.**

frequency allocations, international rules and definitions of radio services which the Member States of the United Nations agree to be bound by and which has the status of an international treaty.

World Radiocommunication Conferences, originally planned to be held at 10-year intervals, are now held on average every four years. Because of their size, length and logistical complexity WRC's are now almost always held in Geneva where the International Telecommunication Union (ITU), a UN agency, has three buildings and access to the adjacent Geneva International Conference Centre. WRC-2000 was, however, held in Istanbul and, of course, the 2019 World Radiocommunication Conference took place in Sharm El-Sheikh, Egypt. By the ITU's count, WRC-19 was the 38th Conference of its type.

Agenda items originate within the deliberative processes of recognized stakeholders. In simpler language this means they are brought forward by Member States or one of the many "Sector Members" of the ITU. These include telecom manufacturers, international and scientific organizations, and other UN agencies such as the World Meteorological Organization. The International Amateur Radio Union (IARU) is an ITU Sector Member and advocates for the Amateur Radio Service on behalf of its Member Societies, which includes Radio Amateurs of Canada.

It's important to realize that the agenda for an upcoming World Radiocommunication Conference is decided at the conclusion of the previous Conference. For example, what will be decided at the 2023



**Katsumi (Ken) Yamamoto JA1CJP, Vice-President of the Japan Amateur Radio League (JARL). Photo: International Telecommunication Union.**

Conference was selected at WRC-19 and will form the body of work for the ITU Study Groups over the next four years.

The rapid pace of technological change is making it increasingly difficult to decide what proposals to include in an upcoming Conference – especially in the final days and hours. It's important for us, as Radio Amateurs, to consider the nature of these technological changes and to assess their impact on the uses of spectrum so we can better understand the challenges we will face when we are called upon to defend our existing allocations, and on those occasions when we might seek to acquire a new allocation.

The road to actually having a proposal make the agenda of a World Radiocommunication Conference is, however, long and arduous. Brought forward first by a Member State, a proposal is nowadays typically reviewed next in one of the regional groupings of ITU Member States. For Canada this would be with the

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**Simultaneous translation interpreters at WRC-19.**  
Photo courtesy of the ITU.

Inter-American Telecommunications Commission (CITEL) of the Organization of American States. While a Member State is at liberty to introduce a proposal by itself in the deliberations for an upcoming Conference, the likelihood of its being selected is greatly reduced if it does not have the support of a regional grouping.

Proposals which make it through the vetting of a regional grouping will ultimately appear as an input for consideration in the closing actions of a World Radiocommunication Conference. In recent Conferences this has become a very busy and frenzied process. Needless to say, only a finite number of agenda items actually make it for consideration and appear as Agenda Items for the next Conference.

Agenda Items are crafted so as to have a specific deliverable. In the ITU lexicon competing deliverables are called the “methods” and are different alternatives proposing changes to the Radio Regulations – for example, sharing a specific range of frequency or changing the nature of an allocation (primary vs secondary). “No Change” – leaving things as they are – is always the default method.

An agenda item is routinely placed under the direction of one of the ITU’s “Working Parties”. For the past several years, the Amateur Radio Service and the Amateur Satellite Service have been exclusively presided over within ITU Working Party 5A (WP 5A) whose other mandate includes terrestrial services operating above 30 MHz. The Chairman of Working Party 5A is a Canadian named Dr. José Costa. Several “Working Groups” report on their activities to WP 5A and Working Group 5A1 (WG 5A-1), chaired by Dale Hughes, VK1DSH, is responsible for Amateur Radio issues. The objective of all this is to present the forthcoming Conference with a considered set of alternatives. Teams of experts study alternative methods and conduct expert analysis through regular meetings, typically

twice a year and usually at the ITU Headquarters in Geneva.

All of this comes to a head in a Conference Preparatory Meeting (CPM2), which is usually held a few months before the start of a World Radiocommunication Conference.

In the case of WRC-19, the CPM2

meeting was held in Geneva in February 2019 prior to the WRC in October 2019. The output of CPM2, the Conference Preparatory Material (CPM) Report, is the considered opinion of the experts who have debated the agenda items over the preceding four years. It documents the options (“methods”) for consideration during the Conference.

It is worth noting that those who will be making the decisions at the Conference are not necessarily the same experts who have laboured through the issues in the preceding years. There is also no restriction preventing a delegation in the Conference from inputting alternative solutions. Nonetheless, the CPM2 Conference is the last opportunity for the expert team – which includes Amateurs – to influence the pre-Conference documentation.

A World Radiocommunication Conference, by the sheer virtue of the number of delegations and delegates, is a marathon. There have been suggestions to reduce the duration from four weeks to three but, if the recent Conferences are a guide, it is an achievement to get all the business done in four weeks.

Without going into too much detail, the agenda items are divided into “Chapters” and – depending upon their complexity and the amount of contention – they work their way through various layers of Working Groups, Sub-Working Groups and Drafting Groups. Once a final resolution has been reached, and its proposed text has been edited for compliance with ITU standards, it appears on the agenda of a Plenary Meeting.

The Plenary Meetings, which are held periodically during the Conference as agenda items are resolved, provide through two readings the final decision of the Conference on an agenda item. It is worth noting that at each stage of the approval process, votes are not taken; rather consensus, meaning each

delegation either supports the decision or does not oppose it, is the requirement.

As the Conference approaches its scheduled conclusion the pressure mounts to resolve outstanding issues. The default method for failure to agree among the proposed alternatives to an agenda item is to make no change.

After the Conference reaches its conclusion, the final Plenary held and the signing and closing ceremonies are over, the ITU will issue a document containing the Provisional Final Acts of the Conference. This precedes by several weeks the official Final Acts which will, if necessary, be brought into compliance with the legal text required in the Radio Regulations.

The subsequent reissue of the Radio Regulations forms the international agreement on the uses of the radio spectrum until the next Conference amends them again. The decisions of a Conference typically come into force after one year on January 1. The decisions of WRC-19 therefore can be expected to enter into force on January 1, 2021.

All of the above, however, does not necessarily change the status of the regulations affecting radio users in any individual countries. Each Member State will take the decisions of a Conference and follow its own procedures before deciding if, how and when to implement them for its own licensees.

In Canada, our regulator will typically issue a call for public consultation on changes it proposes to Canadian regulations and, following consideration of the responses, may then amend the Canadian Table of Frequency Allocations.

A further restraint for the Canadian Amateur Service is that Amateurs, not being individually licensed, must also await a reissue through Ministerial signing of the authorization to make use of the changes which is done through the “RBR-4 – Standards for the Operation of Radio Stations in the Amateur Radio Service” document.

I hope the foregoing provides some insight into how radio is regulated internationally and, more critically, helps to better appreciate why it is essential that the Amateur Radio Service continues to show up at international gatherings and advocate for our frequency allocations.

For more information about World Radiocommunication Conferences please visit <https://www.itu.int/en/ITU-R/conferences/> and <https://www.rac.ca/wrc/>

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# Defence of Amateur Radio Fund (DARF) 2019 Annual Report

Serge Bertuzzo, VA3SB



The sole purpose of the Defence of Amateur Radio Fund (DARF) Trust is to support the travel expenses of a certified

Amateur as a member of the Canadian official delegation at the International Telecommunication Union's World Radiocommunications Conferences (WRC) and Preparatory Meetings which are usually held in Geneva, Switzerland.

World Radiocommunication Conferences update the Radio Regulations, the international treaty that among other things, sets out the frequencies on which radio services such as the Amateur Radio Service may operate. Our delegate's role is to assist our regulator – Innovation, Science and Economic Development Canada (ISED) – with all agenda issues that may influence allocations to the Amateur Radio Service. This may include helping defend existing Amateur bands from being reallocated or being subject to harmful sharing by other interested parties. There may also be an agenda item offering the opportunity to advocate for a new allocation or to defend the use of existing Amateur Radio spectrum by other Services seeking to gain access to the spectrum.

The DARF Trust's role is to provide funding for our delegate's travel and living expenses in order to attend these various conferences. While made a member of the Canadian delegation, ISED does not provide any funds towards their participation. As most of these meetings are usually held in Geneva, one of the most expensive cities in the world, DARF's funding is essential. Without DARF, there would be no Canadian Amateur presence at these international meetings or in the many meetings that take place developing and working out what becomes Canada's position.

Canada is one of a small number of countries – Australia, Germany, The Netherlands, Japan, New Zealand, the United Kingdom, the United States and Brazil – who regularly include a Radio Amateur in their official delegation. These Amateur delegates work closely with each other and with the International Amateur Radio Union (IARU) representatives, including IARU President, Tim Ellam, VE6SH. This is important, as WRC decisions are ultimately made only by the ITU Member States.

DARF TRUST FINANCIAL SUMMARY FOR 2019	
Starting balance	\$34,162.31
Donations and income on investments	\$9,630.66
Disbursements	(\$9,856.13)
Ending balance	\$33,936.84
Net change	(\$225.47)

The IARU is one of many industry Sector Members representing various special interests – telecommunications companies, marine and air carriers, etc. – that attend, but have no vote.

Throughout the ITU Study Cycle preparatory process, our delegate to the Preparatory Meetings regularly keeps us all up to date – through ongoing articles in *The Canadian Amateur*, on the RAC website and via Twitter – on the issues and processes that ultimately determine Amateur Radio spectrum around the world. Bryan Rawlings, VE3QN our delegate to the World Radio Conference 2019 held in Sharm El Sheik, Egypt from October 28 to November 22, 2019, has prepared an excellent overview of WRC-19 which is included on page 28.

The DARF Trust was created by Tom Atkins, VE3CDM and Bill Loucks, VE3AR, in 1991 to provide funding to ensure that a Canadian Radio Amateur would be part of these critical processes. Over the years, this need has only grown more critical with the explosion of mobile services and the need for more spectrum to service them.

DARF is an independent legal Trust, which is administered by RAC to ensure that any funds disbursed are only used for the purposes allowed by the Trust as follows:

- 1) Ensure that there are sufficient funds on hand for the Amateur delegate's expenses to attend WRC meetings.
- 2) If sufficient funds are on hand, to also support travel to Preparatory Meetings when issues directly affecting Amateur Radio spectrum are being debated.

It may seem that this is a once every four year expense for the Conference. However, that is just the end of one cycle of the process and the beginning of the next. Between one WRC and the next are many preparatory sessions where the real work to shape, negotiate and defend allocations take place. Our delegate typically attends two of these meetings

each year, each lasting 10 to 12 days. Even with discounted airfare and hotel rates, it is expensive to send a person to Geneva to work and live for two to four weeks each year.

If you have not contributed to DARF, please consider

making a personal donation and suggest a club donation to DARF at your next meeting. Donations of any amount are welcome. Every dollar helps and will only go to defending and expanding our access to spectrum. We especially thank those clubs and individual Amateurs who have made their DARF contribution. Your support is much appreciated

Special thanks to the following individuals and clubs for their generous donations:

- Robert Thomas, VE3TOU: \$5,000
- Anonymous: \$2,000
- Ottawa Valley Mobile Radio Club: \$600
- Calgary Communications Club: \$200
- Individual donations (less than \$200 each): \$1,830.66

## DARF Trust Financial Summary 2019

The summary provided in the table shows that DARF is still viable and will be able to support our delegate for several years to come. However, inflation and the trend that new donations are less than expenses continues to be worrisome in the longer term. The insatiable demand for mobile device connectivity means continued and increasing pressure on spectrum from large corporate and government interests. Only a strong Amateur presence at the ITU table to defend the bands we already have will protect the future of Amateur Radio. Without the funds to work with, our voices will not be heard. So once again, please consider a donation.

Donations can be made online by clicking on the "Donate" button on the RAC website or sent to RAC HQ. One easy way to donate is to include an extra \$10 or \$20 or more when you renew your RAC membership. Please make your 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.

73, Serge Bertuzzo, VA3SB  
RAC International Affairs Officer

# Transmission Line Trouble?

Erik Skovgaard, VA7QI

Do you worry about high standing wave ratios (SWR)? If you are using one of the newer solid-state amplifiers or a rig without a built-in antenna tuner, you probably should be.

Most solid-state amplifiers tend to prefer an SWR less than 1.5:1. Few HF antennas – especially on the lower bands – will be that good across the entire band and a multiband antenna is nearly impossible to tame on all bands at the same time.

We must remember that the antenna itself is only part of the problem. An antenna *system* encompasses all the feedline components such as connectors, tuners, switches, splices and baluns – and, of course the antenna itself.

There are many books and articles covering antennas, but not nearly as much is written about feedlines. Yet the feedline performs a very important job. It is supposed to deliver as much power to the antenna as possible and preferably not radiate any of it underway. Conversely, it should conduct the signals picked up by the antenna and deliver it to the receiver, preferably without picking up any noise along the way.

**Note:** For those looking for a more detailed analysis of transmission lines see “Antennas and Transmission Lines” by John A. Kuecken, published by MFJ Enterprises in 1996. It is great bedtime reading (you fall asleep fast).

My main HF antenna’s feedpoint is about 166 feet away from the shack. That means a lot of coax and, since I prefer to use RG-213, it is not cheap either.

The length is necessary because:

- 1) It happens to be midway between two tall trees and is therefore a convenient place to feed a dipole.
- 2) I wanted the feedpoint to be a good distance from the house so the antenna does not pick up noise from various computers, LED lights, wall warts and other unintended RF emitters.

However, due to a series of windstorms in the area, I do not currently have a dipole, but I managed to salvage enough of what was left of an existing antenna to make an Off-Centre Fed (OFC) Dipole, which is fed with 450 ohm twin lead and connected to a 6:1 balun.

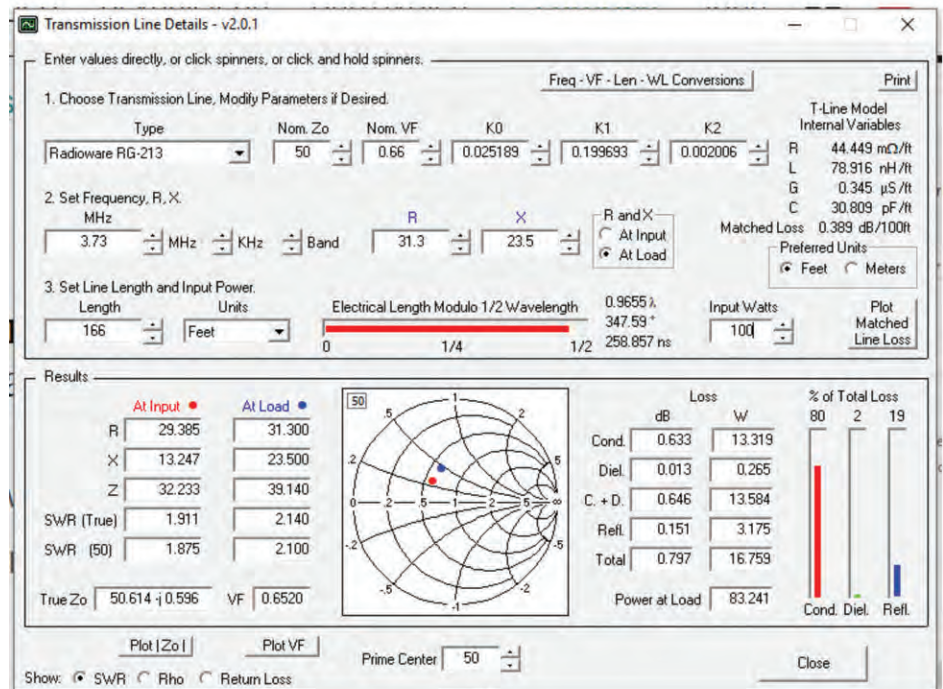


Figure 1: Calculated loss at 3.73 MHz

Truth be told the SWR is not what I had hoped for and, contrary to common myth, my OCF antenna does not cover a lot of bands. I have measured the following at the 50 ohm side of the balun:

- 3.730 MHz SWR = 2.14
- 3.570 MHz SWR = 1.92
- 7.100 MHz SWR = 3.29
- 14.100 MHz SWR = 4.46

While an antenna tuner placed at the balun would probably be able to provide the proper match to the feedline for the two 80m frequencies and possibly even the 40m frequency, my current tuner has had an unwanted and disruptive encounter with water – even though it was designed for outdoor use – and is therefore currently out of service.

Fortunately, my amplifier is reasonably tolerant of a high SWR so I decided to live with it for now. But it occurred to me that it would be good to know the actual loss in the feedline. Manufacturers provide data on dB attenuation per 100 feet at select frequencies, but *this always assumes that SWR=1:1*.

RG-213 is listed as having an attenuation of 0.6 dB per 100 feet at 10 MHz and 0.2 dB at 1 MHz. Scaling that to 3.73 MHz and 166 feet results in a loss of about 0.6 dB, which leaves 87 watts delivered to the balun when the amplifier sends 100 watts out at the opposite end of the cable.

That kind of loss would hardly be noticed by a receiving station. But what about the cable loss at my high SWR? Furthermore, why am I seeing a much better SWR at my station even with the same antenna analyzer?

A little research uncovered an interesting program called TLDetails which is available online at: <https://ac6la.com/swrloss.html>

The program runs on any recent version of Windows and does not need to be installed. Just unzip the downloaded file into a working directory, such as your home directory, and run it. The program needs some data measured either at the transmitter end of the feedline (“At Input”) or at the antenna (“At Load”).

Using my MFJ-226 antenna analyzer, I measured the following values at 3.73 MHz at the balun:

R=31.3 ohm; X=23.5 ohm

I then entered the information into the program and the result is shown in Figure 1 above.

Next, enter the frequency of interest, the cable type from the drop-down box and the length of the feedline. Then enter the measured parameters (R and X) and select whether this was measured at the input to the transmission line or the load side. The result is computed immediately as you type in the values and a wealth of additional information is provided.

The computed result was somewhat surprising, only a 0.8 dB loss! In other words, the balun sees 83.2 watts of the 100 watts I send into the feeder. The program also shows which part of the feedline is responsible for the loss. In this case 80% of the loss is due to resistance in the conductors (mainly the centre conductor) and only 19% of the total loss is due to the reflected wave.

The program also calculates what I should see at the shack end and indeed the SWR looks a little better at that end of the feedline, which is where most of us usually measure it. Furthermore, the value is also close to what the SWR meter in the shack shows.

**Caveat:** The loss is of course frequency-dependent. Assuming the same measurements, and changing the frequency to 14.1 MHz, results in a loss of about 1.5 dB in the same cable.

A similar program called "TLW" is published by the American Radio Relay League as a part of *The ARRL Antenna Book*. The program works the same way as TLDetails, but in addition it can calculate and draw the schematic for a matching circuit *for the shack end of the line* which could be very useful. However, the program provides a few less details and always assumes that your TX sends 1500 watts out. But it does provide some interesting graphs of the voltage and current as well as the resistance and reactance along the cable as shown in Figure 2.

### Curious Cable "Constants"

The nominal velocity factor (VF) for RG-213 coax is 0.66 and the characteristic impedance is 50 ohms, but did you know that this isn't always so? Not only can production batches vary in impedance, but it turns out that both values are frequency dependent.

TLDetails can plot out the graph for each value as a function of frequency. So at 3.73 MHz the impedance is actually 50.6 ohms (see Figure 3) – close enough for me, but look at what happens at lower frequencies. The cable impedance is over 53 ohm at our lowest band.

So the velocity factor at 3.73 MHz is actually only 0.652 (see Figure 4 on the next page). Does it really matter? Well, perhaps not in most cases, but in this case I actually used the VF to compute the length of the transmission line.

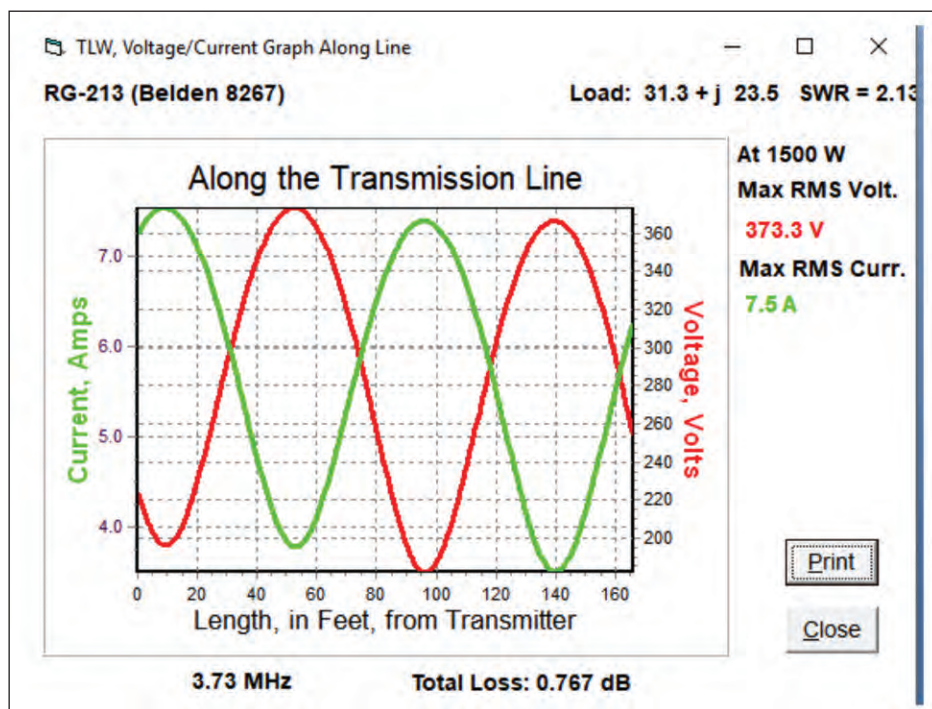


Figure 2: Voltage and Current along the feedline

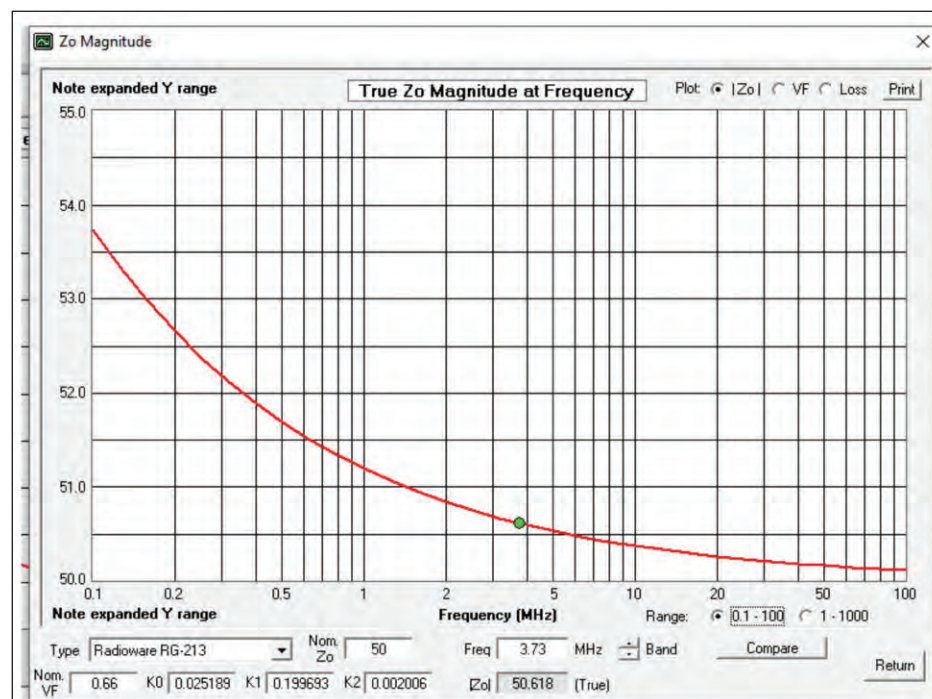


Figure 3: Cable impedance as a function of frequency

Being an eternal experimenter, the line has evolved over time and is now made up of several pieces so I did not really know the exact length. No problem, I disconnected both ends and attached one end to the antenna analyzer.

You may recall that a quarter-wavelength cable exhibits a low impedance when the far end is open.

In this case I measured the low point at 0.978 MHz, which means that the electric

length is  $75/0.978 = 76.6\text{m}$  and to get to the physical length we must multiply with the velocity factor:

$76.6 \times 0.66 = 50.6\text{m}$  or 166 feet.

But using the corrected velocity factor the length is actually  $76.6 \times 0.652 = 49.9\text{m}$  or 163.7 feet.

