RAC Canada 2021 Conference and AGM: Sunday, September 19

Keynote Presentation: "A Fireside Chat"

An informal discussion featuring the following distinguished guests:

- **Glenn MacDonell, VE3XRA: President, Radio Amateurs of Canada (Moderator)**
- **Tim Ellam, VE6SH: President, International Amateur Radio Union (IARU)**
- **Rick Roderick, K5UR: President, American Radio Relay League (ARRL)**
- **Steve Thomas, M1ACB: General Manager, Radio Society of Great Britain (RSGB)**

In these unprecedented times, this is an excellent – and possibly historic opportunity – to engage in a discussion on the challenges we face today and the future of Amateur Radio.

Session 1: Amateur Radio Research and Development

Reception of Non-Amateur Satellites: Scott Tilley, VE7TIL

VLF Experiments on 8 kHz: Joe Craig, VO1NA

5 MHz Propagation Research: Sean Smith, VE6SAR

3D Printing for Amateur Radio: Don Murphy, VE3BSR

– Please see inside for detailed information –

Session 2: Competitive Amateur Radio

- **Leading Canadians at the World Radiosport Team Championship (WRTC 2023):** Todd Bendtsen, VE5MX and Gilles Renucci, VA2EW
- **RAC Canadian Portable Operations Challenge: ("RAC Challenge"):** Dave Goodwin, VE9CB
- **VHF+ Contest Roving and Microwave Hilltopping:** Russell Beech, VE3OIL
- **LiFePO4 Batteries – Comparisons and Applications:** Scott Williamson, VY1SW

– Please see inside for detailed information –

Canada 2021 2021 CONFERENCE

RADIO AMATEURS OF/DU CANADA

2021 CONFERENCE / CONFÉRENCE 2021 CONFÉRENCE

RAC

Session 3: Amateur Radio Outreach

- **RAC and our Regulator ISED (Innovation, Science and Economic Development Canada) – The Road to Protecting Canadian Amateur Radio Spectrum?** Rich Ferch, VE3KI, Paul Coverdale, VE3ICV and Bryan Rawlings, VE3QN
- **Canadian Forces Affiliate Radio System (CFARS):** Phil McBride, VA3QR
- **Royal Canadian Sea Cadet Corps and Amateur Radio:** Matthew Batten, VE3ZQW
- **Canadian University Cubesats: VIOLET and ALEASAT –** Alex Voisine, VE9REX, of VIOLET (UNB/UDM/NBCC); Julian Mentasti, VE7UDP, of ALEASAT (SFU/UBC)

– Please see inside for detailed information –

RAC Annual General Meeting

The Radio Amateurs of Canada will be holding its Annual General Meeting (AGM) on Sunday, September 19. It will be held as a virtual event immediately following the RAC Canada 2021 Conference.

Date: Sunday, September 19

Time: 4 pm (Eastern Standard Time)

Agenda items will include:

1) Report of the President

2) Review of the 2020 finances

3) Appointment of auditors for 2021

A Question and Answer period will follow the AGM proceedings.

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

The meeting will be attended by members of the RAC Board of Directors and Executive and is open to all RAC members.

RAC

For complete information visit: https://www.rac.ca/rac-canada-2021-conference-and-agm

First Session: Amateur Radio Research and Development

Reception of Non-Amateur Satellites:

Scott Tilley, VE7TIL

Scott Tilley, AScT is an amateur astronomer that makes a living as an Electrical Technologist in the Marine industry. He strives to provide analysis and data on humanities use of space from an independent perspective.

The focus of his work is studying trajectories of classified spacecraft, operational characteristics of lost and abandoned spacecraft, and verifying the claims of space faring entities that choose to be vague about their activities. Scott views space as an international park where every user has a responsibility to use the resource in a fair, transparent and understandable way.

Presentation:

Amateurs have been tracking activity in space since the dawn of the space age. This presentation will provide a summary of the history of those activities and delve into the motivations of why amateurs look up into the sky and track satellites. Technical capabilities and examples of recent and present amateur research into humanities use of space will be provided. If you have ever wondered how a private citizen can independently observe and report on what goes on in space, here's your chance to find out how we do it.

For more information about Scott please see the article "Meet the Amateur Astronomer Who Found a Lost NASA Satellite" at:

https://www.washingtonpost.com/news/inspired-life/wp/2018/02/01/this-amateur-astronomer-found-a-satellite-lost-in-space/

"Amateur astronomer Scott Tilley made international headlines when he rediscovered NASA's IMAGE satellite 13 years after it mysteriously disappeared. In this interview with Freethink, Scott discusses his role in the satellite's recovery, why he enjoys amateur astronomy, and how citizen scientists like him have contributed to our knowledge of space from the space race to the present day."

VLF Experiments on 8 kHz:

Joe Craig, VO1NA

I was issued a Certificate of Proficiency in Amateur Radio at age 14 and enjoy homebrewing aerials and radios, theory ,radio history and DX (340 on CW (Honour Roll), 121 on 160).

I am a former RAC Section Manager for Newfoundland and Labrador and a member of the Quarter Century Wireless Association (QCWA), the Poldhu Amateur Radio Club (PARC), and the Marconi Radio Club of Newfoundland (MRCN).

Fascination with VLF started when my Dad G3LMD pointed out GBR while on a train trip decades ago and nurtured by the dedicated members of the Radio Society of Great Britain's reflector.

Presentation:

The talk will outline the challenges of VLF experimentation where weak signals and high noise present unique opportunities to play with novel RF and signal processing techniques.

The intention is to promote interest in Canadian VLF work and to provide resources for those wishing to experiment.

For more information about Joe visit:

https://www.rac.ca/new-amateur-vlf-transatlantic-record/

http://www.ucs.mun.ca/~jcraig/lfex.html

First Session: Amateur Radio Research and Development

5 MHz Propagation Research:

Sean Smith, VE6SAR

My first real exposure to Amateur Radio was at the North American Endurance Riding Championships that were held west of Calgary, Alberta in the summer of 1990.

I was fascinated with the coverage the operators supporting the event had with handheld radios and mobiles in the mountains. I was already an avid shortwave listener at the time.

That fall my Dad, Bert, VE6BHC and I enrolled in the Calgary Amateur Radio Association's Basic course and passed our exams in late November 1990.

After college I moved to Fort McMurray where I joined the Tarsands Amateur Radio Club. While there I set up the eighth ever IRLP node, formerly Node #130. I also helped build the repeater linking system that linked Fort McMurray to the Southern Alberta Repeater Association (SARA) system and learned lots from the awesome Elmers that were active in Fort McMurray at the time. I was a member of the local ARES group and involved in the Y2K preparations.

When work took me to Peace River, Alberta I joined the Mackenzie Regional Radio Club. I became very active in the construction of the Mackenzie Highway Repeater Network and the associated APRS network. After a few years I assumed the role as Emergency Coordinator for the North Peace and I continue to hold that position.

In 2015 I finally got on HF thanks to some not so gentle encouragement from a few of the local Amateurs who showed up at my house with a radio from a Silent Key and helped me get on the air.

My main interest currently is digital modes, mostly on HF although I still help maintain the local repeaters.

Presentation: 60 metre Propagation in the Canadian Auroral Zone

In this presentation we will be delivering the initial results of a four-year study of 60 metre propagation, carried out by a number of Amateur Radio operators in western Canada, with the focus on communications from isolated northern communities during emergencies.

3D Printing for Amateur Radio

Don Murphy, VE3BSR

Don Murphy, VE3BSR, is fairly new to Amateur Radio and was licenced in November 2020.

However he is not new to making, having been 3D printing for four years.

Retired from working as a technical support person for a school board he enjoys many hobbies.

Along with 3D printing and Amateur Radio, Don does woodworking, art, stained glass, photography and is an avid traveller.

Presentation:

The presentation will explain the basics of 3D printing and show you a 3D printer in action.

I will be showing you dozens of things that you can print for yourself. These include an actual radio, antenna parts and even QSL cards.

This introduction will cover the basics so you can see if a 3D printer is right for you.