**Note:** Wavelength is  $300/f$  so one-quarter wavelength is  $75/f$ .

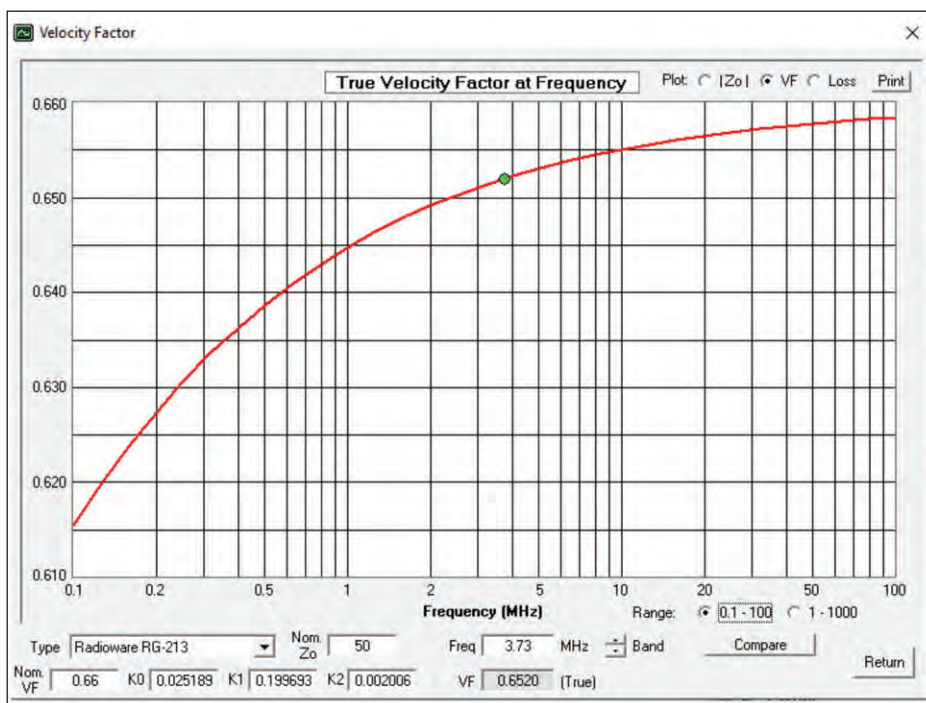


Figure 4: Velocity factor as a function of frequency

## What if I use Cheaper Coax?

It would also be interesting to see what the loss is for RG-8X since it is a lot cheaper than RG-213. I can keep the same values I measured at the balun since that won't change and the length of cable would be the same, so it is only necessary to change the type of cable as shown in Figure 5.

It is interesting to observe that the conductor loss now amounts to 86% of the total, likely due to the thinner centre wire used in RG-8X. As computed by the program the loss would be about 3.5 dB, which means that only 45 watts of the original 100 watts is delivered to the balun. I think I'll keep the RG-213.

In all the above, I carefully avoided one part of the feed system: the 60 feet of 450 ohm twin lead that runs between the balun and the antenna and also the loss in the balun itself. A quick run of TLDetails shows a loss of less than 5% or 0.2 dB in the twin lead (ignoring the balun for now) as shown in Figure 6 on the next page.

I do not have loss figures for the balun and I am not able to measure the impedance on the 450 ohm side. In the meantime, my antenna works reasonably well on 80m and I feel confident that most of the RF generated by my radio actually reaches the antenna. The rest is up to the ionosphere.

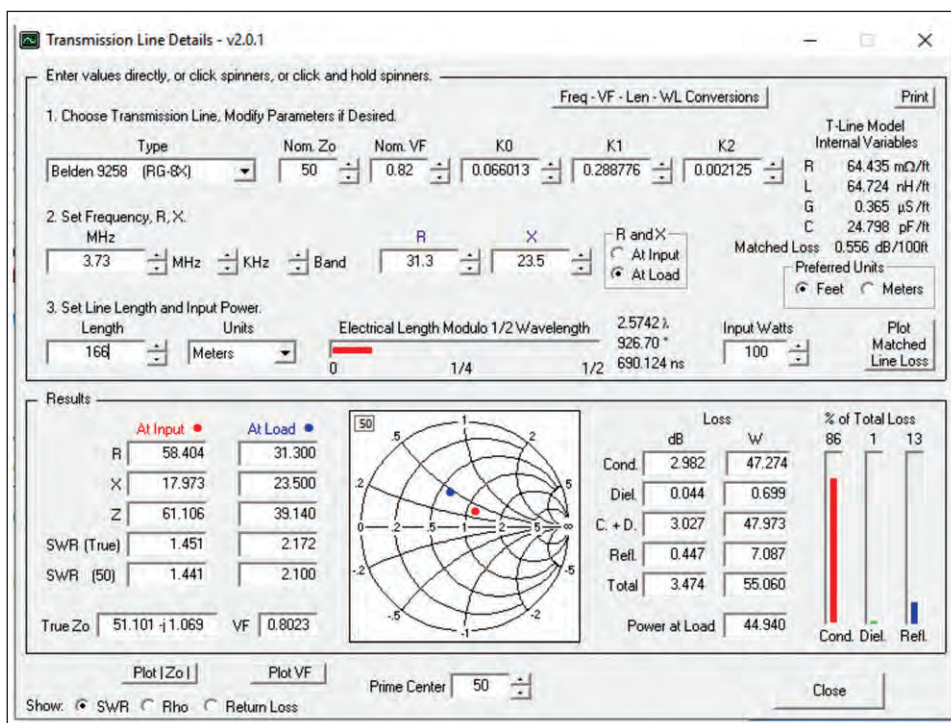


Figure 5: Loss using RG-8X coaxial cable

## Choking the Coax

The antenna system in real life is never quite as theory would predict. There are environmental factors – such as buildings, electrical wires and eaves – that may influence the radiation pattern of an antenna. The feedline itself is rarely ideal. If all worked according to theory the current on the *inside* of the shield should be of the same magnitude (but opposite polarity) as the current on the centre

conductor. If this is not so, some current will run on the *outside* of the coax and this is not desirable.

Current running on the outside of the coax means that some of the transmitted signal will radiate from the coax. This could cause TVI or RF getting into stereos or other electronics in the area. On the receive side this unbalanced coax will pick up noise from nearby unintended emitters and possibly raise the received noise level. The latter is exactly what I



experienced. Despite installing the antenna a good distance from the house and up at least 60 feet from the ground, some noise from the house was picked up.

The fix was to put a choke or a current balun (sometimes also called an unun) where the coax entered the house. An additional choke was added close to the 6:1 balun, which may be overkill for a dipole, but it was necessary for the OCF antenna.

Commercial chokes are available from several manufacturers, but I chose to make my own using an FT400-2 toroid and about 13 turns of RG-8X.

This kind of choke has also been tested on a vertical antenna with raised radials and it works very well. It should also be able to handle legal limit power, provided the SWR is not too high. The above picture shows the choke.

Somewhat easier to find FT240-2 toroids – two stacked with 5-6 turns of the coax – should also work fine for 3.5 MHz and above. They will need a waterproof housing. Even with the poor SWR, I have not noticed any excessive heating.

## Conclusion

The Off-Centre Fed (OFC) antenna served me well for several months, but eventually I hired a tree climber to clear some

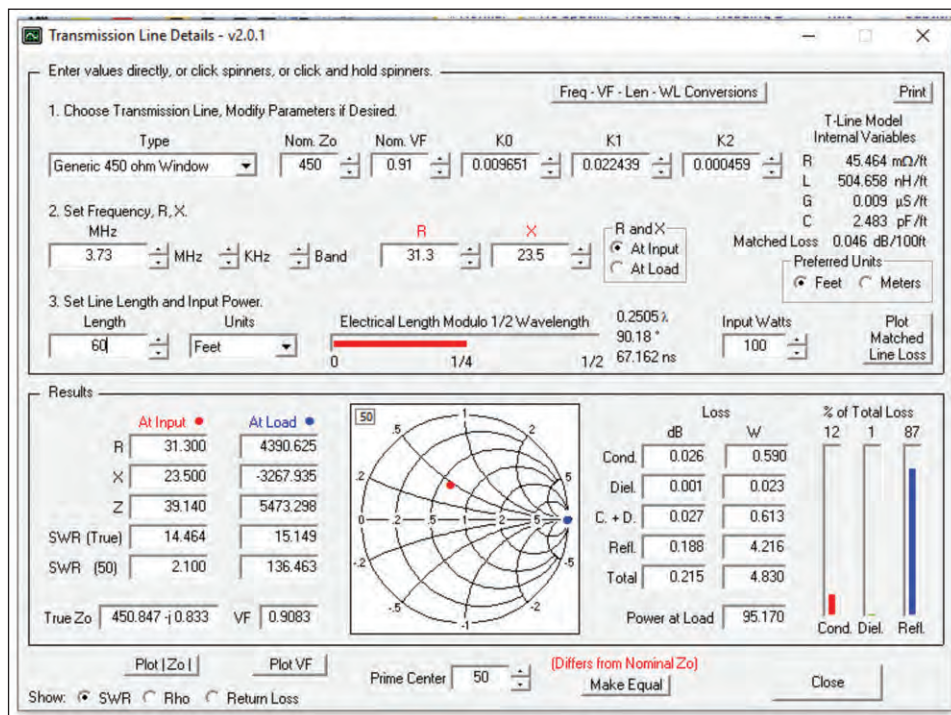


Figure 6: Loss calculation in the 450 ohm line

branches and mount pulleys to raise the antenna in both ends. I now have a 2 x 85-foot doublet with about 85 feet of 450 ohm window line ending in a 1:1 Balun.

At the same time the coax was replaced with 220 feet of Bury-flex. This antenna works on 80, 40 and 17m plus 160m as a short antenna.

The calculated losses in the feedline were:

Frequency	SWR at load	Loss in Coax
1.84	3.76	0.9 dB
3.73	1.93	0.8 dB
7.07	4.23	1.7 dB
18.1	1.51	1.5 dB

As you can see, the losses tend to increase with frequency, but for all the lower HF bands the losses are so small that they will not be noticed by a receiving station and SWR can be compensated with an antenna tuner in the shack rather than one close to the antenna.

The fact that losses increase with frequency should not be a surprise to anyone. A resonant antenna or better cable is necessary at higher frequencies when long cable runs are used.

An old DXer once told me that you should spend more money on the antenna system than on the rig. I think he was actually thinking about the transmission line.

– 73 & Best DX, VA7QI.

Erik Skovgaard was first licensed in 1963 as OZ5EU, became VE7MDL in 1991 and then VA7QI in 2016. He has operated CW, SSB and many different digital modes, but is currently mainly active on HF digital modes (JT-65 and FT-8) where you can find him chasing DX whenever propagation allows. He is also active in the Quadra Island Emergency Program.



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# Canadian National Parks on the Air: Final Update

Update by Sheldon Hartling, VE1GPY (Web: [cnpota.ca](http://cnpota.ca))

The Canadian National Parks on the Air (CNPOTA) event was a program intended to encourage Amateur Radio operations from sites managed by Parks Canada throughout the year 2019. CNPOTA was developed and is maintained by a group of dedicated volunteer Amateurs in the Halifax, Nova Scotia area. Although at this point, the team has expanded to include volunteers in Newfoundland and Quebec!

As I write this final update, we have just finished publishing nearly 2,000 award certificates for the event! There was a total of 998 awards issued with each award certificate available in both English and French. While the actual CNPOTA on-air event ended on December 31, the last month has been very busy for the team! All CNPOTA participants were encouraged to upload log files until a January 31, 2020 deadline. And they did – with dozens of log files uploaded every day throughout the month.

Our graphics designer and software team were hard at work throughout the month completing the software that was used to produce the award certificates. There were lots of test runs and long days in the final week of January which culminated in a final production run of certificates in the early hours of February 1. Certificates were available to participants later that day.

There are six certificates available for download from our website:

- Activator Award
- Chaser Award
- Chaser Award (“Just Chasers” Category)
- Chaser Award (“One and Done” Category)
- Five-Star Activator Award
- Honour Roll Award

There is no cost for these certificates and every certificate is available in both English and French. Participants may log into the [cnpota.ca](http://cnpota.ca) website and claim their certificates using the “Activity/Claim Awards” menu item or by using one of these links:

English: <https://cnpota.ca/activity/claim-awards/>

French: <https://cnpota.ca/fr/active/reclamer-recompenses/>

It's been an exciting year and we've had a blast putting on this event. I'd like to extend a huge thank you to everyone involved!

## Final CNPOTA stats as of February 3:

- 147 of 220 Parks Canada sites were successfully activated. Attempts were made at three additional Parks Canada sites, but they did not receive the required confirmed QSOs.
- The [cnpota.ca](http://cnpota.ca) website had 897 subscribers.
- 360 individuals uploaded logs to the site
- 3,948 log files were uploaded
- 475 activations were attempted
- 444 activations were confirmed; a confirmation required 5 confirmed QSOs
- 7,803 QSOs were confirmed
- Approximately 24,310 unique QSOs were uploaded to the website. We don't have an exact count because some users upload non-CNPOTA QSOs or upload the same QSO multiple times.
- There were confirmed activations in 8 of the 13 provinces (AB, BC, NB, NL, NS, ON, PE and QC).



**Activator Award**

**VE2GT**  
**Pierre Jolin**

is awarded this certificate of recognition from the CNPOTA Events Committee and Radio Amateurs of Canada for placing

**1st**

overall in the Activator category with

**85**

confirmed activations.

2019-12-31  
Date

Sheldon Hartling, VE1GPY, CNPOTA Coordinator



**Prixivateur**

**VE2GT**  
**Pierre Jolin**

se mérite ce certificat de reconnaissance du comité CNPOTA et de Radio Amateurs du Canada et s'est classé

**1er**

dans la catégorie Activateur avec

**85**

activations confirmées.

2019-12-31  
Date

Sheldon Hartling, VE1GPY, Coordinateur CNPOTA



**Chaser Award**

**W900**  
**Carl Durnavich**

is awarded this certificate of recognition from the CNPOTA Events Committee and Radio Amateurs of Canada for placing

**1st**

overall in the Chaser category with a score of

**482**

2019-12-31  
Date

Sheldon Hartling, VE1GPY, CNPOTA Coordinator

- There were no QSOs uploaded for MB, NT, NU or YT. There was one attempt at an activation in SK, but it was not confirmed.
- There were 17 Chasers added to the Honour Roll: W900, VE3ZN, WD9HSY, VE3JV, K8KP, KD8F, NO2C, VE2GT, W8ZST, WD0ACB, K8OD, KD4TTP, K2RYD, KO4SB, K8HQ, W2VDZ and NE1D.
- There were 7 Five-Star Activators: K0BAK, VO1NAR, VE1GPY, VE2GT, VC7FL, VE9MY and VE1JMB.

# FRESH ON THE AIR

## – Adventures for the New and Beginning Amateur

As a new Amateur in this digital era of existence, you get to use your radio for two-way radio communications between yourself and other Amateurs, either through simplex mode or through a repeater. This type of communications is quite a little marvel of electronics unto itself. But did you know that a long time ago in a galaxy not so far, far away, before the wide use of cellphones became commonplace, you could use your radio to actually access the telephone network to make actual telephone calls? It's true, and how this magic happened is something lost for today's new Amateur.

In the dark ages, some repeaters had a thing called Autopatch. This was where an Amateur Radio repeater was connected to the landline telephone network to allow Amateurs the ability to make actual telephone calls from their radio using the radio's keypad, which generated standard phone tones called DTMF. Usually you would input a series of tones to open the autopatch and get a dial tone. You would then punch in your number on the radio's keypad, wait for the other party to answer, and then key up to talk and unkey to listen.

Autopatch was used mainly to call home, to call other Amateurs for information or for meetings, and also for making emergency calls. Since cellphones didn't exist or were in their infancy, this was an amazing use of Amateur equipment and accessibility.

Most autopatches were open patches which were easily accessed whenever you needed them. Activation codes were generally very short and simple and could be found in many Amateur Radio magazines and newsletters. You could also get them from clubs or club members.

Some autopatches were private and the codes were only available to club members. Today, only a very few are open and most are closed and are only available to club members. The rationale behind this is that autopatch capability uses a standard phone line for access, which can be an expensive service to provide.

Clubs usually limit their use to paid members whose membership dues partially pay for the phone line. This ensures that those who support the club get the benefit of autopatch use. The control codes are kept confidential and are

not to be divulged to anyone, even other club members. Once you get the code, it is a coveted and revered piece of secret information.

Today, autopatch is mostly used for emergency communications, when cellphone service is not available, and for communications between club members for personal and club purposes.

Here are a few important tips about using autopatch.

1) Since autopatch is used through a local repeater, anyone with a radio that can receive Amateur frequencies can hear both sides of your conversation. It's extremely important to use a high degree of discretion when speaking and you should never say anything of a personal nature. If you don't want a stranger to hear your personal information, don't use autopatch.

2) Autopatch is provided for short duration communications only. Calls that are lengthy can tie up the repeater, preventing access to it during an emergency. When a call seems to last too long, the autopatch controller may signal, for example, a 30-second warning in which the telephone line will hang up and the call will drop. Always keep your autopatch calls short and to the point.

3) It is only for local calls, no toll free numbers, no long-distance and no other area codes.

Today, as a new Amateur, if you are a club member in which the club's repeater has autopatch, or you have an open autopatch repeater in your area, why not give it a try. You will be able to experience older technology that was highly prized in its day and which still serves its purpose in our hobby.

You will also experience how fun this connection to the phone network was, and how it provided not only personal and hobby-related phone access, but quick access to emergency services when an actual phone booth was nowhere to be found – in a time when phone booths were everywhere except when you needed one.



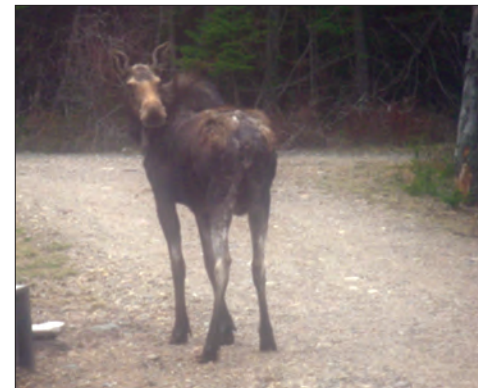
Phillip Boucher, VE3BOC  
E: [phillipjboucher@gmail.com](mailto:phillipjboucher@gmail.com)  
[www.phillipjboucher.com](http://www.phillipjboucher.com)

### Transmission Tidbit:

#### "A 4-Legged Air Traffic Controller"

I was listening to an air traffic controller (ATC) in Gander, Newfoundland talking to pilots on Atlantic trans-oceanic flights. Occasionally the ATC would send tones to the aircraft to identify them on their computer screen maps. These tones are referred to as SelCals, and are very distinctive when they come across my speakers.

Apparently, the SelCal tones also propagated outside my Camp and caught the attention of this young handsome fellow. He wandered in from the woods to within 25 feet of my radio speaker. Maybe he thought he was a trans-oceanic flight as well.



It took me a moment to fire up the camera. By the time I clicked the photo, he was half way out the driveway. I tapped on the window so we could get a view of his pretty little face.

I love living in Chance Harbour, New Brunswick. – Dan Hubert, VE9DAN

If you have a short, humorous anecdote about your time in Amateur Radio, send it in to me and I will include it in a future column.

Write me via TCA magazine, email me at [phillipjboucher@gmail.com](mailto:phillipjboucher@gmail.com), or visit [www.phillipjboucher.com](http://www.phillipjboucher.com).



# “Passing the Test is the Beginning of the Amateur Adventure...”

## Amateurs in the News: One new Amateur’s 42-year Quest – the Back Story



Mark Richardson, VA3OBO, instructing the class.

**Hugh McCully, VE3AYR, Mark Richardson, VA3OBO,  
Rod Clifton, VE3ISO and Mike McArdle, VA3KAH**

John David, VA3JHD had a 42-year quest to earn his Amateur Radio Operator’s Certificate. That story was told in an article by Justin Mowat, a CBC Hamilton Reporter/Editor, which was published on the CBC’s website on December 31, 2019. You can find it at: <https://www.cbc.ca/news/canada/hamilton/hamradio-operators-hamilton-1.5408797>. This is the story of John’s quest – the back story!

In September 2019, John, along with 11 other candidates, joined the fall Basic Amateur Radio course offered by the Burlington Amateur Radio Club (BARC). The determination to succeed shone from John’s eyes from the first meeting. The course met for eight two-hour sessions at the same time and place as the club’s Hackspace gathering. At Hackspace, club members gather weekly to build, problem solve, ragchew, share and support each other! So, in one room were the prospective Amateurs and in another a support group of experienced Amateurs were waiting to Elmer the successful candidates! BARC’s meeting space at Burlington’s Shoreacres Bible Chapel enhances the Club’s ability to support both activities at the same time.

BARC’s instructional team for the course was led by Education Director Hugh McCully, VE3AYR, along with Rod Clifton, VE3ISO, Mike McArdle, VA3KAH and Mark Richardson, VA3OBO. Their informal team teaching approach offers many advantages: a broad range of experience and knowledge, a variety of different voices and a choice of personalities for the candidates to connect with.

A further factor in the learning environment for the course is that three of the instructors were retired teachers and the fourth had been a long-time industrial processes instructor. Thus the course and its scope and sequence was created by teachers experienced in curriculum development and delivered by seasoned instructors.

The course was built on the idea that passing the test is just the beginning of the candidates’ Amateur adventure. So let’s get busy and pass the test!

The challenge for the candidates was to have the dedication necessary to learn the test material and pass the test. When this goal has been achieved, with the wide diversity within Amateur Radio today, each Amateur’s path to adventure is unique. However, all of the newly certified Amateurs get the support for their ongoing learning from within the BARC membership at the weekly Hackspace gatherings.

Prior to each course session, candidates downloaded material from BARC’s online Groups.io site (see <https://groups.io> for more information). The downloads included:

- an assignment sheet specific to each session
- a list of learning statements taken from the Innovation, Science and Economic Development Canada (ISED) Basic Study Question Database
- a copy of all the visuals to be used during the session
- sheets of relevant supplementary graphics
- a list of videos from YouTube and QRZ to be viewed

*Note: Groups.io is an email groups service that enables users to find and start groups, sync members across services, and archive conversations with hashtags. The system works with Dropbox, Email, Github, Feeds, Google Hangouts, Facebook and Instagram.*

This was the study material to be used in preparation for the next session. Learning statements were to be flagged when further explanation was to be sought at the upcoming session.

At each session the learning statements were reviewed and questions from the candidates were discussed. Here is when having four experienced Amateurs in the instructional team became a huge asset as breadth of background and different answers to the same question created a deeper learning experience.

No Basic Amateur Radio course can use a “one size fits all” approach so program modifications have to be made. Our course has a weekly routine in which candidates report their scores on the ISED online Basic Practice Exam at [https://www.ic.gc.ca/eic/site/025.nsf/eng/h\\_00040.html](https://www.ic.gc.ca/eic/site/025.nsf/eng/h_00040.html). This gives the instructors ongoing feedback to make course adjustments and offer individual counseling where appropriate.

As the sessions passed, John was still showing great enthusiasm but he became aware that, although he had a high level of knowledge in some areas of Amateur Radio, he had not had the opportunity to learn some of the more technical aspects and found the technical jargon confusing. John came to Mark, VA3OBO, for extra help after course meetings but there wasn’t enough time for effective support.



Hackspace gathering at BARC: building, sharing and learning.



Since both John and Mark are retired, they agreed to meet a few weekday mornings at the Halibut House restaurant that does a good breakfast! John (on the right in the above photo) and Mark had three productive and enjoyable meetings. During breakfast John would regale Mark with tales of his time in the military – adventures in the Golan Heights and with the Scout troop that he led during his NATO deployment in Germany, including flying a troop to a World Jamboree in Ireland by military aircraft; living on a mountaintop in British Columbia; his volunteer work with the Canadian Warplane Heritage Museum and much more. They discovered some common interests beyond radio and even that they had a mutual friend.

These breakfast sessions each lasted about 2 1/2 hours and the time flew by. John came well prepared, having reviewed all of the course material and making notes of questions on the practice exams that he found mystifying (and who doesn't find some of those?). As Mark worked through John's notes, it was interesting to see how some of his past experience caused difficulty as terms have come to mean different things – for example his understanding of tuning related his experience in adjusting of the power levels of the tube radios of his Golan days, where the Basic course is thinking of the operation of an antenna tuner. They also spent time clarifying the unique language of Amateur Radio, Electronics Theory, and how to master those darned block diagrams.