Second Session: Competitive Amateur Radio

Leading Canadians at the World Radiosport Team Championship (WRTC 2023)

Gilles Renucci, VA2EW

My passion for radio and electronics started when I was 12, leading me to get my first call sign F6FFM at 17 and graduating as an Electronics and Software Engineer at 24.

I discovered contesting at my Engineering school where an alumni team activated the F3TV school call sign. Professionally, thanks to this technical passion, I created several high-tech companies.

In 2004, I moved to Canada as VE2TZT and later VA2EW. I am very involved in DXing and participated in the TX4T and VP6T DXpeditions.

I am also active in contesting and have organized many multi-ops at my home station as it is now my turn to transmit the contest virus to newbies.

I have been involved a lot with the Montreal Amateur Radio community and have served for three years as the President of the Union Métropolitaine des Sans-filistes de Montréal (UMS), a major local radio club, and later the president of the West Island Amateur Radio Club (WIARC). I have enjoyed the excitement of several Field Day organizations in both clubs among other activities.

Listening to signals, sometimes very weak, coming from very far away with my own ears at a point that my mind can literally visualize the surrounding HF environment, like a parallel world, and then interacting with it when transmitting has always fascinated me. That's why despite being a high-tech guy, CW and SSB are my modes versus digitals.

I also like to work on antenna improvement as well as developing some middle complexity electronic gears, including software, to improve the efficiency of my station.

During the International Amateur Radio Union (IARU) HF Championships 2013, I operated in Boston with one of the WRTC-2014 volunteer test stations as a team with Victor, VA2WA. For the WRTC-2018, we volunteered to go to Germany as referees.

Further to the AF Area Team Leader last-minute withdrawal, I upgraded my position as the newly created Wild Card #6 Team Leader and competed with his Teammate Arno, DL1CW.

This was such a great experience that on the day after the competition I was already planning with Victor, over a couple of beers, our participation as a full Canadian team in 2022.

For the WRTC-2022 (2023), I worked very hard to get the #1 NA2 position which provides me with the opportunity to be the Team Leader for this area. I can now go to this competition by the main entry with the good preparation, a trained team, and the chance to put not only Canada on the map, but also Quebec for the first time ever.

In this short presentation, I'll share with you how I see things about the WRTC selection process when you're "David versus Goliath" as well as the contrast with the WRTC competition itself which is more an even playing field.

Todd Bendtsen, VE5MX

I developed an interest in radio as a 13 year old listening to far off AM stations at night.

From there a gift of a radio with the shortwave bands provided the spark that introduced me to both the Shortwave Broadcast bands as well as Amateur Radio.

My first experience with Radiosport came in the form of Field Day in 1984. It would take another six years before I earned my licence but the contest bug bit hard right away.

I have been lucky enough to operate with many great Amateurs from all over western Canada and North Dakota. The wonder of radio has not diminished any and I still love the rush of tuning the bands and wondering where the next signal is coming from.

I am also an avid antenna builder and have been working on growing an antenna farm near the city of Weyburn, Saskatchewan.

I am looking forward to the adventure when it comes to WRTC as this will be my first time attending.

For the WRTC 2022 presentation I will focus on my trip through the qualifying process, how I prepared and executed my plan to become the Team Leader for the North America #8 qualifying area.

Second Session: Competitive Amateur Radio

RAC Canadian Portable Operations Challenge: ("RAC Challenge"):

Dave Goodwin, VE9CB

Dave has been an Amateur since 1975, is an active HF Contester and DXer and his DXpedition to Point Amour Lighthouse was featured on the front cover of the November-December 2020 issue of The Canadian Amateur (top left; and right photo).

Dave has also volunteered his time at the national level and has served as the RAC President and as the RAC Director for the Atlantic Region and currently as the RAC Member Services Officer.

Since 2015, he has also has been teaching Basic and Advanced certification courses with the Fredericton (NB) Amateur Radio Club.

As RAC Member Services Officer, Dave launched the new Canadian Portable Operations Challenge Award for RAC members and this will be the focus of the presentation.

The new program began on Canada Day, July 1, 2021 and we hope it will become an annual event for RAC members.

The new "RAC Challenge" recognizes all portable operations in which RAC members participate and has similar features as a contest. Amateur Radio contests in VHF, UHF and the Microwave bands all have categories for "Rovers" – who move from grid square to grid square and "Backpackers" – who seek out hilltops from which to operate with highly portable equipment and antennas.

For many satellite operators, making contact with as many grid squares as possible is a mark of success. Some of those operators go on satellite DXpeditions to activate rare grids or operate from the intersections of grids to offer multiple grids with a single contact.

In addition to being fun, these activities provide an opportunity for Amateurs to experience what is required to set up and operate under challenging conditions – valuable experience for emergency preparedness.

For more information visit: https://www.rac.ca/rac-challenge/

Note: Unfortunately, Nick Gagnon, VE2NCG, is unable to participate in the RAC Canada Conference this Sunday.

Second Session: Competitive Amateur Radio

VHF+ Contest Roving and Microwave Hilltopping

Russell Beech, VE3OIL

I obtained my Amateur licence in high school progressing to Advanced while attending university. My interest in Amateur Radio was triggered by a combination of the magic of signals from other places to me and an interest in building equipment.

Amateur Radio supplemented both studies and career. The body of knowledge that came from radio added context to some lecture material.

Since graduation I have held a number of roles in electronic research, development and manufacture serving companies in instrumentation, automation, test, aviation and financial technology (fintech).

Over time my interests drifted into contesting, particularly VHF contesting. When the rover category was made competitive in 1991, I entered to address the lack of a home station. I have remained a rover ever since.

Answering the question "How can I improve?" inevitably leads a VHF operator to consider more bands. This has led me to be active on 10 GHz and above.

Presentation:

My rover presentation will explain what a VHF Rover and a Microwave Hilltopper are.

I will provide some contrast to HF operations and what can reasonably be expected on the road.

A summary of when and how to rove will be provided with guidance and boundaries based on my experiences gathered since I started.

LiFePO4 Batteries – Comparisons and Applications

Scott Williamson, VY1SW

I have been an Amateur Radio operator since 1991 and have been very active with the Yukon Amateur Radio Association (YARA) since moving to the Yukon in 2003. I am currently serving as the YARA Vice-President and I am also a Past-President.

The Yukon Amateur Radio Association (YARA) is a Yukon registered society with about 25 members throughout the Yukon. This is about half the authorized Amateur Radio operators in the Yukon.

Members are active in the community and often travel to hamfests in other areas. We are involved in real and simulated emergency communications situations. We practice our skills through our daily "emergency preparedness net" as well as through communications in support of community events like the Canada Winter Games, the Klondike International Road Relay ("KRR") and the Kluane Chilkat International Bike Relay ("KCIBR"). YARA provides support for communications for other community organizations.

I have been a part of the team that has built our linked repeater network, which currently consists of 21 sites covering the southern half of the Yukon, into British Columbia, and as far south as Juneau, Alaska.

I am an expert on 12-volt systems – especially remote repeater sites and RVs – and I am also an avid outdoor adventure seeker, competitive curler and certified curling coach.

Presentation:

The presentation will provide a detailed study of the pros and cons of the more recent development of Lithium-iron Phosphate (LiFePO4) batteries vs the more common sealed lead acid (AGM) batteries for 12-volt applications.

For more information visit: http://yara.ca

Third Session: Amateur Radio Outreach

Canadian Forces Affiliate Radio System (CFARS):

Phil McBride, VA3QR

Licensed in 1994, I am an Advanced and CW certificate holder.
I am currently serving as the Ontario South Director for Radio Amateurs of Canada, as well as the Training Officer for the Canadian Forces Affiliate Radio System.

Additionally, I am the Contact Scouter for the 1st Acton Scout Troop, where I own and sponsor the VE3NEC Memorial Amateur Radio Station at Acton Scout House – a permanent HF/VHF/UHF installation for use by all Scouts Canada members.

I am an ISEDC Accredited Examiner and have given dozens of new Radio Amateurs their exams via telepresence during the COVID-19 pandemic.