As exam time approached, the course instructors also spent time providing information on exam writing strategies. For many of our candidates, it had been years since they had last written an exam and test anxiety is a factor for everyone. To address this, a practice exam was held – “no pressure, just do your best”!



Rod congratulates John after the exam and “Pass with Honours” achieved.

For the candidates who didn't score a passing grade, Rod, VE3ISO, our Examiner provided the right answer and the why for all the missed questions! He did this using the training material provided on the Cold Lake Amateur Radio Society's website: <https://clares.ca/files/all%20questions%20rac.pdf>

The week before the final test was an intense time for both John and Mark. Using the test analysis that Rod had provided allowed Mark to address John's questions with further explanations that aided in his learning. This approach was effective with John. When he wrote his final test a week later he raised his score by 17 marks and passed with honours!

The reward for our time invested in the course was the smiles and success of the candidates and especially to witness the joy that John experienced when he easily achieved Basic with Honours.

We never had any doubts that this would be the result as he had great motivation and determination and put the time and effort into earning his certificate.

The day after David's success, with such a great Amateur Radio and human interest story to share, Hugh, VE3AYR, called the CBC Hamilton office and talked with reporter Justin Mowat.

Two weeks later Justin interviewed John and the instructional team and chatted with many of the Hackspace participants.

Later that night during an after session coffee gathering John had his first QSO! The rest, as they say, is history!



Now you know the back story of John's 42-year quest! Welcome to Amateur Radio John, VA3JHD!

### Burlington Amateur Radio Courses:

The next Burlington Amateur Radio Club (BARC) course for the Basic certificate starts on Tuesday, September 15 and runs for eight consecutive Tuesday evenings until November 24.

We will meet from 7 pm until 9 pm at Shoreacres Bible Chapel, 370 Shoreacres Road in Burlington.

**Cost:** \$100 includes: BARC membership, all necessary course materials and the exam.

Register early to be included in the course lead-up activities.

**Contact:** Hugh, [ve3ayr@gmail.com](mailto:ve3ayr@gmail.com)

**Website:** <https://www.barc.ca/education>

The Burlington Amateur Radio Club (BARC) was founded in 1972. One of BARC's charter members was Noel Eaton, VE3CJ, President of the International Amateur Radio Union (IARU) in 1979 when the WARC bands were initiated.

BARC is an active club: hosting the annual Ontario Hamfest; maintaining four VHF/UHF FM and digital repeaters; offering classes for new Amateurs; and holding meeting weekly. New members and visitors are always welcome. For more information please visit <https://www.barc.ca/>



# Public Service / Amateur Radio Emergency Service

## Northwestern Ontario ARES Participates in “Exercise Ice Storm”

**Warren Paulson, VE3FYN**  
**District Emergency Coordinator**  
**Amethyst Sector**  
**Amateur Radio Emergency Services**

In November 2019, several communities in Northwestern Ontario participated in a simulated emergency exercise called “Exercise Ice Storm”. The effort began in Sioux Narrows – Nestor Falls, a small resort community on the shores of Lake of the Woods with a year-round population of under 600.

A few years earlier, on Thursday, October 26, 2017, the community faced a powerful snowstorm. The heavy wet snow took down power lines throughout the area. By Thursday evening, they had lost power. By Friday, the backup generator servicing the local telephone switch had run out of fuel. It would be the following Tuesday before power and phone service would be restored.

In addition to power, Sioux Narrows lost both cellphone and landline service. The Sioux Narrows Fire Department had no communications at all. Firefighters went door to door to ensure their residents – mostly seniors – were safe.

There was an Amateur Radio presence in Sioux Narrows at the time, and local Amateurs were able to communicate with Bell Telephone and Ontario Hydro by contacting Amateurs in Kenora. Still, during the debriefing after the event, it was clear that they needed to be better-equipped.

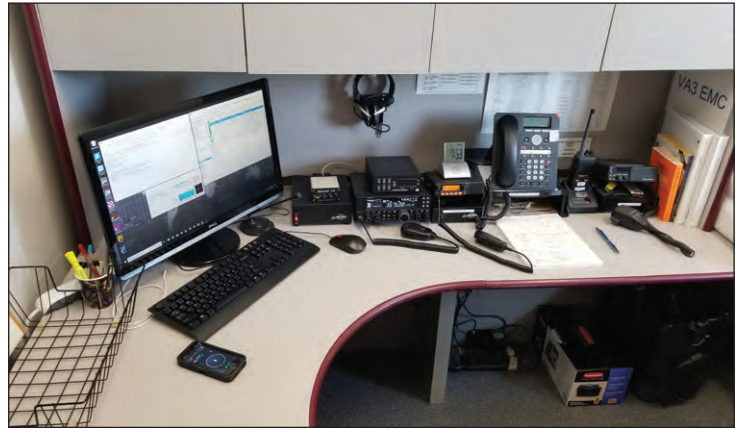
Amateur Radio Emergency Services (ARES) is a formal organization of Amateur Radio operators who volunteer to provide emergency communications for municipalities in situations just like this. ARES had a presence in Northwestern Ontario at the time, but they knew they needed to work more closely with their municipalities.

**Note:** this article was originally published in the “ON Ready” newsletter, which is published by Emergency Management Ontario, and is being used with their permission.

This initiative was spearheaded by Woody Linton, VE3JJA, of Sioux Narrows. An Amateur Radio operator, retired police officer and one-time Fire Chief of Sioux Narrows – Nestor Falls, Woody had a strong interest in emergency communications.

He started by convincing his own Council to set up VHF and HF radio stations in their two municipal offices. He then worked on neighbouring communities to do the same. Soon, Kenora, Thunder Bay, and Fort Frances all had Amateur stations co-located with their municipal Emergency Operations Centre (EOC). Atikokan and Dryden already had stations at their EOCs.

These stations could operate voice over two linked repeater systems: one linked by the Internet and one linked solely by radio. They could operate voice “over the horizon” on HF, communicating throughout the region and to the Toronto Provincial Emergency Operations Centre (PEOC) without any commercial infrastructure. They could also communicate using Winlink, a hybrid email system that could tie in to the Internet via remote stations and that could



**The Sioux Narrows EOC Amateur Radio station is located in the Sioux Narrows municipal office to be close to the Community Control Group during emergencies.**

communicate with other Amateur Radio stations. All had backup power through their municipal EOCs. The typical cost for a station was under \$5,000. Since Amateur Radio operators are not allowed to charge for their services, the setup and operation of the stations is at no cost to the municipalities.

The next task was to recruit people. ARES had a presence in the region, but it had gaps. New ARES Emergency Coordinators were found for Thunder Bay and Fort Frances. A new ARES Emergency Coordinator (EC) position was created for Sioux Narrows – Nestor Falls and this was held by Woody, VE3JJA. Local Amateurs throughout the region were recruited as operators and trained on the EOC stations. Lastly, Ontario North Section Manager Alan Boyd, VE3AJB, and Section Emergency Coordinator Stiig Larsen, VE3LBX, appointed a District Emergency Coordinator (DEC) for the region.

We needed to bridge the final gap by working with our municipal EOCs. Brad Harris, VE3MXJ, the ARES Emergency Coordinator for Thunder Bay, wanted to do a region-wide exercise and involve municipalities. He met with Sharon Bak, the Emergency Management Ontario Field Officer for the Amethyst Sector. She jumped at the opportunity and the “Exercise Ice Storm” was born. Sharon developed the exercise, while Brad worked with ARES operators in the region to be ready to do their part.

**Woody Linton, VE3JJA, sits at the Kenora EOC Amateur station during its early stages. The station is located at Kenora Fire Hall #1 where the city's EOC is located.**



The exercise simulated an ice storm that moved through Northwestern Ontario, taking out power and communications along the way. Atikokan and Manitouwadge activated their control groups and conducted their annual exercise as part of this simulated emergency. Thunder Bay, Fort Frances, Kenora and Sioux Narrows – Nestor Falls participated with municipal and ARES personnel. ARES members participated in Dryden and O'Connor, but without municipal representatives due to other commitments.

The exercise began with the ARES operators convening a CanWarn net due to the approaching ice storm. CanWarn is an Amateur Radio Service that provides on-the-ground, real-time severe weather reporting to Environment Canada. This also often means that Amateur Radio operators in the region are already in place if severe weather becomes an emergency, as this simulated one did.

ARES operators were able to pass email traffic with declarations of emergencies to the PEOC in Toronto, using Winlink. This system lets them connect to the Internet through Amateur stations that could be hundreds or thousands of kilometres away, to send and receive email. It also allows Amateurs to maintain an email system amongst themselves. Operators were also able to communicate with their neighbouring communities to coordinate the “virtual” sharing of resources and information during the exercise. All of these communications were without commercial infrastructure and under (simulated) emergency power.

Prior to this exercise, ARES stations in Amethyst District had plenty of exercise communicating amongst themselves, but no experience in handling traffic generated by their municipal EOC staff. This exercise served both to demonstrate our capabilities and to learn how to handle that traffic. Municipal emergencies, whether real or simulations, require solid documentation of activities and messages handled. ARES members practised these procedures and later discussed ways to improve them.

Graham Warburton is Atikokan's Fire Chief, Certified Emergency Coordinator (CEMC) and Chief Building Official. He had this to say about the exercise:

*“Atikokan's emergency plan is reviewed annually by the Community Emergency Management Program Committee based on actual events or possible events. One of the key factors in a remote area such as Atikokan is communication. This year's annual emergency exercise was based on the total loss of land-based communication. This included Internet, land-based phones, cellphones and local emergency radio systems.*

*During this emergency exercise, the Community Control Group was able to communicate to the Provincial Emergency Operations Centre using our local Amateur Radio group. This communication was both effective and essential should an actual prolonged emergency event with loss of power occur. Atikokan is proud to work with the Amateur Radio group and will continue to ensure they are included in our emergency planning as without communication we truly would understand the meaning of isolation.”*

Amateur Radio is one tool for municipalities to ensure they have communications “when all else fails”.

This exercise did not address local communications, but ARES Amateur Radio operators are able to help there as well – such as providing communications between a local emergency shelter and the EOC. The cost to municipalities is minimal, and the ongoing operation and maintenance is handled by a group of skilled and dedicated volunteers.



**Jason Johnson, VE3PEJ, was one of the station operators in Atikokan during the exercise.**

To find out more about ARES in Northwestern Ontario and how you can get involved, navigate to <http://www.ve3rib.ca/nwoares.html>. Elsewhere in Canada, local ARES contacts may be found at <https://www.rac.ca/ares/>.

*Warren Paulson, VE3FYN, lives in Atikokan, Ontario (“the Canoeing Capital of Canada”). He earned his Basic Amateur Radio Operator Certification in 2004, and soon earned his Advanced and Morse Code. He is President and Technical Director of the Atikokan Amateur Radio Club (<http://www.ve3rib.ca>), an Accredited Examiner, and the ARES District Emergency Coordinator – Amethyst.*

*Warren is also an active member of the Canadian Forces Affiliate Radio System (CFARS) with call sign C1W647. He has taught the Basic Amateur Radio course on numerous occasions. He built and maintains the VE3RIB repeater, VE3RIB-1 APRS digipeater, VE3YIB club station, and the Atikokan EOC station VA3EOA.*

*When he is not involved in Amateur Radio, you can find him working at Souris River Canoes in the finishing room, putting out fires with the Atikokan Fire Department, fixing one of his motorcycles, or enjoying the natural beauty of living next door to Quetico Park.*



## 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 Radiocommunication Conferences to defend the Amateur Radio bands.



It costs a lot to attend a WRC meeting and travel and meeting expenses for a three- to four-week conference can top \$10,000 or more in an international city like Geneva – 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 visit <https://wp.rac.ca/darf/>.

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

# Requirements for Amateur Radio Interoperability

## Joint Emergency Management / Volunteer NGO – Ottawa / Gatineau Field Exercise



Radio Amateurs  
of Canada



St. John Ambulance



**Michael Hickey, VE3IPC**  
**Ontario East Section Manager**

On Saturday, October 5, 2019, a joint field exercise of non-governmental organizations (NGOs) called “Exercise Two Shores” was held simultaneously in Ottawa and in Gatineau. The objective of this article is to share information with other ARES/EmComm groups who may be asked to provide their radio interoperability service in the future.

In Ontario the location was at Pinhey's Point Park near Dunrobin and in Quebec it was near Aylmer. This was the first of its kind in Ontario and the 5th for Quebec. The information here describes the exercise operation from the Ontario perspective.

### The Scenario:

“A large earthquake of a 6.5-magnitude occurred in the Ottawa River between the cities of Gatineau and Ottawa. There was much damage to the two cities and several victims were either lost or injured and mass casualties were expected.”

The concept of this exercise was to allow the volunteer organizations to demonstrate their operational capabilities jointly, by providing an effective response to the scenario of a large-scale earthquake, which has impacted the National Capital Region. The participating groups would plan out and execute a response utilizing their own command structures and resources, deploying air, land and marine Search & Rescue volunteer teams to respond to simulated casualties.

It was decided that Emergency responders would look after Search & Rescue within the affected areas of the cities and that trained volunteer NGOs would look after the Search & Rescue operations in the rural & forested areas

### The Participants:

An Official Letter of Invitation to this event was sent to officials and the media in Ottawa and the surrounding area including: Municipal officials, Emergency Management officials; government officials; and to the media.

They were invited to observe the event and to attend a media conference that would be held at noon which would highlight the important role that ARES and EmComm groups and volunteer NGOs play in times of emergency.

The NGOs involved were: the Canadian St John Ambulance Ottawa; the Salvation Army Emergency Disaster Services; the Canadian Coast Guard Auxiliary; the Canadian Forces Rescue Coordination Centre; the Civilian Aviation Search and Rescue Association (CASARA); the Ottawa Search and Rescue Volunteer Association (OSARVA); Exercise Simulation Software; Team Rubicon; the Canadian Red Cross; Renfrew County Emergency Management; Radio Amateurs of Canada; and ARES / EmComm group volunteers from various parts of Eastern Ontario.

During the exercise VIP observer representatives were present and included: Renfrew County Emergency Management personnel; an Ottawa Canadian Red Cross official; Margaret, VA3VXN, from Radio Amateurs of Canada; and members of the press. Together they were given multiple guided tours of the activities during the event.

### Interoperability:

The Exercise involved numerous ARES / EmComm radio operators from many Eastern Ontario groups who were required to provide Radio Interoperability to the operations in the field.

Prior to event the ARES/EmComm District Mutual Aid call for help was sent by Ottawa ARES/EMRG to EmComm groups adjacent to the City of Ottawa. Each group was then asked to provide a response to the Ottawa group's staging area indicating who they were sending to the exercise and their estimated time of arrival (ETA).

Individual volunteer Amateur Radio operators were then required to complete the District Mutual Aid Plan (DMAP) registration/tracking form (in triplicate) and provide: their personal ID; contact information; and their next of kin. One copy of the form was then left with the group's leadership before deploying to the



Registration and assignment briefing for volunteers.



Harry, VA3ZAK, of Prescott-Russell ARES, printing ARES authentication ID badges for volunteers.



Mike, VE3FFK, inside the Tulmar inflatable tent used for ARES EmComm registration.

Ottawa staging area so they could keep track of who was being deployed.

A second copy of the form was then presented by the operators to the ARES reception table on their arrival at the staging area event ARES registration tent. The radio operators were then briefed and

Arthur, VE3BIT, outside of the Registration Tent. The 12 x 15 foot Inflatable Shelter was provided by Tulmar Safety Systems.

provided with situational details and received their assignments. A third copy of the DMAP form remained on their person at all times until they informed their local leadership that they were home safely from their deployment. Since not all groups had this form on hand, the registration tent had some blank copies available.



Each volunteer NGO had their radio communications and jargon on different frequencies, and not all were on the same band or on the same mode (AM/FM), hence the need for Interoperability. One code word could mean something entirely different to someone else, so plain language was encouraged to avoid any confusion and encryption.

Both full-day exercise events in Ontario and Quebec operated separately in each of their two-square kilometre areas, which was rather small for radio interoperability. The ARES role was to supplement the NGOs by providing a common communications capability to a central point at the Incident Command. An area-wide Amateur Radio Net Control Station using a Communications Trailer provided communications through the Emergency Operations Centre (EOC).

The Amateur Radio Operations tent was co-located with the EOC to pass immediate radio traffic to the Incident Commander. In addition, the EXRSIM team – “an incorporated business, founded on military qualifications, certifications and experience” – was on location with their Exercise Software Platform, which was used to track and plot immediate locations of all involved as well as area coverage displaying this data on a large screen for immediate situational awareness.

In a real situation, ARES/EmComm can play a major role in the establishment of communications with reliable passing of (radiogram) information when and where needed. Searches were conducted, casualties were found and treated and volunteers were fed. More importantly, links were formed between NGOs and people, providing many Lessons Learned. An onsite initial debrief took place and weeks later a more comprehensive debrief occurred.

### Lessons Learned: How to improve interoperability service

1) The many online steering committee meetings which were held before the event did help, but more in-person meetings are needed to work out any remaining problems and to make better plans.

2) Prepare the plan better and sooner so that it can be implemented in a timely fashion. The videoconferences were long and did not easily show the way forward to Radio Interoperability.

3) A solid presentation on what Amateur Radio can do is vital to help the other volunteer NGOs see how ARES can fit into their plans, if at all. Each group needs to understand the functionality of each other NGO group and the organizers need to have a better understanding of each participating organization so that a better plan for interoperability can be established.

4) At the outset of any exercise there needs to be assigned tasks for everyone involved. Many Amateurs at this event were not assigned a set task and only a very few volunteers actually performed any tasks. Amateurs without tasks were later assigned in pairs to go to specific areas around the exercise site and were simply told to report and stand by.

5) We need to be able to determine the level of experience of each Amateur when they arrive for assignment. Perhaps this information can be added to the District Mutual Aid Plan (DMAP) registration/tracking form which they complete before reporting for the assignment. It can provide information on the events they have worked before and illustrate their level of competence. Lesser experienced radio operators can then be assigned to shadow the more experienced operators so that they can gain insights during the exercise.

6) In small areas such as in this exercise (two-square kilometres), Amateurs can only provide interoperability if all other communications in the field fail. One option for us was to provide communications back to a distant centralized area outside of the main exercise location, but the need was not there since Search & Rescue handheld radios were just as good as ours in this close operational proximity.

7) Groups were too tightly spaced physically and tents could have been spread out over a larger area to be more realistic. More space was needed between the event coordination “Exercise inputs Control/Wizards” and those tasked to respond to the dynamic changing events “Operations Control or Emergency Operations Centre.”

Many thanks go to all of the ARES / EmComm exercise participants:

Arthur, VA3BIT, Tyler, VA3DGN, Roger, VA3EGY, Gilles, VA3GJB, Jeff, VA3ISP, Ian, VA3KCP, GC Lance, VA3LP, Jeffrey, VA3PEW, Richard, VA3RLA, Raj, VA3RZT, Stuart, VA3SIO, Thane, VA3TTM, Margaret, VA3VXN, Harry, VA3ZAK, AEC Mike, VE3FFK, GC Steve, VE3FTS, Harrie, VE3HYS, Donald, VE3IGN, Michael, VE3KOY, Fred, VE3LAF, Neil, VE3PUE, Ken, VE3SRS, Mike, VE3UMC, GC Richard, VE3UNW, Alan, VE3VTT, Alan, VE3ZTU and Joe Laberge.

Ontario East Section Manager Michael Hickey, VE3IPC, observed the event for the duration from his home QTH and volunteered to relay for EmComm operations that was on 146.940 MHz to 146.880 MHz EMRG’s Repeater and to make repeated requests for more volunteers for a second shift as part of the exercise. As a result, Shawn, VA3GFY, Roger, VE3NPO and Ron, VA2BRR, volunteered to serve on the second shift for operations.

Kenneth, VE3KGO, also observed the event from his home QTH in Ottawa. In addition, Douglas, VE3YDK, participated as part of the St John Ambulance team and Michel, VE2BCW, was the Gatineau Exercise EmComm Coordinator.

*Michael Hickey, VE3IPC, is the RAC Ontario East Section Manager and he served as a member of the Emergency Management Volunteer Joint NGO Field Exercise steering committee starting in early March 2019 for the Ontario side.*



# Our Amateur Profile: Ron and Cathy McFadyen move East

## Ron McFadyen, VE3YXY/VY1RM

I came to Whitehorse in 1969 to become a part of the CKRW Staff AM 610. After a brief stint in the gold nugget jewellery business I joined the staff of CBC Yukon at Whitehorse as part of their on air staff.

I became the Charter President of the Yukon Amateur Radio Association (YARA) in 1976. I stayed at CBC for 25 years and after retiring from the Corporation I was named News Director of CKRW 96.1 "The Rush". I was on staff for about 10 years before retiring from broadcasting in 2009.

In the summer of 2015 my wife Cathy, VY1CAM/VA3YXY, and I decided to move closer to her side of the family who were located in Carleton Place, Stittsville and Bracebridge in Ontario. Cathy found a home near Perth about 20 minutes west of Carleton Place. A photo of our home was featured on the cover of the November/December 2019 issue of TCA.

We left the Yukon on June 16, 2016 with our Cocker Spaniel Bailey in tow and headed to Carleton Place, Ontario – a journey of about 2,800 miles in five days. (Whew!)

The trip to Ottawa had its ups and downs. Day one was a 12-hour drive to Fort Nelson on the Alaska Highway. Day 2 was another 12 hour drive to Edmonton. After that we drove 8 to 9 hours a day to Yorkton, Saskatchewan Winnipeg, Thunder Bay, Sault Ste. Marie and finally Ottawa.

The photos below show Cathy and Bailey at the Big Easter Egg in Vegreville, Alberta. We also took in the Meridian between Saskatchewan and Alberta and visited the Terry Fox Memorial at Thunder Bay.



We monitored Amateur Radio along the way and had a D-Star chat in western Ontario.

As an added note the tower pictured in the recent TCA Magazine (November-December 2019; see photo at the bottom of the page) was installed by Harold MacFarlane and his son Victor of MacFarlane Electronics of Battersea Ontario (see page 64).



We also purchased the antenna from them: a Hy-Gain TH-11 DX turned by a Yaesu G-1000 Rotor. All RF cables LMR-400.

The shack radios shown in the photo are an Icom-7600 and Icom IC-9100 from Burnaby Radio, IC-2820 from Radioworld (see the ad on the back cover) also WX3IN1 APRS station VE3YXY-2.

Antenna installed by Phil, VE3HOA, from Almonte

We are really enjoying living on a one-acre plot in Perth (it's only seven minutes to a Canadian Tire). There is almost zero noise level on all bands.

We have since become members of Lanark North Leeds ARES in Perth, the Rideau Lakes Amateur Radio Club in Smiths Falls, the Almonte Amateur in Almonte and the Ottawa Valley Mobile Radio Club in Ottawa.

Cheers and all the best

Ron, VE3YXY/VY1RM,  
Cathy, VA3YXY/VY1CAM

PS the YXY suffix is the airport designator for the Whitehorse Airport.

*Thanks Ron! If you have an Amateur Profile please send it to us at [tcamag@yahoo.ca](mailto:tcamag@yahoo.ca).*



# RAC MEMBERSHIP / ADHÉSION À RAC

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

### Gold / Or

Edward Calderwood, VE7BQM  
Tim Ellam, VE6SH  
Neil Macklem, VE3SST  
Joseph Spier, K6WAO

### Silver / Argent

Francois Daigneault, VE2AAY

### Bronze / Bronze

Dave Ackerman, VE3UGT  
Paul Allen, VA3PB  
Keith Antonelli, VE7EXH  
Luis Araiza Chavez, VA7WCR  
Gary Badcock, VO1GWC  
Peter Baker, VE3OCN  
Dennis Bancesco, VE6ATC  
Doug Bannard, VE3SPF  
David Barnes, VO1YA  
Lawrence Barnett, VE6WL  
Geoff Bawden, VE4BAW  
Andrew Bell, VE3AND  
Michael Bell, VE3NOO  
Serge Bertuzzo, VA3SB  
Steven Biczak, N7ITE  
Markus Biehl, VA3MQS  
Brian Biggings, VE3XA  
Chris Bisaillon, VE3CBK  
Henry Blais, VE3HJL  
Colin Bodor, VA6CCB  
Allan Boyd, VE3AJB  
Robert Boyer, VE3XBB  
James (Max) Brewer, VE9AIR  
Patrick Brewer, VE3KJQ  
Matthew Eric Brown, VE3EB  
Vern Brownell, VE7MCC  
Paul Bryan, VA7XP  
Pamela Buckway, VY1PJB  
Ian Burgess, VA6EMS  
William Burgess, VE3CRU  
Paul Burggraaf, VE3PRB  
John Burke, VO1SA  
Clarke Burnett, VE4MB  
Paul Caccamo, VA3PC  
David Caddell, VA7VVV  
Frederick Cain, VE3JMJ  
Ralph Cameron, VE3BBM  
Sandy Cameron, VE3AAC  
Mark Capewell, VA7MNV  
Mary Card, VE3FEB  
Benjamin Carver, VE7BTB  
Gilles Chevalier, VA2CG  
John Christensen, VE3IAO  
David Clarke, VE6LX  
Ken Clarke, VE7BC  
Ernest Clintberg, VE6ECK

Reginald Collie, VE1DOG  
Christina Marie Comeau, VA3WTZ  
John Connor, VE3TG  
Paul Copio, VE4TSY  
Brendan Cormier, VE1BTC  
Guy Costanzo, VA7GAC  
Kornelis Couprie, VE6IG  
David Coutts, VA7UX  
Robert Cove, VO1REC  
David Cowper, VE7IRT  
Paul Cragg, VE3AXT  
Richard Danby, VE3BK  
James Davidson, VE3TPZ  
Brian Davies, VE6CKC  
Frank Davis, VO1HP  
George Davis, VE3OGP  
Wade Dayment, VE6WSD  
Andrew DeMarsh, VE3HCA  
Grant Dixon, VE3CGV  
Lawrence Dobranski, VA3IQ  
Tom Dobson, VE3TWD  
Michael Drake, VA3BKQ  
George Duffield, VE3WKJ  
Robert Dyer, VE3KTY  
Richard Edge, VE7RXE  
Doug Elliott, VA3DAE  
André Emmell, VE2AJJ  
Leif Erickson, VA7CAE  
David Evans, VA7DXX  
Howell Fang, VA7HFZ  
Edward Fechner, VA3EDF  
Richard Ferch, VE3KI  
H Field, VE7UTS  
Richard Finn, VE3PNK  
Terry Finn, VE6TF  
James Fisher, VE1JF  
Bob Foley, VE3RVZ  
L Clare Fowler, VE3NPC  
Doug Frame, VE3JDF  
Ed Frazer, VE7EF  
Norm Freidin, VE3CZI  
Mario Gasparovic, VE3HVV  
Ross Gibson, VE4RWG  
John Gilje, VE6KJG  
Michael Gillis, VE7MGZ  
Dominic Girouard, VA2DOM  
Thomas W Godden, VE3TWG  
Dave Goodwin, VE9CB  
Stephen Goodwin, VE6SMG  
George Gorsline, VE3YV  
Srdjan Gotovac, VA3SSG  
Richard Govoni, VE3SHL  
Timothy Graham, VE7LXC  
Gregory Grant, VA7GRA  
David Green, VE3TLY  
Dustin Greig, VE6SVN  
Dominic Grosleau, VE3DGZ  
Reg Gulliford, VE3AWN  
J Paul Guy, VE8JG  
Tom Haavisto, VE3CX

D A (Sandy) Haggart, VE3HAZ  
Alan Haines, VE3ALH  
David Hamilton, VE6DWH  
Don Hamilton, VA7GL  
Gordon Hamilton, VE7ON  
Garry Hammond, VE3GHP  
Garry V Hammond, VE3XN  
Jovan Hamovic, VA7JOV  
Richard Hanisewski, VE5RH  
Martin Hann, VE9PLS  
Brad Harris, VE3MXJ  
Harm Hazeu, VE4HAZ  
Margaret Heaslip, VE3EQE  
Jean-Paul Henault, VE2JHP  
Hugh Henderson, VY1HH  
Ric Henderson, VA6RIC  
Dale Hennigar, VE3XZT  
Doug Henry, VE1ZG  
Christopher Hillier, VO1IDX  
Dallas Hinton, VE7FKH  
Robert Hockin, VA3HO  
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Peter Hodgson, VE3UR  
David Hodson, VA3UL  
Frank-Michael Hofmann, VE6FMH  
Lloyd Hofmann, VE6XL  
G Hollett, VE1MLW  
Richard Hoover, AB0CV  
Gabor Horvath, VE7DXG  
Robert (Bob) Howard, VE3YX  
A Graham Ide, VE3BYT  
Robert Ireland, VE9KM  
Lorne Jackson, VE3CXT  
Gordon John Jacques, VA3GJJ  
Peter Jago, VA3PJ  
Zain Jaison, VA7VZN  
B M Jatzeck, VA6BMJ  
Jonathan Jennings, VE6JDJ  
Gordon Jewsbury, VE7JBY  
Doug Johns, VA3DLJ  
Dave Johnson, VE7VR  
Jeremy Jones, VA3ZTF  
Sam Jones, VE3LCK  
James Joyce, VE3LTN  
Ernie Jury, VE3EJJ  
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Steve Kanavos, VA7UTC  
W J Karle, VE1YY  
Eric Kehler, VA7NX  
Ernest Kenward, VE7BYK  
Wayne Kidd, VE7IBF  
Neil King, VA7DX  
David Kingsland, VE3MDX  
David Klatt, VE5GN  
Walter Kohler, VE7SM  
Boris Kohut, VE4BG  
Brian Konopski, VE4KON  
Gordon Kosmenko, VE6SV  
David LaHay, VE7FVW  
Ken Laker, VE3LRK

Al Law, VE3FZ  
Samuel Leach, K3KLC  
Francis Leclerc, VE2FLP  
John Ledieth, VE3FVC  
Ken Lehman, VE3IKL  
Siegfried Lehmann, VA7LEH  
Barrie Lennox, VE3AOI  
Stan Leschinsky, VE3TW  
Joel Levis, VE3CJJ  
John Little, VE3TRL  
John Lockwood, VE9KC  
David P Lopetinsky, VE6ELL  
Robert Loranger, VE2AXO  
Gerald Lutley, VE1GPL  
Rand Lutman, VE7HRA  
Glenn MacDonell, VE3XRA  
Ian MacFarquhar, VE9IM  
Jim MacKenzie, VE5EV  
Robert MacKenzie, VA3RKM  
Pierre Mainville, VA3PM  
Alan Mallett, VA7AWM  
Dan Martin, VE6GDM  
Marc Masson, VE2MMH  
Gabriel Mazzeo, VA3CWT  
Phil McBride, VA3QR  
Don McCallan, VA3GFD  
Duncan McCansh, VE3OM  
Bernard McCoy, VE6HFD  
John McGowan, VA3JYK  
Andrew Allan McKay, VA4XRY  
David McKinlay, VA3IR  
L David McLennon, VO1LM  
Malcolm McLeod, VE5ZG  
Eric Mills, VE1AST  
Vladimir Milutinovic, VE3JM  
Micheal Misiwich, VA6MIS  
J T Mitchell, VE6OH  
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Marcel Mongeon, VA3DDD  
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Byron Morse, VA3BMO  
Bob Morton, VE3WY  
Alexander Mulder, VE7OHM  
Gordon Murray, VE3JSJ  
Robert Nash, VE3KZ  
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Patricia Nordin, VE3ZP  
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Michael Papper, VE3OX  
James Park, VE7IW  
Joseph Parkinson, VE3JG  
Albert Parsons, VE6RFM  
Gordon Passmore, VA7GAP  
Brad Paterson, VA6AKF  
Bruce Patterson, VE7XPB  
Colin Pavey, VA3FP



Geddie Pawlowski, VE3CJX  
 Johan Pedersen, VE0NLI  
 Tim Pekkonen, VE3UO  
 Steve Pengelly, VE3STV  
 Raymond Perrin, VE3FN  
 Andre Perron, VE2ZT  
 Brent Robert Petersen, VE9EX  
 Jonathan Phaneuf, VA7NMD  
 Ron Philip, VE7NS  
 Robert Piggott, VE7CYU  
 Dale Pilsworth, VA6OK  
 Gary Pollock, VE1GMP  
 Suresh Ponnai, VA3SUR  
 John Potts, VE6JWP  
 Terry Potts, VE3TEP  
 Everett Price, VO1DK  
 Devon Racicot, VE5DWR  
 Norm Rashleigh, VE3LC  
 Bryan Rawlings, VE3QN  
 David Reid, VE6BIR  
 Gilles Renucci, VE2TZT  
 Guy Richard, VE2XTD  
 Earl Richardet, VE7QJ  
 Mauro Rizzardo, VE3TCV  
 David Rosenfeld, VE3BAK  
 Allan Ross, VE7WJ  
 Donald Rowed, VE3KII  
 Cary Rubinfeld, VE4EA  
 Denis Rule, VE3BF  
 Dale Runge, VE6RAA  
 Ted Rypma, VE3TRQ  
 Mark Sales, VE6VER  
 Edward Samborski, VE3TAS  
 Dan Sanchez, VE7EOZ  
 Brian Sayer, VA6BCS  
 Shawn Schenkey, VE6NS  
 Bill Scholey, VE7QC  
 Dave Scott, VE3ZZU  
 John Scott, VE1JS  
 Ian Seddon, VE3HUT  
 Donald Shaw, VA6DBS  
 Kieran Shepherd, VA3KS  
 Daniel Sidorchuk, VA3DO  
 George Simpson, VE6HX  
 Ron Sinclair, VE3JRN  
 Ihor Skotar, VE3GXV  
 Erik Skovgaard, VE7MDL  
 James Snell, VE7XZW  
 Dave Snyder, VE4XN  
 Patrick Speer, VE7PJS  
 Mark Spencer, VE7AFZ  
 Edward Spingola, VA3TPV  
 Mike Stafford, VE6MEX  
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 Jason Toms, VE3TBE  
 Jason Tremblay, VE3JXT  
 Jean-François Tremblay, VA2FW  
 Yori Tsuji, VE4ACX  
 William Underwood, VE1WLU  
 Richard Upfield, VA3RMU  
 Ronald Vadeboncoeur, VE3REV  
 John Van Egdom, VE6XJV  
 Bernie Van Tighem, VE7BVT  
 Rob Van Wyck, VE3FLB  
 Robert Vanderminnen, VA3RMV  
 Aaron Warner, VE3FZZ  
 Andrew Webb, VE6EN  
 James Webb, VE3WA  
 Joel Weder, VE6EI  
 Greg Weir, VE1GWE  
 Andrew Wells, VE3WEL  
 David Wendt, VE3EAC  
 Larry Westby, VE5LWW  
 John White, VA7JW  
 Don Whitty, VE9XX  
 Brice Wightman, VE3EDR  
 James Wilkins, VE7UVL  
 Wayne Willis, VE5WFW  
 Bruce Winter, VE7HBW  
 John Wiseman, VE7BVS  
 Richard Wodzianek, VA7RLW  
 K Scott Wood, VE1QD  
 Allen Wootton, VY1KX  
 Robert Wortman, VE9RLW  
 James Wyse, VO1CPZ  
 Steve Zabarylo, VE3GIA

#### NEW RAC MEMBERS NOUVEAUX MEMBRES RAC

Brian Arbery, VE2BRN  
 David Bainbridge, SM0XPM  
 Laurent G Beaudet, VE2WI  
 Cary Belger, VA6RPG  
 Alain Bilodeau, VA2BIA  
 Samuel Bilodeau, VA2SBH  
 Pierre-Olivier Boisvert, VE9PO  
 Mario Bouchard, VA2EK  
 Stéphane Boudreau, VE9SBX  
 Jean-Marc Bouille, VA2OBD  
 Martin Bourcier, VE2YUC  
 Sheldon Boyde, VO1SKB  
 Timothy Branson, VA7WBZ  
 Richard Budny, VA3RSA  
 Jeffrey Burke, VA3JYB

Roland Busque, VE6BSQ  
 Levente Buzas, VA7QF  
 Alfred Catternole, VA7NPA  
 Rob Chartier, VA7QAD  
 John Chave  
 John Chin, VA3BOF  
 Andrée Choquette, VA2ANJ  
 Steven Clyens, VE3YGI  
 Rita Comuzzi, VE3XT  
 Charles Copeland, VA7CDQ  
 Ross Craig, VA3EBH  
 Tim Crandell  
 Bob Cristofoli, VA7BJC  
 Bryan Crockford, VA7TUC  
 Normand Croteau, VE2NCC  
 Thomas Daniel, VA3VRA  
 John David, VA3JHD  
 Brian Denny, VA3YDF  
 Andre Desruisseaux, VA2AD  
 Dave Dingee  
 Matthew Dodge, VA7ROH  
 Cliff Dungey, VA3JCD  
 Chris Ferguson, VA3AUW  
 Tanya Fleming, VA3FFS  
 Joanne Ford, VA1DYK  
 Scott Fortnum, VE3ISF  
 Pascal Gagnon, VE3VPG  
 Ivan Gerginov, VA3NKA  
 Chris Glynne, VA3WTD  
 Tim Goebel, VE3TIU  
 Wesley Allan Good, VE3BXS  
 Ian Greenham, VO2IR  
 Joseph Gregorio, VA3JVG  
 James Greig, VA3EZH  
 Randy Greig, VE3YRG  
 Claude Guillemette, VE2TKO  
 Luis Gurrieri, VA3LEG  
 J Paul Guy, VE8JG  
 Wayne Harris, VE4WMH  
 Robert Hatch, VE7UHS  
 Paul Hibbert, VA7PHO  
 Darryl Hon, VA7EVR  
 Simon Hoogenboom, VE3WSW  
 Richard Hoover, AB0CV  
 Alan Hotte, VA3IAH  
 Nicky Howard  
 Bruce Hutchinson, VE7HUT  
 Robert Hynds, VA3RRH  
 Fortunato Ignacio, VA3NUJ  
 Mark Jeffery, VA7MNJ  
 Jiong Yi Jiang, VA7JJY  
 Shane Jordan, VA6WSJ  
 Rene Juneau, VA3YLB  
 Michael Kassay, VE3MKX  
 Kamal Kishor, VA7KXK  
 Paige Koberstein, VE6KBY  
 Richard Kolomeychuk, VE3RJK

Frank Kowalishyn, VE7KKV  
 Pierre Lachance, VA2LVP  
 Nereid Lake, VE7BTQ  
 Alain Lamarche, VE2WWL  
 Brett Lamb, VE7KLV  
 Brandon Landry, N1QMI  
 Veronica Lane, VA7HSL  
 Robert Lavigne, VA3JIN  
 Peter Legault, VA3FKR  
 Klaus Leipert, VE7KFL  
 Kee Ming Leong, VA7DKL  
 Wayne Lore, VE7WTL  
 Stuart Macleod, VE1AJ  
 Joel MacNeill, VY2KW  
 Geoff Manifold, VA7GEF  
 Ken Massicotte, VE3YKE  
 Kyle McLaughlin, VE7ODG  
 James M Miller, VA7EOR  
 Ken Miller, VE3KQR  
 Andrew Mitchell, VA3CW  
 Bob Myatt, VE4ZN  
 Stephen O'Connor, VE9RMR  
 Abayomi Okuwoga  
 Larry Onisto  
 Jerry Orszynowicz, VA3JKO  
 Gil Ouellet, VE2UJ  
 Emily Panter, VE3EMI  
 Gilbert Parent, VE2GPX  
 Jack Parker, VE3RUA  
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 Vladislav Petrusevich, VE4VIP  
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 Kelly Taylor, VE4XT  
 Victor Taylor, VA3VGT  
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 Dan Todic  
 Jason Toms, VE3TBE  
 Jim Toms, VE3JKT  
 Carl Tremblay, VA2SAJ  
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 Patrick Truchon, VA7FI  
 Vincent Vallee, VE1XE  
 Binoy Varghese, VA7BKV  
 Mike Weir, VE9KK  
 Kevan Yamamoto, VA7MTO  
 Janusz Zawierucha, VE3OKZ  
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# RANDOM THOUGHTS...

## “RDF can help your honey...”

**OK, so here is the deal.** As we decimate the other living creatures on this planet, it becomes obvious, locally, that we are not seeing as many of those same creatures as we used to as children.

I don't mean we have been using a magnifying glass on the ants on a sunny summer day, no. That kind of activity has been long discontinued and I hope no one activates it any time soon.

It may surprise some readers that we humans are not the only ones trying to make this planet safe for creatures held to be about the only things that will be left alive after we are all gone. Along with ants, and other interesting six-legged crawly creatures, like scorpions and spiders, surely there will be something moving on the surface of the Earth until, after maybe many million years, Earth will display our successors and new kings of the planet. This presents a bit of a problem. We will not be here to see it happen. Cockroaches will not even bat an eye at the memory of us.

*It is not only we who are destroying pollinators. So are other creatures.*

About a year ago I was battling a huge squadron of wasps and hornets on my (peaceful, HAH!) refuge from civilization's unwanted side effects. I identified five species of hornets and wasps. A surprise, as while the climate up to that point had been changing, it had not yet supplied a horde of pests. Even the mosquitoes had disappeared. Unfortunately, these predatory hymenoptera were laying eggs and soon they needed to feed their broods. I counted five huge hornet nests and seven large wasp nests.

The hornets are pretty big. They make a distinctive buzz when in flight. No wonder a fighter jet is named after them. They are not invincible, but it takes time and a bit of dexterity to manage that crowd. Some of the entomologically endowed Amateurs can correct my species ID. Present were: *Polistes fuscatus*, the paper wasp; *Dolichovespula maculata*, the bald-faced hornet; *Dolichovespula arenaria*, the common Aerial Yellowjacket; *Vespula acadica* (maybe) Forest Yellowjacket, or similar; and maybe the Transition Yellowjacket,

*Vespula flavopilosa* or similar. You can identify them by their unique pattern of yellow or red or white colour stripes.

*OK, so finally, here is where radio comes in...*

I happened to be listening to European scientists speaking about the loss of honey bees and pollinators, without which, we all will lose most or all of the edible plants (and honey), due to bee destruction by pesticide application and what are now called the invasive Asian Hornets, which have entered Europe and England, and are killing off the honey bees, which they prey upon and feed parts of, to their young. A drastic situation. Like diseases, they will likely arrive here in a 747 or a cargo vessel.

I was able to watch the progress of a similar killing by hornets right here near my shack. Yellowjackets do the same, by the way. In one summer season all my pollinators vanished – honey bees, all the different butterflies, and a random plethora of other insects that were nice and juicy, or in the case of the honey bee, had strong tasty wing muscles in the thorax.

The hornets even killed a little brown bat (*Myotis lucifugus*) in my yard. Hornets and wasps by the way, are part of the ecology, as we are. It is only when the populations multiply excessively that we suffer from it. Unfortunately, around that time, I had to spend some time as a cherished guest of a hospital and the Hornet versus Human debacle was put on hold for a few months.

As I later found out, the concerned scientists in England have been developing a method to help combat the invading predatory hornets. And this is where Amateur Radio can help. The scientists have discovered that VHF Radio Telemetry can help track and locate the bulging nests of this predator, up to 1.2 kilometres away. Once located, the threat to honey bees can be selectively dealt with.

Scaled down Radar had proved minimally useful because it has a short range and the critters are so fast they outfly the searchers. So here is my suggestion to Amateurs who like to build stuff. Get the plans (try English universities on the Internet) and build some of these telemetry devices. Then enlist Amateurs who like Fox Hunts and other direction

finding aspects of Amateur Radio to try them out. Help protect the honey bees. Help save a bit of this planet, which is, after all, the only home we got. When you succeed, drop a line to TCA!

Curiously enough, nature itself lends a hand now and then. As I was ending these scribbles, a lightning flash and thunderclap struck just above my shack, over my antenna. The flash and the boom were simultaneous. The surprise was followed by a terrific downpour like I had only seen a few times before. The following day I was surprised to see no hornets or wasps anywhere around. It turns out that the torrents of rain knocked down the nests and, since then, there have been only a few survivors buzzing around. Lucky me! And, the antenna was undamaged.

But a WARNING. Stick to making the telemetry devices rather than chasing into the forest after hornets or wasps. If you must, do not work alone. Carry an EpiPen and know how to use it. Instruct your buddy. Carry a can of chrysanthemum based “multi-bug kill-on-contact” spray. Do not shake the nest: any vibration will be very painful. Ask me. I have survived a swarm of killer bees in the jungles of *Centroamerica*. I lived. Others might not.

Wear white or pale colours. Do not wear black clothes, it is what they will attack directly. Go early, in the fresh of the morning, as the swarm becomes active after the noon sun heats. Walk slowly and quietly. No clomping around. Keep 10 metres or so from the active nest.

Safety First!

– 73! I have to buzz off now.



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# THE SPORTS PAGE: The Canadian Contest Scene

## “QRP in a Time of a Solar Minimum”

I have been wanting to write about QRP contesting – stations that transmit with five watts output or less – for quite some time. Since I don't operate QRP myself, I was never happy with what I was able to write. Peter West, VE3HG, does *very well* running five watts into relatively simple antennas so I asked him to share some of the secrets of successful operation running QRP.

Peter, VE3HG, has been licensed since 1980 but was introduced to Amateur Radio when his father Leo (SK) got his licence VE3FWR (later VE3HG) in the early 1960s. Peter started contesting about 10 years ago and joined Contest Club Ontario (CCO). While living on a modest suburban lot Peter focuses much of his contesting entering the QRP categories when conditions support operating at five watts. Over to you Peter...

### Peter West, VE3HG

The one bit of advice I would offer to QRP stations is **do not!** append /QRP to your call. This adds four characters to your call. Most of the time the *other* station really does not care.

In marginal conditions, you have made the job of copying your call that much *more* difficult – simply because there are four additional characters.

Many contesters also have taken this to mean: “Its OK to give up. The other guy is running QRP. He does not expect to make the QSO”.

If you don't let on that you are running QRP, you have made the job of making the QSO easier, and *not* given the other station a reason to give up. He will assume you (could) be running higher power, and “it's just conditions”.

Do we need better propagation to be competitive in the QRP category of local, national or international contests? Many would say yes and they would be correct if we only consider the devastating effects that no propagation has on the higher bands of 20, 15 and 10 metres.

But does that mean QRP is dead in a time of solar minimum? Absolutely not and, in fact, QRP operation right now can yield some of the best results you're going to see in a decade.

What makes QRP work now isn't propagation so much as it is the quiet band conditions – especially on the low bands of 160, 80 and 40 metres. Sometimes even 20 metres gets super quiet and that's the time QRP comes into its own.

You've all heard the comment that “life is too short for QRP” and there are contest days when that's true. When conditions are such that the 100-watt guys are asking for fills and repeats, this might not be the contest to expect QRP success. Band noise, low signal strength and especially QSB (variation in signal strength over time) are the enemies of QRP contesting.

Right now, however, some weekend conditions on the low bands are ideal for QRP success. For example, in late 2019 and now in 2020 I have been working into Europe on 80 metres running five watts of CW into very modest antennas. Contest exchanges with no fills or requests to repeat call signs and rates similar to my 100-watt efforts are possible.

This success is due to the quiet conditions plus the skill and station setups of both the QRP operators and the QRO guys (the opposite of QRP, or increased power operation). Remember, high power, well-designed contest stations are set up to hear faint signals and to rapidly work through pileups.

Old hands at QRP contesting know that their five-watt signal is only 2 S-units below a 100-watt signal. That means if the 100-watt guy is S-9 then the QRP guy is S-7. And if the QRP guy is running just two watts then that signal is still workable around S-4 or so.

The successful QRP station will be one where the operator is using a contest-quality rig and has the power reduced to five watts. I run my Flex 6600 at five watts using an external QRP watt meter in the line to keep me honest.

Sure it's fun to operate a QRP rig you built from a kit or one that you can fit into a jacket pocket, but almost all of these rigs just don't have receivers capable of operating in crowded and loud contest conditions. Also the rules of some contests require a log that shows exact frequencies recorded in a logging program and many small portable QRP

rigs can't do that. Read the rules of your contests and look for special information pertaining to QRP categories.

As for antennas, the best QRP antennas are the same as the best antennas for QRO stations – and that means big beams on towers with full-size wire antennas up in the clear at least a quarter wavelength high for the low bands. It also means that portable antennas, loops, end-feds and other compromise antennas aren't ideal. They will work but they're not the best for competitive QRP. Being situated in the country on a hilltop is always an advantage.