While I am well equipped at home, I do most of my operating in the field using various station kits that I have assembled. Along with operating and participating in military communications with CFARS, I'm always looking for ways to engage youth in the service to ensure its continued and vibrant future.

Presentation:

In Canada, the Department of National Defence (DND) sponsors a program called CFARS: the Canadian Forces Affiliate Radio System. CFARS was initially structured after its American counterpart, MARS – the Military Auxiliary Radio Service – and consists of DND/Canadian Forces installations, Canadian Forces-based Amateur Radio club installations, and civilian Amateur Radio licensees who have applied and been accepted into the system.

CFARS consists of some 125+ stations spread across Canada, as well as several unattended RF-based Winlink email gateways. The purpose of CFARS is to provide DND with a means of establishing and conducting long-distance communication using a system capable of operating independent of established infrastructure.

My presentation will outline the history of CFARS and where we are today in our relationship with the Department of National Defence.

Royal Canadian Sea Cadet Corps and Amateur Radio

Matthew Batten, VE3ZQW

Sub-Lieutenant Matthew Batten, VE3ZQW, is the head of the Communications Department at RCSCC Quinte, a Sea Cadet Corps in Belleville, Ontario. An avid shortwave listener (SWL) for years, Matthew obtained his licence in 1994 following introductions to Amateur Radio in High School.

Recognizing the need to revitalize the Sea Cadet training curriculum even before the pandemic, Matthew developed a comprehensive plan to introduce more STEM (Science, Technology, Engineering and Mathematics) content via naval communications training. Embarking on his program in October 2019, he is now able to count six additional Sea Cadet unit stations, with more in the planning stages for Ontario and the Maritimes in the upcoming year.

Matthew has been employed in the industrial engineering sector for several years, specializing in manufacturing and service with both private as well as family companies. He is married to his wife Candice, a pediatric nurse, and father to three children.

Presentation:

The presentation will:

A) Provide an overview of the Activities and Training, including the basic background of our program, the youth demographic, the aims of the Radio program, and the delivery of the program before the pandemic and after.

B) Touch on the Benefits and Successes of introducing Amateur Radio to our cadets. Acceptance of the theory and hobby by our demographic, successes of some graduates, international outreach / cooperation of similar organizations.

C) Outline the methodology of program delivery and the subsequent practical operations including complementary related activities.

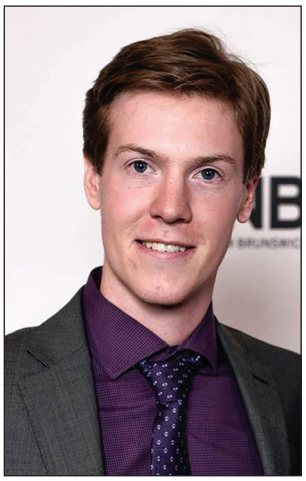
D) Provide the timeline of our program, with future growth plans for development and paths to success.

Third Session: Amateur Radio Outreach

Canadian University Cubesats: VIOLET and ALEASAT

Alex Voisine, VE9REX, of VIOLET (UNB/UDM/NBCC); Julian Mentasti, VE7UDP, of ALEASAT (SFU/UBC)

Alex Voisine, VE9REX



I was born and raised in Fredericton, New Brunswick and spent my youth mostly playing sports. When I started at the University of New Brunswick (UNB), I was initially interested in the Science department and spent the first two years of my degree in Physics before switching to Electrical and Computer Engineering the following year.

I was introduced to Amateur Radio in my final year when I took an Electromagnetics course that offered the Basic Amateur Radio Examination as its first lab. After starting my Masters program with Dr. Brent Petersen, VE9EX, I completed the Advanced course as well. Since then, I have participated in Jamboree on the Air (JOTA) in 2019 to connect Scouts across Canada and teach them about Amateur Radio, and I helped run the RAC booth at the Canada-Wide Science Fair in 2019. I don't have my own Amateur Radio setup yet, but I plan to have one in the near future and hope to see you on the air.