It's essential to use at least low-loss RG-213 cable and better still LMR-400 or even Heliac. I use direct bury to bring the 75-foot coax runs under the lawn to the shack. If you're running QRP you can't afford to have a watt or two disappear in water-soaked coax or poorly soldered connectors. Buy an antenna analyzer and learn how to use it. Don't depend on your rigs SWR measurements and auto-tuner when you're running QRP.

Having said all that, I must admit that I am currently running with an end-fed 80-10 half-wave antenna erected as an inverted-V, with a horizontal component, since the wire starts beside the house on a seven-foot pole and rises 30 feet into a tree at the back of the yard and then comes back to a fence post on the far side of the house. Hardly ideal but amazingly it works and some nights on 80 metres it works very well.

The other two antennas I have are a ground-mounted HF-6 vertical with 20 ground radials and a chain-link fence-mounted HF-2 vertical. Both of these antennas can be tuned for either the CW or SSB portion of the bands and can be operated without a tuner. I have worked into New Zealand (ZL) and Australia (VK) using the HF-6 on CW at 5 watts during CQ WW DX on 40 metres so it can be done.



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## ARRL INTERNATIONAL DX CONTEST, SSB 2019

Call	QSOs	Mult	Category	Score
VE3EJ	2,043	345	SOABHP (A)	2,083,455
VY2ZM	2,129	322	SOABHP	2,021,838
VY2TT	2,179	292	SOABHP	1,883,400
CJ3A	1,765	310	SOABHP	1,627,500
VE3DZ	1,509	305	SOABHP	1,374,330
VE2BWL	967	239	MSHP	673,263
VA3DF	735	225	SOABLP (A)	492,075
VE3CX	675	207	SOABHP (A)	411,102
VE5MX	517	194	SOABHP (A)	299,148
VO1GRC	499	187	MSHP	259,743
VA3FV	655	122	SOABHP	235,338
VO1NAR	448	159	MSLP	207,495
VE9MY	361	182	SOABHP (A)	194,922
VA2CZ	349	172	SOABLP (A)	178,020
VE6FI	375	150	M2X	160,200
VO1KVT	435	115	SOABHP (A)	148,695
VE3WG	283	154	SOLP	126,588
VE4EA	261	140	SOABHP	107,520
VE3KP	246	146	SOABHP	105,996
VE3TW	238	131	SOABHP	93,141
VA3WW	232	133	SOABHP (A)	89,775
VE6BBP	215	130	SOABHP (A)	83,850
VA3SB	232	100	SOLP	68,400
VE9AA	230	90	SOABHP	61,560
VE3LRL	173	120	SOABHP (A)	59,760
VE3RZ	170	114	SOABLP (A)	58,140
VE5SKI	209	89	SOABHP	55,002
VA2WA	248	69	SOSB20	50,301
VE3VN	166	102	SOLP	49,572
VE5WI	189	80	SOABHP	44,160
VA3WB	151	94	SOABLP (A)	41,172
VA2QR	163	83	SOABHP (A)	40,089
VE3LVW	153	80	SOLP	36,240
VE6EX	155	80	SOLP	35,760
VA7FC	143	78	SOABLP (A)	32,994
VE3TM	153	65	SOSB20	28,860
VE3CNA	119	79	SOLP	27,492
VE6AO	138	66	SOABHP (A)	26,928
VE6KDX	130	69	SOABHP (A)	26,703
VE3LMS	111	79	SOLP	26,307
VY0ERC	128	61	MSHP	22,875
VE3HED	96	79	SOABHP (A)	22,515
VE3FJ	118	58	SOSB20	20,184
VO1BQ	104	62	SOABHP	19,158
VE2HIT	86	66	SOLP	16,434
VE3MZD	82	66	SOABLP (A)	16,038
VE4GV	76	66	SOABHP (A)	14,652
VE1JS	124	40	SOABHP	14,640
VE2JFM	86	60	SA	14,220
VE2SCA	86	57	SOABHP	14,193
VE1SQ	88	54	SOLP	13,770
VE7CV	99	44	SOABHP (A)	12,936
VE3LA	76	58	SOABLP (A)	12,702
VA7BEC	96	43	SOSB20	12,126
VE9OA	80	49	SOABHP (A)	11,760
VE3EZB	64	61	SOABHP (A)	11,529
VE5SF	70	55	SOLP	11,385
VE4JBB	72	49	SOLP	10,437
VE6CMV	74	46	SOABHP (A)	9,936
VE2TSM	67	48	SOHP	8,928
VA7JW	80	38	SOABHP (A)	8,664
VE3PN	64	44	SOSB160	8,448
VE3UTT	94	30	SOABHP (A)	8,370
VA7VF	75	39	SOABHP (A)	7,839
VE3NR	61	42	SOLP	7,560
VE3FZ	52	47	SOABLP (A)	7,191
VE3SST	54	45	SOLP	7,155
VE6KD	64	37	SOABHP (A)	6,771
VE2GT	53	40	SOABLP (A)	6,360
VA3CME	56	39	SOLP	6,318
VE3BR	47	43	SOLP	5,934
VA6NJK	57	34	SOABLP (A)	5,814
VE3GNI	50	39	SOABHP (A)	5,733
VA2RIO	43	35	SOLP	4,410
VA3RKM	38	38	SOLP	4,332
VE9ML	46	31	SOSB80	4,278
VE4VJR	44	32	SOABLP (A)	4,224
VO2AC	32	32	SOABLP (A)	3,072
VE8GER	40	24	SOSB20	2,808
VE5DLC	34	26	SOLP	2,652

VE6EH	30	20	SOLP	1,740
VE7BGP	29	18	SOLP	1,566
VE2LPW	24	21	SOABLP (A)	1,512
VE6CSX	29	17	SOABHP (A)	1,479
VE3HG	25	19	SOSB20	1,425
VE7SAR	23	13	MSHP	780
VE2TDT	16	16	SOLP	720
VE7BNR	14	11	SOLP	462
VA7PPL	17	12	SOLP	432
VA3NW	8	8	SOLP	192
VE5GC	11	6	SOSB20	180
VE9ND	8	6	MSLP	144
VE3LSO	8	7	SOLP	126
VA2LGQ	7	7	SOHP	126
VE7KPZ	7	5	SOSB20	105
VE9TNT	7	5	SOLP	105
VA3CQB	6	5	SOHP	75
VE2NCG	4	4	SOSB15	48

Every station needs a proper ground system. This can be the subject of an entirely separate article so I will just recommend the ARRL's *Grounding and Bonding for the Radio Amateur* book by Ward Silver, N0AX. If you're running an Amateur Radio contest station – and even if you're running at QRP levels – you need excellent grounding and also excellent noise suppression in the form of common-mode chokes. For more information on chokes search online for "common mode chokes for Amateur Radio".

QRP contesting requires different skills. I've learned to listen to see if the calling station is picking up the front end or back end of call signs, and then I have aggressively called accordingly. I also don't hesitate to jump into pileups and I never assume my signal is too weak for the other guys to hear me. I also don't hang around if I haven't worked the other station in two or three calls. I plunk his frequency into memory and I move on to come back later.

The very best time to try your hand at QRP contesting, especially the 48-hour contests, is Sunday afternoon when everyone is looking for just one more QSO to put into the log.

Finally, never ever for any reason announce that you are QRP. Nobody cares. Just pretend you're QRO and you'll be amazed at how well you can do with five watts.

*Thanks for a great article Peter! Hope to see you on the bands.*

– Tom, VE3CX



### 90th Anniversary of the Polish Amateur Radio Union: Information needed about Polish Amateur Radio History

This year marks the 90th anniversary of the Polish Amateur Radio Union (PZK). To celebrate this important anniversary I am conducting research on this topic and going to write a book about it. I am especially interested in the history of connections between Polish stations in the mid-1920s with stations around world.

I am seeking information about Polish Amateur Radio history from the years 1925-1939 and 1946-1956. There is a large population of Polish Radio Amateurs living abroad. I am a member of a vibrant community in Toronto and you can find more information at [www.ve3xpl.com](http://www.ve3xpl.com).

I am reaching out to everyone for as much information as I can gather. I am looking for Amateur Radio operators with a Polish background or who had a call sign in Poland. I also want to collect photographs, QSL cards, stories, lists of call signs, articles. I would be very grateful for material from radio operators who had contact with Polish radio stations and would appreciate it if you would please email any information you wish to share to: [history.pzk@gmail.com](mailto:history.pzk@gmail.com)

– 73, Waldemar Szczesniak, VE3CZK, VE0CZK, exSP9HYN

**RSGB COMMONWEALTH CONTEST**

Call	Time/Hours	Section	Power	QSOs	BCA	Score
VY2ZM	24-hours	Open-SOU	700	831	143	8,380
VE3JM	24-hours	Open-SOA	750	666	133	7,275
VE9CB	24-hours	Open-SOU	750	733	123	7,170
CJ3A (VE3AT)	24-hours	Open-SOU	750	618	137	7,030
VY2/G3VYI	24-hours	Open-SOU	750	761	106	6,890
VE5MX	24-hours	Open-SOA	1,000	477	128	6,375
VE3EJ	12-hours	Open-SOA	750	537	129	6,210
VE9ML (VE9ML VE9BK)		MOLP	100	465	97	4,950
VE3NNT	12-hours	Open-SOA	1,000	414	105	4,925
VA2WA	12-hours	Open-SOA	1,500	442	101	4,895
VA3RAC (VE3KZ)		HQ	1,000	384	104	4,860
VE3UTT	12-hours	Open-SOA	1,000	349	88	4,105
VE3CX	12-hours	Open-SOA	750	390	80	4,095
VE3RZ	24-hours	Open-SOA	100	253	102	4,075
VA3DF	24-hours	Open-SOA	100	288	88	3,905
VA2RAC (VE2FK )		HQ	500	425	64	3,905
VE3DZ	12-hours	Open-SOU	1,000	288	92	3,860
VE3KI	12-hours	Open-SOU	500	269	88	3,645
VE1OP	12-hours	Open-SOA	750	280	75	3,455
VE3ZI	12-hours	Open-SOU	750	212	79	3,165
VE7RAC (VE7JKZ)		HQ	350	189	70	3,095
VE3VHB	12-hours	Open-SOA	1,000	174	83	3,055
VO2AC (VE3FU)		Open-REM	100	271	60	3,010
VE9OA	12-hours	Open-SOU	800	256	61	2,890
VE3BR	24-hours	Rest-SOU	100	168	77	2,890
VO1MP	12-hours	Open-SOA	300	240	53	2,560
VA1MM	12-hours	Open-SOU	500	221	54	2,540
VE3FJ	12-hours	Open-SOU	1,000	175	62	2,535
VE9AA	12-hours	Open-SOA	700	203	57	2,510
VE3VY	12-hours	Rest-SOA	100	124	65	2,260
VE3TM	12-hours	Rest-SOU	100	110	52	1,995
VA3DX	12-hours	Open-SOA	700	101	53	1,930
VE3RUA	12-hours	Rest-SOU	100	77	47	1,725
VE3HX	12-hours	Open-SOU	400	85	44	1,550
VE3MGY	12-hours	Rest-SOA	100	92	36	1,400
VE6LB	12-hours	Open-SOA	800	72	37	1,370
VE5SF	12-hours	Open-SOU	100	107	29	1,355
VE6KC	12-hours	Open-SOA	700	77	37	1,350
VA3RKM	12-hours	Rest-SOU	85	59	39	1,325
VY1RAC (VY1KX)		HQ	100	66	33	1,230
VE3AYR	12-hours	Open-SOU	100	54	36	1,220
VE1ZAC	12-hours	Open-SOA	900	59	32	1,150
VE2AXO	12-hours	Open-SOU	100	55	29	955
VE3TW	12-hours	Open-SOU	500	50	27	850
VE9EX	24-hours	Open-SOA	500	42	25	845
VE3ZY	12-hours	Rest-SOU	75	38	23	840
VE3OSZ	12-hours	Rest-SOU	25	50	21	820
VA7RN	12-hours	Open-SOU	1,000	43	21	815
VE6TL	12-hours	Open-SOU	400	29	24	715
VE2QV	12-hours	Rest-SOU	100	34	18	700
VE3IGJ	12-hours	Rest-SOU	100	37	20	700
VE3KP	12-hours	Open-SOU	500	38	17	690
VA3EC	12-hours	Open-SOA	100	26	20	650
VA3AMX	Unassisted	5W	5	25	18	585
VE4VJR	12-hours	Open-SOU	100	26	16	545
VE3WG	12-hours	Open-SOU	100	24	17	535
VE3FH	12-hours	Rest-SOU	100	22	16	530
VE3DQN	Unassisted	5W	5	24	15	515
VY0ERC (VE3KTB)	12-hours	Open-SOA	200	19	13	385
VE5VA	12-hours	Open-SOU	90	25	8	360
VE7BGP	12-hours	Open-SOU	100	7	6	170
VA3PCJ	Unassisted	5W	5	2	2	45

OPEN-SOU – high power, no antenna restrictions  
 OPEN-SOA – Assisted – high power, no antenna restrictions  
 REST-SOU – low power, single element antenna  
 REST-SOA – Assisted – low power, single element antenna  
 BCA – Bonus Call Areas  
 5W – 5 Watts (QRP)

**OKLAHOMA QSO PARTY**

Call	QSO	Category	Score
VE3NBJ	148	SOLP CW	31,098
VE7CV	126	SOLP MIX	19,411
VE3AQ	70	SOLP CW	10,080
VE3HED	47	SOHP SSB	3,478
VE3AYR	30	SOLP MIX	2,040
VE6NS	8	SOLP CW	192
VE3RUA	4	SOLP CW	48
VE6ABO	4	SOLP SSB	32
VE6EH	3	SOLP SSB	18

**WISCONSIN QSO PARTY**

Call	QSO	Category	Score
VE9AA	56	SOHP	3,742
VE3RUA	48	SOLP	3,990
VE3DO	30	SOLP	1,796
VE3KP	38	SOHP	1,520
VE5GC	21	SOLP	1,053
VA3FN	15	SOLP	540
VE3HED	22	SOHP	452
VA6NJK	14	SOLP	273
VE9RLW	9	SOLP	81
VE3FWF	6	SOLP	72

**VIRGINIA QSO PARTY**

Call	QSO	Category	Score
VA2CZ	57	SOAB MIX HP	2,937
VE3AYR	72	SOAB MIX LP	5,538
VE3AQ	75	SOAB CW LP	5,400
VE3HED	60	SOAB SSB HP	2,730
VE3KP	46	SOAB CW HP	2,300
VE3IZS	34	SOAB CW LP	1,496
VA3NGE	23	SO40 MIX LP	666
VA3RKM	14	SO40 CW LP	392
VE3PYJ	15	SO40 SSB LP	228
VA3FN	11	SOAB CW LP	220
VE3FWF	11	SOAB CW LP	198
VE2GT	7	SOAB SSB HP	49
VE3SDF	6	SO40 SSB LP	36

**GEORGIA QSO PARTY**

Call	QSO	Mult	Score
VE9AA	153	71	21,726
VE3KZ	140	87	21,489
VE3TW	108	56	10,248
VE3AQ	65	33	4,290
VE3MV	61	27	3,294
VE2BWL	56	33	2,475
VA3FN	47	26	2,444
VE3USP	38	27	2,052
VA3EC	29	22	1,276
VE2FK	26	20	1,040
VE3PYJ	36	25	900
VE2GT	18	15	315
VE9RLW	13	9	117
VA6NJK	10	8	80

**NA SPRINT, SSB**

Call	QSO	Mult	Category	Score
VE9AA	185	47	SOHP	8,695
VO1KVT	82	32	SOHP	2,624
VE5SF	77	34	SOLP	2,618
VA7ST	74	35	SOHP	2,590
VE7BC	73	30	SOHP	2,190
VA3WW	55	30	SOHP	1,650
VE9OA	56	26	SOHP	1,456
VA6RCN	61	22	SOLP	1,342
VE3MXJ	45	26	SOLP	1,170
VE6IVN	41	26	SOHP	1,066
VE6EX	47	20	SOQRP	940
VA4HZ	36	19	SOLP	684
VA2KD	25	17	SOLP	425
VE9EX	27	15	SOHP	405
VE3AND	25	16	SOLP	400
VE8GER	30	13	SOLP	390
VA7EGZ	18	10	SOLP	180
VA1JON	13	11	SOLP	143
VA6DBS	13	10	SOLP	130
VE3PYJ	13	7	SOLP	91
VE3SST	10	9	SOLP	90
VE2GT	2	2	SOLP	4
VE6CSX	1	1	SOHP	1
VO2AC	1	1	SOLP	1

**ONTARIO QSO PARTY**

Call	QSO	Mult	Category	Score					
VE3WG/R	234	137	Rover	396,889	VE3JPL	25	21	SOLP MIX	1,360
VE3EJ	600	299	SOHP CW	394,680	VE3LMS	36	26	SOLP SSB	1,170
VE3ODX (VE3CX)	832	262	SOHP MIX	341,648	KM4IAJ	23	21	SOLP SSB	1,050
VE3KZ	612	236	SOHP MIX	278,716	KE4S	19	15	SOLP MIX	1,035
VA3RAC (VE3RZ)	485	229	SOHP MIX	207,703	N3KN	18	18	SOHP SSB	1,008
VA3CCO (VE3NNT)	534	190	SOHP MIX	183,920	W4PM	19	16	SOLP CW	992
VA3DF	436	205	SOLP MIX	182,245	N1NN	20	16	SOHP CW	896
VE3CRU/R	78	45	Rover	139,815	VE3LON	36	23	MS	828
VE3RUA	348	175	SOLP MIX	128,625	AA8TA	15	13	SOLP CW	806
VE3MGY	303	171	SOQRP	113,202	N7DF	16	14	SOHP MIX	770
VE3VY	312	171	SOLP MIX	108,243	K1KI	16	16	SOHP CW	768
VA3GKO	402	159	MS	107,166	AE1T	18	14	SOLP MIX	756
VE3KP	214	131	SOHP CW	64,452	KE0TT	15	14	SOQRP	756
VE3TM	212	112	SOLP CW	52,864	K6DAJ	14	11	SOHP CW	748
VE3BR	178	118	SOHP MIX	48,144	AC0E	14	12	SOLP CW	720
VA3FN	183	103	SOLP CW	43,466	KD5J	16	12	SOLP MIX	708
VE3PJ	314	115	SOLP MIX	42,320	VE3OSZ	19	13	SOLP CW	702
VE3AQ	166	104	SOLP CW	40,352	N0KOE	18	16	SOLP MIX	656
VA3WW	346	100	SOHP SSB	35,500	WA4TAS	16	13	SOLP MIX	598
VE3CJ	213	84	M2	34,524	K5IB	13	11	SOHP MIX	594
VA3WB	166	90	SOLP CW	32,760	N8EA	11	10	SOLP CW	460
VE3VN	131	100	SOLP CW	30,200	K0RJW	19	16	SOHP SSB	448
W1AJT	121	81	SOHP MIX	27,945	VE3NQM	16	13	SOLP SSB	442
VE3GFN	159	87	SOLP MIX	27,318	VA3WR	16	13	SOLP MIX	429
VA3PDE	235	105	MS	26,565	NA2X	11	11	SOLP CW	418
VE3TW	145	83	SOHP MIX	26,228	KC4TEO	12	11	SOLP MIX	418
WB8WKQ	131	70	SOHP MIX	23,800	W6SX	8	8	SOHP CW	384
VE3WRL	166	69	SOLP MIX	23,667	KN4Y	12	12	SOLP MIX	384
W5TM	97	71	SOHP CW	20,022	NS9I	11	10	SOHP CW	380
VE3IZS	92	75	SOLP CW	19,200	K7ULS	11	10	SOLP CW	380
VE3GYL	200	81	SOHP SSB	18,387	VE9RLW	12	12	SOLP SSB	360
W9PA	109	66	SOHP MIX	18,348	VA2RIO	13	11	SOLP MIX	341
VE9ML	86	58	SOLP MIX	15,022	VA3RKM	13	13	SOLP CW	338
VE3TJI	178	70	SOLP SSB	14,350	VA3RDW	15	11	SOLP CW	330
KA6BIM	88	59	SOHP MIX	14,278	W2KU	10	10	SOHP SSB	280
VA3FF	82	67	SOLP MIX	13,333	W1ARY	8	8	SOLP CW	256
VE3DS	70	49	SOLP MIX	11,613	WA2JQZ	8	8	SOLP CW	256
VE3MV	62	50	SOLP CW	10,200	VE9WRS	13	11	SOLP SSB	242
K4GM	67	51	SOLP MIX	10,149	AA0AW	10	8	SOLP CW	224
VE5MX	58	49	SOHP CW	9,604	W7KAM	13	10	SOLP SSB	220
VE3JM	63	55	SOLP CW	9,570	KK4ADQ	11	9	SOLP SSB	180
K5LH	66	49	SOLP CW	9,212	WQ6X	6	6	SOHP CW	168
VE3MM	87	48	SOLP CW	9,120	W9TC	8	7	SOHP CW	168
VE3MXJ	117	62	SOLP SSB	7,254	K7JW	5	4	SOLP MIX	168
VE3SST	70	50	SOLP MIX	7,050	DL5KUT	6	4	SOHP MIX	140
VE3NZ	69	41	SOLP CW	6,642	VE3NR	6	5	SOLP MIX	135
N4VV	51	42	SOHP CW	6,636	N2CQ	7	6	SOLP CW	132
K1RO	55	40	SOLP MIX	6,320	KB9S	7	6	SOLP CW	132
VA3OPP	110	49	SOLP SSB	6,272	W7GF	4	4	SOLP CW	128
K4BAI	49	42	SOHP MIX	6,048	KF3G	8	8	SOLP CW	128
VA3ATW	78	54	SOLP SSB	5,670	NW5Q	6	5	SOLP SSB	120
VE3HEU	72	34	SOHP CW	5,440	AA4CF	8	7	SOHP CW	112
VA3PDG	101	48	SOLP SSB	5,280	AC9QM	7	7	SOLP SSB	112
VE3EY	49	42	SOLP CW	5,124	VE3HG	11	10	SOLP SSB	110
VE3LVW	47	33	SOLP MIX	5,115	K7MKL/VE3	12	9	SOLP MIX	108
VE3FJ	63	34	SOHP CW	5,100	VE7KAJ	4	3	SOLP MIX	96
K1DJ	43	37	SOHP CW	4,958	KA9GDW	7	6	SOLP SSB	96
AA4DD	42	33	SOHP CW	4,884	KA2GQQ	7	6	SOLP SSB	96
WN4AFP	48	31	SOLP MIX	4,867	VE2NCG	6	4	SOLP CW	80
WA8KAN	47	33	SOHP MIX	4,521	VE2NCG	6	4	SOLP CW	80
WA3AAN	40	34	SOLP CW	4,352	VE3KAH	8	6	SOLP MIX	78
VE3SWA	56	47	M2	3,901	K2BIO	6	6	SOLP CW	72
W0YJT	39	33	SOLP MIX	3,795	AK4VQ	5	5	SOHP SSB	70
KE2D	33	30	SOLP CW	3,660	KV2X	4	4	SOLP CW	64
K4GMH	38	31	SOLP CW	3,596	N4JAH	9	7	SOLP MIX	63
WB9HFK	41	32	SOLP MIX	3,360	KC5DCT	3	3	SOLP MIX	63
VE7CV	34	26	SOHP MIX	3,094	KT4Q	4	4	SOLP SSB	52
VA3RSA	61	29	SOLP SSB	3,074	W0RM	3	3	SOLP CW	42
K4VBM	31	24	SOLP MIX	2,640	W6SFI	3	3	SOLP MIX	39
VE3CNA	57	34	SOLP SSB	2,550	K0BAK	5	5	SOLP SSB	25
VE3CV	34	30	SOLP MIX	2,520	VE3FR	2	2	SOLP MIX	22
VA3NGE	41	30	SOLP MIX	2,460	WZ6ZZ	2	2	SOLP SSB	22
K1IB	30	24	SOHP CW	2,400	WB4HRL	4	4	SOHP MIX	20
W1END	30	24	SOLP CW	2,400	KF8MZ	5	4	SOHP SSB	20
VE2CJR	50	35	SOLP MIX	2,380	K9WPV	4	4	SOLP MIX	16
VE3KTB	37	30	SOHP MIX	2,370	VA6RCN	1	1	SOLP CW	10
K4RUM	25	22	SOHP CW	2,332	KE3VN	3	3	SOQRP	9
K0HNC	32	27	SOLP MIX	2,268	LY1DZ	2	2	SOLP CW	8
K3YP	30	22	SOLP CW	2,200	N2UU	2	2	SOLP CW	8
VA3RGA	50	28	SOLP SSB	2,156	W2UDT	2	2	SOHP SSB	4
NS2N	30	25	SOHP MIX	2,150	KG2E	2	2	SOLP SSB	4
KC2WUF	26	23	SOQRP	2,093	UY0ZG	1	1	SOHP CW	2
N1SOH	28	22	MS	2,090	AB5XM	1	1	SOLP CW	2
WD0BMS	33	28	SOHP SSB	1,932	VE2GT	1	1	SOHP SSB	1
K5UV	24	19	SOHP CW	1,672	VE3RNF	1	1	SOLP SSB	1
WA8ZBT	27	21	SOLP CW	1,638					

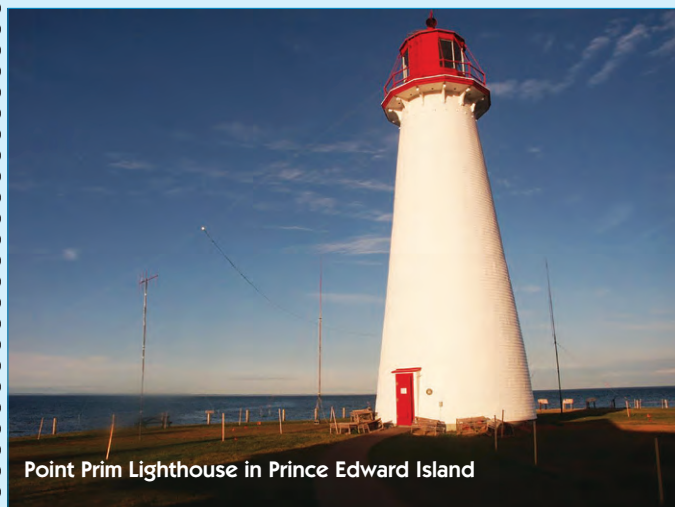
## FLORIDA QSO PARTY

Call	QSO	Mult	Category	Score
VA3DF	465	110	SOLP MIX	179,300
VE3KZ	440	106	SOLP MIX	165,148
VE3UTT	276	100	SOLP MIX(A)	98,200
VE3CX	509	105	SOHP MIX(A)	93,765
VE3NNT	431	67	SOHP CW(A)	57,218
VE3TM	191	82	SOLP MIX	55,596
VE3PJ	216	86	SOLP MIX(A)	55,556
VA2CZ	310	98	SOHP MIX(A)	52,724
VA3EC	212	61	SOLP CW	51,484
VE3BR	176	79	SOLP MIX	48,348
VE3AYR	176	69	SOLP MIX	45,402
VE3MV	166	70	SOLP MIX(A)	41,440
VE9AA	243	76	SOHP MIX(A)	35,644
VE3WG	142	68	SOLP MIX	30,872
VE3KP	228	64	SOHP CW	28,672
VE3TW	207	79	SOLP MIX	26,386
VE3GFN	133	56	SOLP MIX(A)	25,424
VE3EJ	199	55	SOHP CW(A)	21,670
VE1OP	146	57	SOHP CW(A)	16,188
VA1MM	157	52	SOHP CW	15,912
VE3SST	95	51	SOLP MIX	15,402
VE3VN	68	43	SOLP CW	11,524
VE3YAA (VE3FJ)	108	50	SOHP CW	10,600
VE3NR	67	46	SOLP MIX(A)	10,028
VE5MX	104	48	SOHP CW(A)	9,696
VA3NGE	66	40	SOLP MIX(A)	8,800
VE3AQ	122	41	SOHP CW(A)	8,610
VE3IZS	69	25	SOLP CW	6,400
VE3MGY	50	29	SOLP CW(A)	5,568
VE2BWL (VE2BWL, VE2ATB)	82	50	MSHP MIX	5,450
VE3LVW	50	33	SOLP MIX	5,082
VE3KTB	67	40	SOHP MIX(A)	4,400
VA2WA	40	21	SOLP CW(A)	3,276
VE3FH	34	24	SOLP CW	3,264
VE3JM	35	22	SOLP CW	2,904
VE3PQ	30	21	SOLP CW	2,520
VE3IDT	49	27	SOLP SSB	2,484
VE2EZD	32	17	SOLP CW	2,108
VE3HG	31	23	SOLP MIX(A)	2,070
VE2FK	31	24	SOHP CW(A)	1,488
VE7IO	24	16	SOLP CW	1,472
VE3LMS	39	18	SOLP SSB	1,368
VA3ZNQ	34	20	SOLP SSB(A)	1,320
VA3WW	51	26	SOHP SSB(A)	1,274
VA3PC	25	19	SOLP SSB	950
VE9RLW	25	18	SOLP SSB	864
VO2AC	18	12	SOLP CW(A)	864
VE3MXJ	25	15	SOLP SSB(A)	750
VA3TYB	19	15	SOLP SSB	570
VO1MP	20	16	SOHP CW(A)	544
VA3OBO	17	12	SOLP SSB	408
VA6RCN (VE3RCN)	11	9	SOLP CW	396
VA7XH	21	14	SOHP SSB(A)	294
VE2GT	11	10	SOHP MIX(A)	140
VA3FN	5	4	SOLP CW	80
VA6NJK	8	5	SOLP SSB(A)	80
VE7KAJ	2	2	SOLP CW(A)	8

## POLISH SP DX CONTEST

Call	QSO	Mult	Category	Score
VE9AA	205	48	SOAB CW HP	28,224
VE9ML	176	46	SOAB MIX LP	22,632
VE3NNT	157	38	SOAB CW HP	16,530
VE3TW	89	23	SOAB MIX HP	5,865
VE3YAA	94	16	SOSB CW 20	4,272
VA2WA	63	24	SOAB CW HP	4,248
VE2FK	78	16	SOAB CW HP	3,600
VE3KP	59	22	SOAB CW HP	3,564
VE3MV	68	19	SOAB CW LP	3,477
VE3TM	54	19	SOAB MIX LP	2,907
VE9CB	49	20	SOAB MIX HP	2,880
VE3BDN	57	16	SOAB PH HP	2,496
VE2BWL	27	15	SOAB CW HP	1,170
VE1RSM	25	12	SOSB CW 20	900
VA2CZ	29	12	SOSB CW 40	864
VA3LUK	18	10	SOSB PH 20	510
VE5MX	16	7	SOAB CW HP	315
VE3PND	10	7	SOSB CW 40	147

## International Lighthouse Lightship Weekend 2020



Point Prim Lighthouse in Prince Edward Island

### George Dewar, VY2GF

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 22-24.

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 third 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 they return year after year.

Plans are underway for a number of lighthouse activations on Prince Edward Island by the Maritime Lighthouse Amateur Radio Group (MLARG) using the call sign VY2PLH. One planned activation will be at Point Prim (CAN 809) and there is also the possibility of an activation at Cape Bear (CAN 092). MLARG activities can be followed online at: <https://www.facebook.com/groups/MLARG/>.

The MLARG extends an invitation to any Amateur who would like to operate and they will also facilitate individual activations at other locations.

The PEI Lighthouse Society lists in excess of 50 sites. If you would like to do an activation please contact George Dewar at [vy2gf@rac.ca](mailto:vy2gf@rac.ca) or [dewarg@bellaliant.net](mailto:dewarg@bellaliant.net).

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

For more information on the PEI Lighthouse Society please visit: <http://www.peilighthousesociety.ca/>

CQ WPX CONTEST, SSB					VE1SQ	100	88	SO LP ALL	35,552
Call	QSOs	PX	Category	Score	VE3VN	99	89	SO LP ALL	33,642
VB3E (VE3AT)	3,700	1,179	SO HP ALL	15,005,133	VA3FP	116	109	SO HP 20M	31,937
VE3EJ	2,285	1,138	SO HP ALL	13,602,514	VE3FH	119	110	SO LP 20M	31,680
VE9CB	3,021	1,041	SO HP ALL	10,428,738	VE3MT	98	82	SO HP ALL	31,570
VC6V (KE5JA VE4GV VE6TL VE6SV)					VE3KKQ	98	83	SO LP ALL	31,374
	3,822	930	MULTI-TWO	10,362,990	VA7GI	108	81	SO HP ALL	26,082
VC2W (VA2WA)	2,769	1,050	SA HP ALL	9,969,750	VA5KMG	115	78	SO LP ALL	24,258
VE3DZ	2,344	987	SO HP ALL	8,324,358	VE3MGY	96	67	SO LP ALL (T)	24,120
VE5MX	2,848	945	SA HP ALL	8,308,440	VE3XKZ	95	90	SA LP ALL (R)	23,040
VC2Z (VE2BWL VA2EK VA2CZ K1LI)					CK4EV (VE4EV)	104	81	SO LP ALL	21,951
	2,261	892	MULTI-ONE HP	6,706,056	VE6LB	99	74	SA HP ALL	21,830
VE3CX	1,768	796	SA HP ALL	4,393,124	VO1CRP	87	72	SO LP ALL (R)	21,312
VE6FI (VE6FI VE6AQ VE6MAA)					VE7SXM	103	71	SA LP ALL	20,306
	1,650	621	MULTI-TWO	3,046,005	VE5DLC	97	78	SO LP ALL	20,280
VE6AO (VE6CCM VE6CCL VE6WSI VE6...)	1,760	546	MULTI-TWO	2,631,720	VE2GT	80	78	SA LP ALL (T)	16,302
VE3YAA (VE3DQ VE3EUT VE3FC VE3FJ...)					VE3PYJ	72	60	SO LP 40M	16,080
	1,107	614	MULTI-ONE HP	2,199,348	VE2SCA	72	67	SA HP ALL	15,410
VE4EA	1,383	478	SO HP ALL	2,132,836	VE3HG	55	54	SA LP 40M	13,554
VA5AA (VA5AA)	1,172	499	MULTI-MULTI	1,631,231	VA7RN	82	60	SO HP ALL	13,440
VO1DX	883	466	SA HP ALL (R)	1,493,064	VA3AHQ	65	56	SA LP ALL	11,928
CK9ML (VE9ML VE9BK)					VE1JS	58	55	SO LP ALL (T)	8,800
	789	456	MULTI-MULTI	1,418,616	VE7BNR	68	44	SO LP ALL	8,404
VE2GSO	903	486	SO HP ALL	1,302,966	VE7CKF	67	46	SO LP ALL	7,728
CJ3CCO (VE3KZ)	775	521	SO HP ALL	1,213,930	VA6DBS	62	45	SO LP ALL	7,650
VE7VR	945	394	SO HP ALL	1,160,724	VA6RCN	58	48	SO LP ALL	7,632
VY2ZM (K1ZM)	606	390	SO HP 160M	1,144,650	VE2TDT	48	45	SA HP ALL	7,335
VB7R (VA7RR)	978	485	SO HP 20M	1,085,430	VE7AHT	55	49	SA HP ALL	7,203
VE7GL	896	454	SA HP 20M	902,552	VE5GC	62	55	SO LP 20M (T)	7,095
CK3LRL (VE3LRL)	698	349	SA HP ALL (T)	894,138	VA7MD	66	53	SO LP ALL	6,307
VE6DDD	778	388	SO HP ALL (T)	813,248	VE3DNM	47	45	SO LP ALL	5,940
VO1AX (VO1AX VO1JQB)					VE3MIS (VE3CWU)	49	46	SA HP 20M	5,612
	614	348	MULTI-ONE HP	760,728	VE9TNT	47	37	SO LP ALL	5,476
VE4VT	740	347	SO LP ALL (T)	720,025	VE3GNI	45	37	SO HP ALL	5,069
VE3OTL	574	361	SO HP ALL (T)	668,933	VA7PPL	46	40	SO LP ALL (R)	4,200
VA7QD					VE2NCG	42	39	SO QRP 20M (R)	3,783
(VA7NLF VA7QD VE7TI VE7IO...)					VE7CMT	33	29	SA HP 80M (T)	3,509
	618	330	MULTI-MULTI	596,640	VE6SPS	40	33	SA LP ALL	3,366
VE3TW	469	312	SO HP ALL (T)	500,136	VA1JON	27	26	SO LP ALL	3,172
VE9AA	497	287	SO HP ALL	498,806	VE7CNW	35	33	SA HP ALL	3,135
VA3ROC	493	247	SA HP ALL	470,288	VE7BGP	35	31	SO LP ALL (T)	2,759
VE6EX	651	307	SO LP ALL	443,308	VA7DBJ	28	24	SO LP ALL	2,496
VA3WW	444	278	SA HP ALL	431,734	VA3DKL	30	30	SO LP 20M (R)	2,250
VA7ST	486	278	SO HP ALL	367,238	VE6IKR	32	26	SA HP ALL	2,028
CJ2CZ (VA2CZ)	417	253	SA HP ALL	365,838	VA3MYC	25	24	SO QRP ALL	1,704
VA3MW	340	281	SA HP ALL	322,026	VE4VJR	28	26	SA LP ALL (R)	1,690
VE2PIB					VE3MZD	24	23	SA LP ALL	1,541
(VE2PIB VA2MP VA2ALF)					VE3ETE	29	26	SO LP ALL	1,352
	349	272	MULTI-ONE HP	317,696	VE3HED	22	22	SA HP 20M	1,232
VE3KP	344	211	SO HP ALL	264,383	VA7ZM	20	15	SA LP ALL	1,035
VE7FO (VE7FO VA7GI)416		245	MULTI-ONE HP	249,410	VE7KAJ	23	22	SA LP ALL	1,012
VE3HM	295	222	SO LP ALL (T)	216,228	VE7YAH	13	13	SA HP ALL	533
VE3VY	305	198	SA LP ALL (T)	212,850	VA3FN	12	11	SO LP ALL	506
VA7BEC	339	215	SA LP ALL	191,135	VO1ZAP	14	14	SO LP 20M (R)	420
VE7FE	306	213	SA HP ALL	184,884	VE5ZC	12	12	SO HP ALL	288
VA3NW	239	163	SO LP ALL	157,621	VA7IR	10	10	SA QRP 160M (T)	270
VY0ERC (VE3KTB)	262	194	SA HP ALL	148,992	VE3DLH	5	5	SO LP ALL	105
VA3WB	200	165	SA LP ALL	107,250	VA3VDM	3	3	SO LP 40M	30
VA2CO	193	159	SO HP ALL	100,170	VE7NA	2	2	SO LP 40M	16
VE7JH	204	157	SO LP ALL (T)	93,886	VE9UNB	2	2	SA LP 20M (T)	10
VE6IVN	214	157	SO LP ALL	93,572	VE7KCY	1	1	SO LP 40M	4
VE6EH	209	125	SO LP ALL (T)	81,125	SP DX CONTEST RTTY				
VE3FZ	171	139	SA LP ALL	73,392	Call	QSO	Mult	Category	Score
VE6CSX	200	126	SA HP ALL	73,332	VE2FK	350	127	SOHP	1,560,576
VE3LON					VE2BVV	239	83	SOLP	617,852
(VE3ACW VE3HOR VE3MGR)					VE2EBK	183	79	SOHP	568,405
	177	149	MULTI-ONE LP	71,073	VA1XH	133	56	SOHP	114,352
VE5FX	182	158	SO HP ALL	67,150	VA3FF	99	36	SOLP	48,456
VA2KZ	160	147	SO LP 20M	64,680	VE5MX	46	11	SOHP	12,188
VE2CJR	149	132	SA LP ALL	59,268	VE2NMB	49	11	SOHP	6,050
VA3NGE	157	112	SA LP ALL	59,248	VA3IK	21	9	SOLP	2,610
VE6FT	175	121	SO HP ALL	56,265	VE2QV	15	8	SOLP	1,840
VE3SST	148	112	SO LP ALL (T)	50,064	VE2ZWA	12	3	SOHP	420
VA3AC	135	96	SO LP 160M	47,136					
VE3MH	132	106	SO LP ALL	43,036					
VE3XNS	114	93	SO LP ALL	36,363					
VA2QR	110	95	SA HP ALL	36,290					

## CONTEST CALENDAR FOR MARCH, APRIL AND EARLY MAY 2020

Contest Name	Start	End	Web Address
North Carolina QSO Party	1500 Mar 1	0059 Mar 2	<a href="http://ncqsoparty.org/rules/">http://ncqsoparty.org/rules/</a>
ARRL Int. DX Contest SSB	0000 Mar 7	2400 Mar 8	<a href="http://www.arrl.org/arrl-dx">http://www.arrl.org/arrl-dx</a>
RSGB Commonwealth CW	1000 Mar 14	1000 Mar 15	<a href="https://www.rsgbcc.org/hf/rules/2019/rberu.shtml">https://www.rsgbcc.org/hf/rules/2019/rberu.shtml</a>
Oklahoma QSO Party (Part 1)	1400 Mar 14	0200 Mar 15	<a href="http://k5cm.com/okqp.htm">http://k5cm.com/okqp.htm</a>
Oklahoma QSO Party (Part 2)	1400 Mar 15	2100 Mar 15	<a href="http://k5cm.com/okqp.htm">http://k5cm.com/okqp.htm</a>
QCWA Spring QSO Party	1800 Mar 14	1800 Mar 15	<a href="http://www.qcwa.org/2019-qso-party-rules.pdf">http://www.qcwa.org/2019-qso-party-rules.pdf</a>
Idaho QSO Party	1900 Mar 14	1900 Mar 15	<a href="http://www.pocattelloarc.org/idaohqsoparty/">http://www.pocattelloarc.org/idaohqsoparty/</a>
North American Sprint RTTY	0000 Mar 15	0400 Mar 15	<a href="http://ncjweb.com/Sprint-Rules.pdf">http://ncjweb.com/Sprint-Rules.pdf</a>
Wisconsin QSO Party	1800 Mar 15	0100 Mar 16	<a href="http://www.warac.org/wqp/wqp.htm">http://www.warac.org/wqp/wqp.htm</a>
NAQCC Sprint	0030 Mar 19	0230 Mar 19	<a href="http://naqcc.info/sprint/sprint202003.html">http://naqcc.info/sprint/sprint202003.html</a>
BARTG HF Contest RTTY	0200 Mar 21	0200 Mar 23	<a href="http://www.bartg.org.uk/">http://www.bartg.org.uk/</a>
Virginia QSO Party (Part 1)	1400 Mar 21	0400 Mar 22	<a href="https://www.qsl.net/sterling/VA_QSO_Party/2020_VQP/2020_VQP_Main.html">https://www.qsl.net/sterling/VA_QSO_Party/2020_VQP/2020_VQP_Main.html</a>
Virginia QSO Party (Part 2)	1200 Mar 22	2400 Mar 22	<a href="https://www.qsl.net/sterling/VA_QSO_Party/2020_VQP/2020_VQP_Main.html">https://www.qsl.net/sterling/VA_QSO_Party/2020_VQP/2020_VQP_Main.html</a>
Russian DX Contest	1200 Mar 21	1200 Mar 22	<a href="http://www.rdx.org/asp/pages/rulesg.asp">http://www.rdx.org/asp/pages/rulesg.asp</a>
NSARA Contest (Morning)	1200 Mar 22	1600 Mar 22	<a href="https://nsara.ve1cfy.net/?page_id=82">https://nsara.ve1cfy.net/?page_id=82</a>
NSARA Contest (Afternoon)	1800 Mar 22	2200 Mar 22	<a href="https://nsara.ve1cfy.net/?page_id=82">https://nsara.ve1cfy.net/?page_id=82</a>
CQ WPX Contest SSB	0000 Mar 28	2400 Mar 29	<a href="https://www.cqwp.com/rules.htm">https://www.cqwp.com/rules.htm</a>
Louisiana QSO Party	1400 Apr 4	0200 Apr 5	<a href="http://laqp.louisianacontestclub.org/laqso_rules.htm">http://laqp.louisianacontestclub.org/laqso_rules.htm</a>
SP DX Contest	1500 Apr 4	1500 Apr 5	<a href="https://spdxcontest.pzk.org.pl/2019/rules.php">https://spdxcontest.pzk.org.pl/2019/rules.php</a>
North American SSB Sprint	0000 Apr 5	0400 Apr 5	<a href="http://ssbsprint.com/rules/">http://ssbsprint.com/rules/</a>
JIDX Contest CW	0700 Apr 11	1300 Apr 12	<a href="http://www.jidx.org/jidxrule-e.html">http://www.jidx.org/jidxrule-e.html</a>
Georgia QSO Party (Part 1)	1800 Apr 11	0359 Apr 11	<a href="http://www.georgiaqsoparty.org/">http://www.georgiaqsoparty.org/</a>
Georgia QSO Party (Part 2)	1400 Apr 12	2359 Apr 12	<a href="http://www.georgiaqsoparty.org/">http://www.georgiaqsoparty.org/</a>
NAQCC Sprint	0030 Apr 15	0230 Apr 15	<a href="http://naqcc.info/contests.html">http://naqcc.info/contests.html</a>
Holyland DX Contest	2100 Apr 17	2100 Apr 18	<a href="http://www.iarc.org/iarc/#HolylandContest">http://www.iarc.org/iarc/#HolylandContest</a>
YU DX Contest	0700 Apr 18	0659 Apr 19	<a href="http://www.yudx.yu1srs.org.rs/">http://www.yudx.yu1srs.org.rs/</a>
CQMM DX Contest	0900 Apr 18	2359 Apr 19	<a href="http://www.cqmm.com/rules/">http://www.cqmm.com/rules/</a>
Michigan QSO Party	1600 Apr 18	0400 Apr 19	<a href="http://www.miqp.org/Rules.htm">http://www.miqp.org/Rules.htm</a>
Ontario QSO Party (Part 1)	1800 Apr 18	0500 Apr 19	<a href="http://www.va3cco.com/oqp/rules.htm">http://www.va3cco.com/oqp/rules.htm</a>
Ontario QSO Party (Part 2)	1200 Apr 19	1800 Apr 19	<a href="http://www.va3cco.com/oqp/rules.htm">http://www.va3cco.com/oqp/rules.htm</a>
SP DX Contest RTTY	1200 Apr 25	1200 Apr 26	<a href="http://www.pkrvg.org/strona,spdxttyen.html">http://www.pkrvg.org/strona,spdxttyen.html</a>
Florida QSO Party (Part 1)	1600 Apr 25	0159 Apr 26	<a href="https://floridaqsoparty.org/">https://floridaqsoparty.org/</a>
Florida QSO Party (Part 2)	1200 Apr 26	2159 Apr 26	<a href="https://floridaqsoparty.org/">https://floridaqsoparty.org/</a>
ARI International DX Contest	1200 May 2	1159 May 3	<a href="http://www.ari.it/">http://www.ari.it/</a>
7th Call Area QSO Party	1300 May 2	0700 May 3	<a href="http://ws7n.net/7QP/new/Page.asp?content=rules">http://ws7n.net/7QP/new/Page.asp?content=rules</a>
Indiana QSO Party	1600 May 2	0400 May 3	<a href="http://www.hdxcc.org/inqp/rules.html">http://www.hdxcc.org/inqp/rules.html</a>
Delaware QSO Party	1700 May 2	2359 May 3	<a href="http://www.fsarc.org/qsoparty/rules.htm">http://www.fsarc.org/qsoparty/rules.htm</a>
New England QSO Party	2000 May 2	2400 May 3	<a href="http://www.neqp.org/rules.html">http://www.neqp.org/rules.html</a>

**Note:** In the above chart an \* indicates Local Time. 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. 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](http://www.cq-amateur-radio.com/cq_contests/index_cq_contests.html). **Bands:** The 30, 17 and 12m bands are never used in any contest.

# The Section News: The RAC Field Organization Forum

## BRITISH COLUMBIA / YUKON:

SM Acting Bill Gipps, VE7XS  
A/SM David Musselwhite, VY1XY  
A/SM Neil King, VA7DX  
STM Al Ross, VE7WJ  
SEC Acting Al Munnik, VA7MP  
SEC Terry Maher, VYIAK (Yukon)  
OOC: Dennis Wight, VE7IJJ  
ACC: Karla Wakefield, VA7KJW  
CEC: Gursimran Gill, VA7GUR  
Website: [www.va7mpg.ca](http://www.va7mpg.ca)

## NOVEMBER-DECEMBER SM REPORT:

If you have an item of interest to include in this section, please send it to [bill.gipps@gmail.com](mailto:bill.gipps@gmail.com) and the TCA Editor at [tcamag@yahoo.ca](mailto:tcamag@yahoo.ca).

### Second Annual 2m QSO Party Hiroshi Takahashi, VA7LET

The second annual 2m QSO Party was held on November 16 with a dozen logs received and a number of other participants. The contest was open to participants located in Metro Vancouver, Vancouver and the Gulf Islands, as well as Maidenhead grids CN89, CN99, CN78, CN88 and CN98.

Mobile or fixed stations could be used with the following categories: QRP 10W or less; Low 11-49 W; and High >50W.

The exchange was call sign, power class and municipality. Points were one point per station worked plus 10 points for each municipality worked, plus 10 points for each municipality operated from using local simplex frequencies. VA7VM (low) was the high scorer with 187 points, VA7KBM (High) 165 points and VE7FAW (QRP) 170 points.

Participants enjoyed the challenge of making contacts and producing bonus points. It also raised awareness of VHF simplex propagation in the lower Mainland.

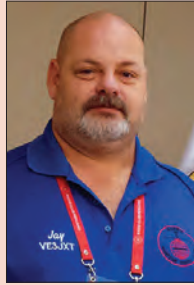
### Canadian National Parks On The Air Fred, VE7IO and Marcy, VE7JT

Many thanks to all the dedicated organizers who made CNPOTA happen. Without your voluntary contributions this event would not have been so successful.

Activating the fort at Fort Langley was challenging but very rewarding. The many local Amateurs who activated VC7FL, overcame setup and propagation issues to log SSB, CW and digital QSOs.

The Fort management was not too enthusiastic about having antennas, generators and radios in their space in the beginning. However, at the windup of our CNPOTA activations they were very happy and even enthusiastic as they realized how Amateur activations promoted the Fort. Needless to say all the activations were carried out safely and professionally by everyone involved.

## MESSAGE FROM THE RAC COMMUNITY SERVICES OFFICER



Community Services Officer  
Jason Tremblay, VE3JXT  
[community@rac.ca](mailto:community@rac.ca)

Welcome to 2020! A new year, a new decade and a new Community Services Officer. I would first like to thank Doug Mercer, VO1DM, for his many years of dedicated service as the RAC Community Services Officer and for his ongoing mentorship. I know I have very big shoes to fill.

The new year brings new beginnings for some and for others the constant reminder of change. This is also true with communications in Canada. There have been recent reports that Emergency Services and Emergency Managers are adopting new communications tools and systems, such as 700 MHz or Bell Net. Inevitably, reports like these lead some ARES members to question their role in today's ever-changing society.

So, let's take a quick look at ARES and the world of 700 MHz.

To understand why this system was first established we must first take a look at the history of communications in Emergency Services. For decades, communications in emergency services in North America was because it involved public, private, local, state, provincial, federal and national services. In addition, while one particular service may not have had the available resources to purchase new technology, another may have been able to do so quite easily.

The 9/11 attacks highlighted the inability for deployed public safety networks to handle a true crisis situation and the powers that be soon realized that something needed to be done and fast. The First Responder Network Authority (FirstNet) of the United States was created in 2012. FirstNet is a nationwide wireless broadband network for first responders which was built and deployed through a first of its kind public-private partnership between the federal government and AT&T.

According to the Federal Communications Commission, the "700 MHz Band is an important swathe of spectrum available for both commercial wireless and public safety communications". In addition, "FirstNet is charged with responsibilities for deploying and operating the nationwide public safety broadband network" and utilizes the 700 MHz Band. It is another tool for Emergency Services to help them provide their services better.

The FirstNet system does not in any way impact the role of Amateur Radio. It may require changes in some regions but that is a part of communications. These new systems cost millions of dollars to establish and rely on infrastructure and, as a result, many communities cannot afford them.

Amateur Radio also has many tools in our toolbox such as APRS, Winlink and digital systems. ARES provides qualified communications personnel who establish ad-hoc radio communications links where and when they are needed. It is not designed to replace a system and will only do so if all other communication systems have failed.

ARES groups are encouraged to work with their local, regional, provincial and national organizations to get a better understanding of how changes in technology and in the environment and other areas will impact them – now and in the future. They need to be able to assess the available tools in their toolbox to see what works and what needs to be changed. They also need to see what other tools may be available to them and provide training to ensure that ARES volunteers can use these tools efficiently.

Local Amateur Radio clubs and all Amateurs, in general, also need to be shown what steps need to be taken to be better prepared in case of an emergency, including what would be required in the event of a deployment.

We can adapt to today's changing world by strengthening our knowledge base and not by worrying about what may or may not happen. Focus on the mission and build a strong toolbox to fall back on.

More importantly, "Plan, Prepare and Practice" until everything becomes second nature. You may never get that call, but you will always have peace of mind that if something does happen you and your family will be ready.

For more information on Canada's National Public Safety Broadband Network you can find the "Progress Report on a National Public Safety Broadband Network 2019" at <https://www.publicsafety.gc.ca/cnt/rsrscs/pblctns/2019-prprt-npsbn/index-en.aspx>.

Radio Amateurs of Canada is well represented at these meetings by our President Glenn MacDonell, VE3XRA.

Jason Tremblay, VE3JXT – RAC Community Services Officer

The experience was totally positive and beneficial for both the Fort and Amateur Radio.

### Public Service Honour Roll

#### November:

VE7XLH: 120; VA7MPG: 220; VE7GN: 120; VE7WJ: 100

#### December:

VE7XLH: 119; VA7MPG: 100; VE7GN: 110; VE7WJ: 100

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### ALBERTA:

SM: Garry Jacobs, VE6CIA  
SEC: Brian Davies, VE6CKC  
STM: Don Moman, VE6JY  
OO: Don Moman, VE6JY  
Web: <http://wp.rac.ca/ares-alberta-yellowknife-nwt/>

### NOVEMBER-DECEMBER SM REPORT:

#### Edmonton and Area – Colin, VA6CCB

Thanks to the diligence of Ron, VE6RWP, Alberta ARES has obtained permission to use D-Star reflector REF016B for Emergency communications on D-Star if need be. For more information visit: <http://ref016.dstargateway.org>

#### Three Hills and area – Bernard VE6HFD

The Three Hills ARES unit has been busy with training on formal traffic handling with and without Winlink. The winter months will allow more time for one-on-one training with emphasis on document management and retention. On the air training will continue with Emergency Operations Centre (EOC) staffing and operations highlighted in the new year.

We have set up an IRLP/Echolink node (1476/223479) in Hanna and it is linked into the VE6HB repeater system so we can get into other areas, if the Internet is available. One more tool in the toolbox.

The weekly VHF net has continued to gain interest in Amateur radio and its capabilities for the area served. I would like to thank all the ARES members and non-members for their support and donating their time.

Of note, the VE6HB repeater (146.820) site that was slated for demolition has been put on hold. Very good news for sure.

#### Red Deer and area – Garry VE6CIA

The Central Alberta Amateur Radio Club is holding a dual band roll up J-pole antenna building session for all those interested.

The response was lively and we had to limit attendance to 25 participants to allow it to be manageable. After some cancellations the waitlist was depleted so everyone was able to get in.

– SM Garry, VE6CIA

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### 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); Grant Delaney, VA4GD (LGD of Pinawa and surrounding municipalities); Andrew Webb, VE4PER for Portage la Prairie area.  
Web: <http://wp.rac.ca/ares-manitoba/>

### NOVEMBER-DECEMBER SM REPORT:

The Winnipeg Amateur Radio Club organized a Basic Amateur Radio Short Course in the fall thanks to Roberto Urrea, VA4JBB. Eighteen participated in the course and 13 individuals wrote the exam on November 16 and everyone passed. The grades ranged from 72% to 97%. Congratulations to all!

#### Winnipeg ARES – Jeff Dovyak, VE4MBQ

We would like to welcome our newest members: Barb Reider, VE4BRR and Jim Coussau, VE4CKP.

Our Annual General Meeting was held on November 19. The 2018-19 Statement of Income and Expenses was approved as was the proposed 2019-20 Budget. The 2018-19 Activity Summary was distributed to the members and included:

- Alerts, callouts, exercises and tests: 1
- Public Service events: 6
- Educational meetings: 8)

The 2018-19 Executive was re-elected by acclamation. Congratulations to:

- President Kurt Sargent, VE4GIS
- Secretary John Erwin, VE4WX
- Treasurer Susan Collings, VE4SYM

We are still in need of a Fundraising Chairperson and we are looking for an alternate “phoner” for one of our telephone fan-out lists.

Thanks to Winnipeg ARES members who brought new, unwrapped children's toys to support the Salvation Army Toy Mountain campaign and thanks to Dick Maguire, VE4HK, for taking the donations to the Salvation Army Weetamah Corps.

Award-winning Automotive journalist Kelly Taylor, VE4XT, delivered an excellent Winter Driving presentation at our DEC General Meeting.

WARES meetings are the second Tuesday of the month 1900h at Sir William Stephenson Library 765 Keewatin Street.

– Jan Schippers, VE4JS

### Traffic Totals

November: 0

December: 0

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### ONTARIO NORTH:

SM: Allan (Al) Boyd, VE3AJB  
[ve3ajb@vianet.ca](mailto:ve3ajb@vianet.ca)  
STM: Patrick (Pat) Dopson, VE3HZQ  
[dopsonp@vianet.ca](mailto:dopsonp@vianet.ca)  
SEC: Stig Larsen VE3LBX  
[slarsen@vianet.ca](mailto:slarsen@vianet.ca)  
OBM: Paul Caccamo, VA3PC  
[va3pc@ciinet.org](mailto:va3pc@ciinet.org)  
Web: <http://ontario.racares.ca>

### NOVEMBER-DECEMBER SM REPORT:

#### Albany District

#### Sault Ste. Marie – EC Brent MacMillan, VE3OTL

Results from 2019 Field Day have been published in QST and VE3SOO operating from our EOC placed third in Canada in Class 2F. Interest in operating from EOCs in Field Day across Canada is building!

#### DEC Report – Warren Paulson, VE3FYN

Warren, VE3FYN, is making some changes to the weekly and monthly HF net, particularly to allow participation from other ONN districts. The monthly EOC test nets are revealing areas for improvement in several of our EOC stations, which are being addressed by the various ECs.

#### Amethyst District

#### Thunder Bay – Brad Harris, VE3MXJ

Thunder Bay organized and participated in a regional emergency exercise on November 5, which involved not only ARES members from Thunder Bay to Kenora, but several municipal EOCs who used it to conduct their annual exercise. We were able to show our municipalities our capabilities, and work on improving traffic handling between ARES and the EOC members.

Working with Sharon Bak, our EMO Field Officer, Thunder Bay organized our first ever Amethyst District Simulated Emergency Test involving several municipal Control Groups and all our regional EOC Amateur Radio stations. The exercise was called “Exercise Ice Storm” and simulated a District-wide ice storm that took out power and communications throughout the region.

Municipal Control groups worked through the scenario and involved Amateur Radio in sending and receiving traffic throughout the region and to the Provincial EOC in Toronto via both voice and Winlink. Many of our communities now have VHF/HF/Winlink stations at the municipal EOCs

and this was a chance for us to work with municipal staff to demonstrate our capabilities. We learned a lot about how to smoothly send and receive traffic for the EOC members. Another exercise is planned for next year. Please see the article on page 43 for more information.

#### **Atikokan – DEC Warren Paulson, VE3FYN**

Atikokan participated in the regional SET described above and on page 43. Our municipal Control Group was activated, and three Amateurs staffed our EOC station, sending traffic throughout the region and to the PEOC via voice and Winlink. We are now taking what we learned to develop better systems to transfer information back and forth with the municipal staff.

We have installed a Winlink email RMS server to improve regional access to the system. While it is open, it is intended primarily to benefit Amethyst ARES. The gateway may be limited to ARES use during an emergency, and may operate in radio-only mode to serve as an emergency email gateway in the region. It is already receiving a good deal of traffic.

#### **Fort Frances – Rod Davis, VE3RYD**

We participated in our regional exercise on November 5, which went pretty well. Other than that it was just regular meetings and check-ins on nets VHF and HF. Thanks all for the great work everyone does.

#### **Kenora – Chris Bigelow, VA3ECO**

On November 5, a Northwest Ontario ARES/CEMC exercise was held. Kenora had a separate CEMC exercise earlier in the fall so it was just an ARES exercise here. The Fire Chief, a Central Ambulance Communications Centre (CACC) representative, and the Kenora Health and Safety Officer, observed and contributed some scenarios. Propagation on 80m was good with the westernmost Kenora EOC managing to have good contact to the easternmost Thunder Bay EOC, and all EOCs in between – a distance of 460 kilometres.

We also went to the Lake of the Woods District Hospital and tested the fixed VHF antenna on the hospital roof, which has a coax cable down to the large meeting room on the main floor. The SWR measured 1.5:1, and an HT could key the local repeaters with full quieting. There is not enough room to install a fixed radio and power supply at this time.

#### **Sioux Narrows – Nestor Falls**

Sunday night ARES VHF net continues to draw 6 to 8 Ops weekly.

On November 5, the Sioux Narrows – Nestor Falls EOC VA3EMC station participated in the EMO Amethyst District Emergency Exercise. The Exercise was

approximately three hours in length and was a most worthwhile endeavour. SSB and Winlink data were used to pass traffic on behalf of the Municipal Emergency Control group. Good readable signals were reported from all the EOCs in the District. VE3JJA, VE3ROB, VE3JFU and VE3RMU were on duty for the exercise.

Three new low-cost VHF/UHF QYT KT-8900 25 watt Mini transceivers were purchased by unit members. They seem to work very well.

Both EOC stations locations, VA3EMC and VA3EMN, are working around construction in their respective locations and are both are operating well.

#### **Dryden – Bob Ernewein, VE3YDN**

The Amateur Radio Society of Dryden maintained our monthly/weekly ARES HF net check-ins as well as our NWO Sunday evening 1930 hrs area analog/multi-mode regional net.

With many thanks, we received the gift of a computer from Art, VE4ART, which was arranged and programmed for us by that Woody and Cory.

We participated in the Regional Simulated Emergency Test on November 5.

We are still in the process of upgrading our VE3EOD HF antenna system. We face several hurdles in the various City Departments to access areas of the DFS Hall-1 and are getting a team together to see it through. We face a similar challenge to get our new Winlink computer online with the City in-house IPS personnel.

#### **Killarney District**

##### **Manitoulin Island and North Shore – Allan Boyd, VE3AJB**

I am very happy and proud to inform you that the Manitoulin Amateur Radio Club team took first place in the RAC Canada Day Contest 2019. Thanks to Igor, VE3ZF, Igor, VA3FF, Allan, VE3AJB, Pat, VE3VC, Doug, VE3OUI, Rusty, VE3WVA, Lou, VE3LDY for an excellent job.

#### **Sudbury**

The Sudbury ARC's Christmas dinner at MIC Canadian Eatery was a success. Twenty-one members and spouses enjoyed good food and conversation (dessert wasn't bad either). A good time was had by all.

– Allan Boyd, VE3AJB

#### **DECs Reporting**

VA3s: PC

VE3s: FYN

#### **ECs reporting:**

VA3s: AJV, TGI

VE3s: ECO, EGC, ETE, JJA, LJM, MXJ, OTL, RYD, YDN

#### **ONTARIO EAST:**

SM: Michael Hickey, VE3IPC

Email: ve3ipc@gmail.com

SEC: Michael Hickey, VE3IPC

STM: Vacant

OBM: Paul Caccamo, VA3PC, va3pc@

ciinet.org

Web: <http://wp.rac.ca/ares/>

#### **NOVEMBER-DECEMBER SM REPORT:**

I wish to report that Lance Peterson, VA3LP, the District Coordinator (DC) for Eastern Ontario has stepped down after seven years of service, for personal reasons. Lance has been the DC for Eastern Ontario since August 2012 when he replaced me in that position and I became the Ontario East Section Manager. At this time I do not have a replacement, but I am hopeful that someone with ARES/EmComm experience will want to volunteer for this necessary position. Lance stated that he will continue to be "the go to guy" for ARES training courses in Eastern Ontario as and when needed. If you have an interest in this position and live in Eastern Ontario, please contact me directly. I wish all the best for Lance as he continues to be the Group Coordinator for Prescott-Russell ARES.

I am also interested in knowing if anyone in the Severn ARES District would like to take on the position of District Coordinator. There currently is one ARES group. You will be given guidance and several tools to help you in this position and I would be very happy to mentor you.

The Ottawa ARES/EMRG AEC Mike Kelly, VE3FFK, has stepped down after serving in this position for many years. Mike has been very punctual and meticulous in preparing and providing me with the group's monthly reports since 2013, when I became the DC and later the SM. Thanks Mike for serving with dedication as I always looked forward to your monthly report. His final EMRG report is provided below.

Mike, VE3FFK, was also very instrumental in helping me develop key components of the District Mutual Aid Plan (DMAP) manual. It took six years to complete this task and both Mike, VE3FFK and Lance, VA3LP, were very helpful. We made a great team!

#### **ARES EmComm Group leadership reports:**

*Submitted by Ottawa ARES*

*AEC Mike, VE3FFK*

The **Ottawa ARES/EMRG Group** reports that their monthly repeater test was conducted by Dave, VE3KMY, in November and December. One of the repeaters, VE3OCE (UHF) 443.800 MHz, was off the air, but has since been returned to service with a backup antenna.

Repeater test participants: Norm, VE3LC; AEC Mike, VE3FFK; Gordon, VA3GLK; Barry, VE3NA, Ken, VE3EKN (Almonte Hospital VA3HSP); Jean, VE2OCQ; Rob, VE3SJN; Hugo, VE3KTN; Neil, VE3PUE; and Jocelyn, VE3JCT.

The **Rally of the Tall Pines** was once again held in Bancroft and took place from November 22 to 24. Of the 201 volunteers who were needed to run this event, 71 were Amateurs, of which three were EMRG members. The fast pace, multiple nets on repeaters and simplex, and the stresses and risks involved in car racing make the event challenging from a communications point of view. Conditions were icy this year, but there were no injuries and only a few cars were damaged in the running of the rally.

The Tall Pines volunteers from EMRG were: Alan, VE3ZTU; Jamie, VA3JME and AEC Mike, VE3FFK.

On December 16, there was a final debrief and wrap up of the Emergency Management Volunteer Joint NGO (Two Shores) deployed exercise which was previously held on October 5. The debrief was attended by participants from Ottawa and surrounding area ARES groups. Most of the items noted had to do with the concept of the exercise. For more information please see the article in the Public Service / ARES column on page 45.

Exercise wrap up participants were: Al, VE3ZTU (EMRG); Harrie, VE3HYS (EMRG); Jeffrey, VA3PEW (EMRG); AEC Mike, VE3FFK (EMRG); GC Richard, VE3UNW (EMRG); Lance, VA3LP (DEC Eastern Ontario); Gilles, VE3NPI/VA3GJB (Prescott-Russell); and Steve, VE3FTS (Renfrew County East).

As reported previously this is Mike's final ARES report as he is stepping down from the position of AEC for EMRG/Ottawa ARES. Group Coordinator (GC) Richard, VE3UNW, will now be preparing the reports. Mike also pressed the point that there is a need for someone to relay the weekly Ontario Sections Bulletin to the packet BBS system on 145.030 MHz.

*Submitted by Peterborough ARES  
GC John deLagran, VE3VL*

The **Peterborough ARES Group** members conducted technical tests on the ARES radio equipment located at the Peterborough County Courthouse in November.

Several Peterborough ARES members participated in the local Scouts' Jamboree On The Air (JOTA) which was held on October 18-20. Barry, VE3BLM and Teresa, VE3TSM, Nina, VE3IRK, Dave,

VE3SD, Rick, VE3IQZ, John, VA3NW and Bob, VE3RVZ, all contributed to this very successful event.

There was an average of 9 check-ins to the weekly ARES net during November and December.

*Submitted by RCE-ARES  
GC Steven Harrison, VE3FST*

The **Renfrew County East (RCW)-ARES Group** reports that several members were asked to attend an exercise debrief video-conference for the Emergency Management Volunteer Joint NGO (Two Shores) exercise that was held on October 5. The exercise had pulled all NGO agencies together during a deployed simulated earthquake scenario in the Ottawa/Gatineau region. The overall exercise was led by Michel Doré, the National Emergency Management Coordinator for St. John Ambulance and Andrew Stanzel, an intensive care unit nurse in Ottawa, acted as Co-Director of the exercise. Participants included representatives from St John Ambulance, the Civilian Aviation Search and Rescue Association (CASARA) and the Ottawa Search and Rescue Volunteer Association (OSARVA).

Many items and lessons learned were discussed at the meeting including mobility capability, a net control and EOC control facilities being set up close to the Incident Commander. As a result of this meeting, Lance, VA3LP, requested that ARES and Amateur Radio exercise leadership members who were at the exercise location meet to discuss specific items that will hopefully improve future events. The meeting was held on December 16 and the result of this became the Lessons Learned which is reported in the article in the Public Service / ARES column on page 45.

GC Steve, VE3FST attended the bimonthly ARES/EmComm meeting, which was chaired by the Almonte Amateur Radio Club's President Robin Webb, VE3UIX. The Almonte ARC has an ARES sub-group whose objective is "to serve the community by making available, on a volunteer basis, their skills, equipment and time for public service events, and in particular when requested by municipal officials and support agencies during declared emergencies".

Points of discussion were: a) Issues of an aging population and a decrease in the number of Radio Amateurs interested in ARES; b) we need to determine ways to have courses available to certify new members; c) Ideas for attracting new members; d) Setting up and running courses; and c) ARES and exercises.

*Submitted by LNL-ARES Club  
Secretary Bob, VE3NZQ*

The **Lanark North Leeds (LNL)-ARES** Secretary Bob Bell, VE3NZQ reports that on November 25, the ARES members Al, VE3VTT, Ron, VE3YXY, John, VE3EEF and Bob, VE3NZQ, were participants in the annual SET for Lanark County.

The SET was an exercise in which Tay Valley Township had – in addition to a number of sightings around homes and nearby schools – found a dead coyote with evidence of foaming around the mouth indicating a potentially more serious condition such as rabies.

Although Tay Valley was in charge of handling the actual situation in the field, County staff along with Police, Fire and Social Services were each on call to assist as required and also to draft and implement a response, if required, to the County at large, should it be necessary.

Ron, VE3YXY (net control) and Bob, VE3NZQ, were assigned at the Lanark County headquarters in Perth. Al, VE3VTT, was assigned to the Tay Valley Municipal Offices, and John, VA3EEF, was assigned to the Emergency Site. The ARES linked repeater system which was used included: VE3KJG, VA3TEL, VE3REX and VE3WPO.

Overall, the exercise was a success, but from an ARES communications perspective it highlighted the need to be familiar with the equipment being used. At one point one of the field radios, belonging to the County, went into temporary lockout and there were no communications for a short time. This was a good lesson learned and also illustrated that it is a good idea to bring a backup radio that you know how to program.

The LNL-ARES team continued to operate its weekly ARES net on our linked repeater network, averaging eight check-ins for November & December.

– 73, Michael Hickey, VE3IPC

**Districts Reporting:**  
Eastern Ontario and Severn

**ECs (GCs) or Assistants reporting:**  
VE3FFK, VE3VL, VE3FST, VE3NZQ.

**OBS reporting:** VE3IQZ and VE3KII for "CanAm" daily morning net 40m 7.153 MHz.

## MARITIMES:

SM: David (Dave) Hull, VE1HUL  
Email: ve1hul@rac.ca

### NOVEMBER-DECEMBER SM REPORT:

#### RAC Canada Winter Contest

The Truro Amateur Radio Club participated in the RAC Canada Winter Contest in December. This was a club activity designed to get our newer Amateurs on the air on HF. We had nine Amateurs show up and six of those ended up on the air. We participated for six hours and a good time was had by all.

#### Yaesu System Fusion Repeaters

New Wires X compatible repeaters have come online in Moncton, New Brunswick (VE9MFR 146.625-) and Amherst, Nova Scotia (VE1AMH 145.190-). In Prince Edward Island the VE1CRA 146.715- repeater has switched from D-Star to Fusion and is also Wires X compatible.

This is a good thing as Santa seems to have thought a lot of Maritime Amateurs were on the good list in 2019. I hear there were a lot of Fusion/C4FM radios found under the Christmas tree.

#### CQ Maritimes on Wires X

CQ Maritimes is hosted by the WestCumb Amateur Radio Club. The room name is "CQ Maritimes" and the room number is 6020.

The Maritime Fusion Net meets each Wednesday night at 7 pm (ATL) in the CQ Maritimes Room 60207. This is a digital net only. Amateurs from Nova Scotia, New Brunswick and Prince Edward Island are invited to take part. This is a joint effort between the WestCumb ARC in Amherst, Nova Scotia and the Moncton & Area ARC in Moncton, New Brunswick.

#### CQ Canada on Wires X

The CQ Canada – VE1AO room is hosted by the Truro Amateur Radio Club and the room number is 40678. There is lots of activity on this room from across Canada and around the world.

Every Wednesday evening at 9 pm ET, there is a cross-Canada net that usually lasts for an hour or more. For more information about the CQ Canada Net visit their website at [www.cqcanada.com/](http://www.cqcanada.com/) or the Facebook page at [www.facebook.com/groups/net.c4fm/](https://www.facebook.com/groups/net.c4fm/)

#### Symposium for Maritime Amateur Radio Techs (SMART) 2020

The fifth annual SMART Symposium is scheduled for April 25 at the Dr. Carson & Marion Murray Community Centre in Springhill, Nova Scotia. Although the name indicates the Symposium is for Techs there are presentations to interest everyone no matter if you are a new Amateur or a seasoned veteran. For further information please check out the SMART 2020 webpage at <https://www.westcumb.ca/s-m-a-r-t-2020>

That's it for now, as always if anyone has anything to submit send it to me at [ve1hul@rac.ca](mailto:ve1hul@rac.ca)

– 73, Dave Hull, VE1HUL

## NEWFOUNDLAND & LABRADOR:

SM: Boyd Snow / VO1DI

Late fall and early winter is a rather slow time for happenings in the Amateur Radio world within the NL Section and this year has been no different. I guess everyone just takes a little break or gets caught up in the hustle and bustle of the season.

All the repeaters on the island seem to be holding out so far, but up until now we have not had any significant weather events that would be cause for concern.

## RAC FIELD ORGANIZATION REPORTS

### National Traffic System (NTS) Net Reports

Net (Manager)	Sessions	QNI	QTC
<b>November 2019:</b>			
APSN (VE6JY)	30	1853	12
ARES	8	248	11
Aurora (VE7GBO)	30	2995	24
BCEN (VE7XLH)	30	109	9
BCYTN (VE7WJ)	30	221	34
CECA (VE7GBK)	4	153	17
MEPN (VE4JS)	30	426	0
MMWXN (VA4GD)	30	701	0
MRS (VE4HK)	8	287	0
MSMN (VE4ALF)	21	688	0
<b>December 2019:</b>			
APSN (VE6JY)	31	1625	11
ARES	9	336	7
Aurora (VE7GBO)	31	2703	27
BCEN (VE7XLH)	30	102	1
BCYTN (VE7WJ)	31	138	38
CECA (VE7AKE)	5	158	10
MEPN (VE4JS)	29	353	0
MMWXN (VA4GD)	31	700	0
MRS (VE4HK)	9	324	0
MSMN (VE4ALF)	22	623	0

The solar installation at VO1TNP also seems to be holding its own, but it is not seeing much use either at this time. It will be monitored throughout the winter to see if the calculations on the battery bank size and charging panel were correct.

Plans are moving forward for the replacement of the aging infrastructure at VO1MST. Everything is on schedule as of now and we expect to have the new equipment up and running, off-site in test mode, by about late March. If all goes well, we are looking at June for the installation at the site. Anyone wishing to contribute to the efforts of maintaining the NL Section's repeater systems can contact Doug, VO1DM or Calvin, VO1CAL.

There seemed to be great participation in the RAC Canada Winter Contest this year. I operated as VO1RAC, but noted there were several other VO station taking part. It's great to see the interest in the Section. Certainly, RAC is one of the sponsors of this contest and this is just a very small part of what the organization does for Amateurs nationwide. If you're currently not a member, I would urge you to strongly consider joining. RAC is our only voice with regulators, nationally and internationally (see pages 28 to 34). They speak on behalf of all Amateurs, RAC member or not, so there is really no reason not to support their efforts.

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

#### November:

Cod Jigger Net: 379  
Evening Traffic Net: 784  
VHF Caribou Net: 623

#### December:

Cod Jigger Net: 447  
Evening Traffic Net: 514  
VHF Caribou Net: 556



# 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: <https://secure.eton.ca/rac/events/upcoming.php>

### Cowichan Valley ARS Swap Meet

**Sponsor:** Cowichan Valley Amateur Radio Society

**Date:** Sunday, March 1.

**Time:** Vendors 8:30 am; Public 9 to 11 am.

**Place:** Crofton, BC; Crofton Community Centre, 8104 Musgrave Street, up Robert Street, by the Ballfields and the Firehall.

**Description:** Bring your stuff, we have a lot of new Amateurs looking for gear and odds-and-ends. The coffee will be on. Fundraiser for the Mount Brenton battery project.

**Cost:** Admission and tables by donation

**Talk-in:** 145.470, 127.3

**Info:** Gabor Horvath, [ve7jh@rac.ca](mailto:ve7jh@rac.ca) or by text 250-715-8634.

**Web:** <http://www.cvvars.com>

### Ham-Ex 2020

**Sponsor:** Peel and Mississauga ARCS

**Date:** Saturday, March 28.

**Time:** Vendors 7 am; Exhibits/demonstrations 8 am; Fleamarket open at 9 am.

**Place:** Brampton/Caledon, ON; Brampton Fall Fair Grounds, 12942 Heart Lake Road, Caledon, ON L7C 2J3.

**Description:** The fleamarket features over 100 tables, with some of Canada's leading retailers. There will be exams for Basic, Advanced and CW Qualifications, exhibits, demonstrations, special event station, DXCC card checking, light refreshments, and breakfast.

**Cost:** \$10 per person; Tables 6 ft \$30, 8 ft \$35. Tables include one admission. Grand prize tickets \$5 or \$3 for \$10. Paypal accepted.

**Talk-in:** VE3PRC 146.880- (103.5 Hz required) and VE3MIS 145.430- (103.5 Hz required)

**Info:** Contact: [vendors@ham-ex.ca](mailto:vendors@ham-ex.ca); download a vendor registration form from website.

**Web:** <http://www.ham-ex.ca>

### Iroquois ARC Fleamarket

**Sponsor:** Iroquois Amateur Radio Club

**Date:** Saturday, April 4.

**Time:** Vendors 8 am; Public 9 am.

**Place:** Iroquois ON; Civic Building at 1 Dundas Street.

**Cost:** Admission is free. Table rental \$10.

**Talk-in:** VE3IRO 145.29 MHz, 100 Hz Tone.

**Info:** For tables contact Mike [va3tufham@aol.com](mailto:va3tufham@aol.com) or Don [va3nc@rac.ca](mailto:va3nc@rac.ca).

**Web:** <http://www.iroquoisarc.ca>

### The 44th Annual Durham Hamfest

**Sponsor:** North Shore and South Pickering ARCS

**Date:** Saturday, April 25.

**Time:** Vendors 7:30 am; Public 9 am to 12 noon.

**Place:** Pickering, ON; Chestnut Hill Developments Recreation Complex (Formerly Pickering Recreation Complex) at 1867 Valley Farm Road, Pickering, ON, L1V 6K7.

**Cost:** Public \$8. Children under 12 years of age are free. Wall Tables \$40 (only wall tables have hydro). Centre Island Tables \$25 and both include one admission

**Talk-in:** Repeater: VE3SPA Frequency: 147.375 MHz Tone: 103.5 Hz Input: +600 kHz.

**Description:** An annual market and hobby show bringing together manufacturers, commercial and fleamarket vendors to provide communication information, services and equipment to Amateur Radio, scanner, shortwave and other communication enthusiasts!

**Info:** Contact [vendors@durhamfest.com](mailto:vendors@durhamfest.com) or please visit our website for more information and to download a Vendors Registration form.

**Web:** <https://durhamhamfest.com/>

### New England Amateur Radio Festival (NEAR-Fest XXVII)

**Date:** Friday, May 1 and Saturday, May 2.

**Time:** 9 am on Friday morning

**Place:** Deerfield, NH USA; 156 Stage Road, east of Manchester on State Highway 43.

**Cost:** \$10 per person, inside parking \$10.

**Description:** The largest radio event in the Northeastern USA held every May and October. All radio enthusiasts and their friends are welcome.

**Info:** Contact: [w1rc@near-fest.com](mailto:w1rc@near-fest.com)

**Web:** <https://near-fest.com/about-near-fest/>

### Maple Ridge Swap Meet

**Sponsor:** Maple Ridge Amateur Radio Club

**Date:** Sunday, May 3.

**Time:** Vendors at 8:30 am; Public 10 am; Open for pancake breakfast 8:30 am. Concession will remain open during the event

**Place:** Pitt Meadows BC; 12460 Harris Road

1 Block South of the Lougheed Highway in the old REC Building.

**Description:** Amateur Radio and Computer Swap Meet. The largest in the Fraser Valley Great prices lots of stuff.

**Cost:** Public \$5; Tables \$20 includes 1 entry; both include a chance to win a radio.

**Talk-in:** 146.800 -600 + Tone 156.7

**Info:** Nick 604-465-9476 or [ve7te@mrarc.net](mailto:ve7te@mrarc.net)

**Web:** <http://www.mrarc.net>



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### 36th Annual Smiths Falls Flea Market

**Sponsor:** Rideau Lakes Amateur Radio Club

**Date:** Saturday, May 9.

**Time:** Vendors 7 am; Public 9 am.

**Place:** Smiths Falls, Ontario; Smiths Falls Curling Club, 13 Old Sly's Road (same location as previous years).

**Description:** Our 36th annual fleamarket of Amateur Radio equipment includes a large number of commercial and private vendors, a canteen, a consignment table and equipment testing table.

**Cost:** Vendors: Tables (appx 2.5 ft x 5 ft) \$15 (admission not included)

Public: \$5 per person (includes door prize ticket), youth under 16 admitted for free.

**Talk-in:** VE3RLR on 147.21 MHz+.

**Info:** Contact [ve3rlr@gmail.com](mailto:ve3rlr@gmail.com)

**Web:** <https://www.ve3rlr.ca>

### The Halifax Amateur Radio Club Fleamarket

**Sponsor:** Halifax Amateur Radio Club

**Date:** Saturday, May 23.

**Place:** Lower Sackville, Nova Scotia; The Royal Canadian Legion, 43 Sackville Cross Road.

**Time:** Vendors 8 am; Public 10 am to 2 pm.

**Cost:** Public \$5. Tables \$10, includes a 3 ft x 6 ft selling space, some with power. Space is limited so book your table as soon as possible.

**Talk-in:** 146.97 VE1CDN

**Description:** All radio enthusiasts and their friends are welcome to the HARC Annual Amateur Radio Fleamarket.

**Info:** [johnmbignell@gmail.com](mailto:johnmbignell@gmail.com)

**Web:** <https://www.facebook.com/events/488310998544367/>

### Winnipeg Amateur Radio Club Hamfest and Conference

**Sponsor:** Winnipeg Amateur Radio Club

**Date:** Sunday, June 7.

**Place:** Winnipeg, MB; Dakota Community Centre 1188 Dakota Street.

**Description:** There will be speakers, prizes and a fleamarket with further details to be announced.

**Cost:** Admission is \$15. Early bird registration before May 31 is \$10.

Vendor Tables are \$ 20 and includes one admission.

**Info:** Contact [info@winnipegarc.org](mailto:info@winnipegarc.org)

**Web:** <http://winnipegarc.org/Hamfest/>

#### **45th Central Ontario Hamfest & Fleamarket**

**Sponsor:** Guelph and Kitchener-Waterloo Amateur Radio Clubs

**Date:** Sunday, June 7.

**Time:** Vendors: 7 am; Public 9 am to 12 noon.

**Place:** Cambridge, Ontario. Waterloo Regional Police Association Recreation Centre

RR 2, 1128 Rife Rd. North Dumfries Township.

**Description:** Indoor tables and tailgating; major vendors, loads of collectibles; free prize draws, excellent full-featured snack bar ready to serve you. Easy parking.

**Cost:** Public \$8 (under 12 free);

Vendors: Inside 8-ft tables \$23 includes one admission. Additional inside tables \$15. Tailgater spaces \$18 Includes 1 admission. Additional Tailgate Pads \$10. Additional admission \$8.

**Talk-in:** VE3KSR repeater on 146.970, Offset; -0.6 MHz, CTCSS; 131.8.

**Info:** Contact Nick Waterman, VE3NNW, at [info@hamfest.on.ca](mailto:info@hamfest.on.ca) or 519-884-3760 on evenings & weekends only.

**Web:** <http://www.hamfest.on.ca>

#### **London Vintage Radio Club Fleamarket**

**Sponsor:** London Vintage Radio Club

**Date:** Saturday, June 13.

**Time:** 7 pm for public and vendors alike.

**Place:** Guelph, ON; Hammond Manufacturing, 394 Edinburgh Road North at corner of Speedvale and Edinburgh in the east side of the parking lot.

**Cost:** \$10 for vendors; no charge to public.

**Description:** Bring your own table. You will find antique and vintage radios, Amateur Radio equipment, tubes, radio collectables, parts, magazines and all sorts of radio goodies for sale, trade etc. The Hammond Museum of Radio on Southgate Road will be open for visitors from mid-morning until 3 pm.

**Info:** Contact [larry.asp@sympatico.ca](mailto:larry.asp@sympatico.ca)

**Web:** <http://lvrc.homestead.com/fleamarket.html>

#### **57th Annual International Hamfest**

**Date:** Saturday, July 11. Registration on Friday.

**Time:** Friday registration 4-8 pm;

Hamfest on Saturday 8 am to noon.

**Place:** The International Peace Garden 25 kilometres south of Boissevain, Manitoba on Highway #10.

**Description:** Information sessions, tailgating, cash prizes, contests, and lots of eyeball QSOs.

**Cost:** Registration \$20 at par and includes lunch.

**Talk-in:** 146.52 MHz Simplex and VE4IHF repeater 146.85/25

**Info:** Contact Jim at [ve4ihf@mts.net](mailto:ve4ihf@mts.net)

**Web:** <http://ve4qk.org/ve4qk/ihf.ht>

#### **Parry Sound Amateur Radio Club Hamfest**

**Sponsor:** Parry Sound Amateur Radio Club

**Date:** Saturday, August 8.

**Time:** Vendors 7 am; Public 9 am.

**Place:** Parry Sound, ON; McDougall Recreation Centre, 148 Hammel Road P2A 2W9.

**Description:** Free coffee. PSARC will be Net Controller for The Ontario Amateur Radio Service Net. Frequency 3.755 MHz LSB Operation as VE3PSH.

**Cost:** Public free admission; Vendors: Indoor only 1st Table \$10; 2nd and more \$5 each. Supply your own table(s) \$7.

**Talk-in:** Club Repeater VE3RPL 2m VHF 145.490 MHz (-600 kHz) PL tone 156.7 Hz

**Info:** Contact: [hamfest@ve3rpl.com](mailto:hamfest@ve3rpl.com). To order tables use our Contact Us webpage.

**Web:** <http://hamfest.ve3rpl.com>

#### **Hamilton Tail Gate Treasure**

**Sponsor:** Hamilton Amateur Radio Club

**Date:** Saturday, June 20.

**Time:** Public 8 am to 1 pm.

**Place:** 180 Van Wagners Beach Road, Hamilton, Ontario L8E 3L3.

**Cost:** Vendors \$5; Public: free.

**Talk-in:** VE3NCF repeater 146.760-tone 131.8.

**Info:** John [va3xm@rac.ca](mailto:va3xm@rac.ca)

**Web:** <http://www.hamiltonarc.ca/wp-content/uploads/2019/03/Summer-Swap-2019.pdf>

#### **Hanover Ham Haul**

**Sponsor:** Local Amateur Operators

**Date:** Saturday, August 15.

**Place:** Hanover, ON; Hanover Drive-in Theatre, 033277 County Rd 28, Hanover, ON N4N 1N7, and enter at the Ticket booth.

**Time:** Vendors 8:30; Public 10 am to 1 pm.

**Cost:** \$5 per person and \$5 per parking space. One free admission with purchase of three or more parking spaces. Children under 12 free.

**Talk-in:** 146.52 Simplex

**Description:** An outdoor Amateur Radio Garage Sale and Hamfest in the Hanover, Grey and Bruce Counties area. Bring any or all of your surplus Amateur Radio related items only.

The Concession booth will be open with washrooms, coffee, tea, cold drinks, light meals and snacks. A play area is onsite for supervised children.

**Info:** Contact Dave Margetts at [davemargetts@bmts.com](mailto:davemargetts@bmts.com) or use the link on the Ontars website upcoming event listings.

**Web:** <http://www.ontars.com>

#### **HARC Hamfest 2019**

**Sponsor:** The Hamilton Amateur Radio Club

**Date:** Saturday, October 3.

**Time:** Vendors 7 am; Public 9 am.

**Place:** Ancaster, ON; School Fair Building at the Ancaster Fair Grounds, 630 Trinity Road, Ancaster, L0R 1R0.

**Description:** An Amateur Radio, computer and electronics fleamarket. Parking is available onsite.

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[www.macfarlaneelectronics.on.ca](http://www.macfarlaneelectronics.on.ca)

**Cost:** Public: \$8 per person; Vendor

Tables: \$12 per table. Vendor liaison:

Mardy Eedson, VE3QEE at [ve3qee@hamiltonarc.ca](mailto:ve3qee@hamiltonarc.ca) or call 905-648-0187 and leave a message.

Mail payment to: The Hamilton Amateur Radio Club, 117-350 King Street East, PO Box 75073, Hamilton, Ontario L8N 4G6.

Payment can also be made via PayPal.

Tables are reserved upon receipt of payment on a first come basis. Please book in advance to avoid disappointment.

**Talk-in:** 146.76 (-) with tone 131.8 VE3NCF

**Info:** Hamfest Chairman: Al Ersser, VA3ERE [va3ere@hamiltonarc.ca](mailto:va3ere@hamiltonarc.ca)

**Web:** <http://www.hamiltonarc.ca>

#### **Montreal South Shore Hamfest**

**Sponsor:** Club Radio Amateur Rive-Sud de Montréal

**Date:** Saturday, October 17.

**Time:** Vendors 6 am; Public 9 am.

**Place:** Longueuil, QC; Place Desaulniers, 1023 Taschereau Boulevard (10 minutes from downtown Montreal).

**Description:** The biggest Hamfest in Quebec

Restaurant. ATM. Accessible. Free parking.

**Cost:** Public \$8; Tables \$10 entry not included.

**Info:** Francois Drien, VE2FDA, 450-672-9994

Email contact: [hamfest@ve2clm.ca](mailto:hamfest@ve2clm.ca).

**Web:** <http://www.ve2clm.ca/activites/hamfests/>

# RAC OFFERS BOTH BASIC QUALIFICATION STUDY GUIDES



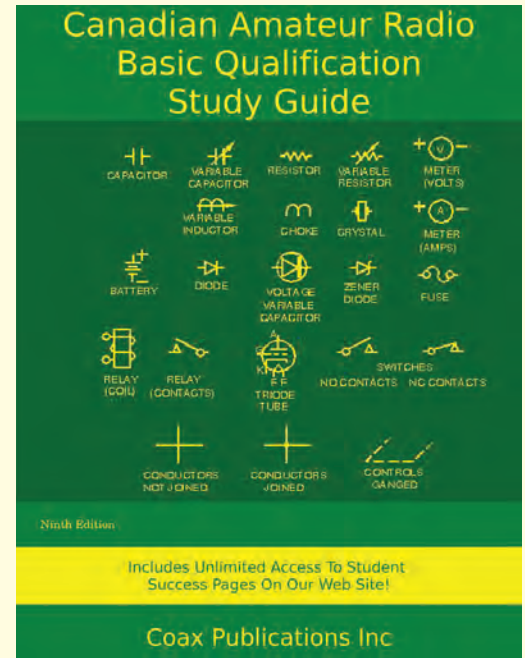
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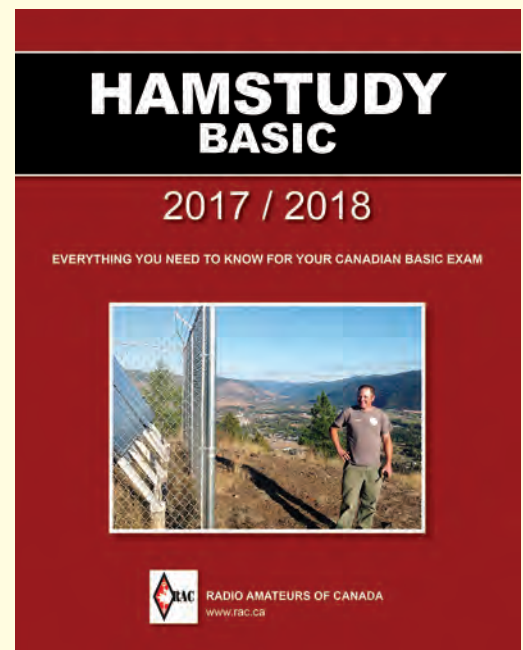
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Up to 10MHz visible bandwidth

14-bit ADC silicon technology plus multiple high-performance input filters

Software selectable AM/FM & DAB broadcast band notch filters

4.7V Bias-T for powering external remote antenna amplifier

Powers over the USB cable with a simple type B socket

50Ω SMA antenna input(s) for 1kHz to 2GHz operation (software

Additional software selectable Hi-Z input for up to 30MHz operation

Additional software selectable 50Ω BNC input for up to 200MHz operation

Additional LF/VLF filter for below 500kHz

24MHz Reference clock input (+ output on RSPduo)

Dual tuners enabling reception on 2 totally independent 2MHz ranges

Dual tuners enabling diversity reception using SDRuno

Robust and strong plastic case (with internal RF shielding layer)

Rugged black painted steel case

Overall performance below 2MHz for MW and LF

Multiple simultaneous applications

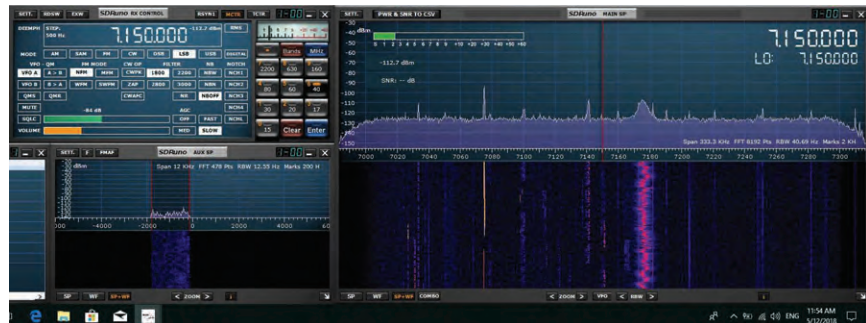
Performance in challenging fading conditions (\*using diversity tuning)

RSP1A

RSPdx

RSPduo

Continuous coverage from 1kHz to 2GHz	✓	✓	✓
Up to 10MHz visible bandwidth	✓	✓	✓
14-bit ADC silicon technology plus multiple high-performance input filters	✓	✓	✓
Software selectable AM/FM & DAB broadcast band notch filters	✓	✓	✓
4.7V Bias-T for powering external remote antenna amplifier	✓	✓	✓
Powers over the USB cable with a simple type B socket	✓	✓	✓
50Ω SMA antenna input(s) for 1kHz to 2GHz operation (software	1	2	2
Additional software selectable Hi-Z input for up to 30MHz operation		✓	✓
Additional software selectable 50Ω BNC input for up to 200MHz operation		✓	✓
Additional LF/VLF filter for below 500kHz		✓	✓
24MHz Reference clock input (+ output on RSPduo)		✓	✓
Dual tuners enabling reception on 2 totally independent 2MHz ranges		✓	✓
Dual tuners enabling diversity reception using SDRuno		✓	✓
Robust and strong plastic case (with internal RF shielding layer)	✓		
Rugged black painted steel case		✓	✓
Overall performance below 2MHz for MW and LF	Good	Best	Good
Multiple simultaneous applications	Good	Good	Best
Performance in challenging fading conditions (*using diversity tuning)	Good	Good	Best



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