CubeSat NB is a joint venture between the University of New Brunswick, l'Université de Moncton, and the New Brunswick Community College. It is a part of the Canadian CubeSat Project which provides post-secondary institutions with an opportunity to engage students in a real space mission to design, build, test and launch a CubeSat. A CubeSat is a miniature satellite measured in 10 cm x 10 cm x 10 cm cubes called units (U). CubeSat NB's CubeSat is a 2U CubeSat which we've named VIOLET after New Brunswick's provincial flower. VIOLET will support two missions throughout its lifetime: the GNSS Receiver for Ionospheric and Position Studies (GRIPS) and the Spectral Airglow Structure Imager (SASI).

GRIPS will be receiving signals from global navigation satellite systems (GNSS), such as GPS, as they travel through the ionosphere and are affected by it. Researchers will be able to use this GNSS data to further study how the ionosphere changes from place to place over time, as well as how it responds to space weather. Significant space weather events can interfere with communications systems and electrical grids. SASI will be imaging the redline atomic oxygen layer of the ionosphere using a narrowband filter to capture airglow events. These images will be used to examine the varying density of atomic oxygen throughout the ionosphere.

Apart from its main missions, VIOLET will also be providing several services to Amateurs across the globe. VIOLET can be communicated to by Amateurs in three different modes: a VHF/UHF packet transmission, a VHF/UHF transponder, and an S-band playback mode. VIOLET is currently in its assembly, integration and testing phase and we are currently planning for a launch in Summer 2022.

See: https://www.unb.ca/initiatives/cubesat/radio.html

Julian Mentasti, VE7UDP

Payload Developer and Captain at UBC Orbit

Julian Mentasti, VE7UDP, is a Software Developer for the ALEA Satellite. He is formerly the Co-Captain of UBC Orbit, a student design team focused on the innovation, design and development of satellites.

An Amateur since 1991, his interests include satellites, distributed systems and telecommunications.

He recently graduated from the University of British Columbia with a degree in Computer Science and is currently a Software Developer II at Google.

Presentation:

The student-built ALEASAT satellite is a joint initiative between Simon Fraser University (SFU) and the University of British Columbia (UBC), and will provide images of Earth on an on-demand basis to any Amateur Radio operator. The project originated from the fifth Canadian Satellite Design Challenge (CSDC), where teams all around Canada were challenged to build a CubeSat that, when contacted, takes and transmits a picture of the point of contact. In addition to the opportunity for university students to develop and launch a spacecraft, the project will bring real value to the community. Canadian operators will have a satellite at their disposal for on-demand imagery to assist in disaster monitoring.

"We have two payloads for this satellite. The first is a camera that can take pictures of the Earth from orbit. The primary attraction of this camera is any Amateur Radio operator could send a signal to our satellite and request a picture of their area. Our second payload is a miniaturized human centrifuge. With SFU Aerospace we are developing a full-size human centrifuge at Aerospace Physiology Laboratory at SFU BPK department. Sending a miniaturized version of this into space will allow us to see the effects the centrifuge would have on a spacecraft. SFU Aerospace Physiology Laboratory is designing the first completely Canadian Short-Arm Human Centrifuge which will be re-designed for long-term space missions and will be fitted to successfully fly on board of commercial spacecrafts for Lunar and Martian missions."

Web-based modules and live sessions will also be available for those looking for an introduction to satellite communications and what they can expect when interfacing with ALEASAT.

For more information about ALEASAT visit:

https://www.sfusat.org/alea

Amateur Radio Outreach: "The Road to Protecting Canadian Amateur Radio Spectrum?"

RAC and our Regulator ISED (Innovation, Science and Economic Development Canada)

Richard Ferch, VE3KI, Paul Coverdale, VE3ICV and Bryan Rawlings, VE3QN

Richard Ferch, VE3KI

Richard obtained his first Amateur Radio licence as VE4AEO in Manitoba in 1978. Upon moving to Ottawa in 1980, he changed call signs to VE3IAY. After his retirement in 2006, he acquired his current VE3KI call sign, and is now also licensed in the US as AC1FE. His operating interests are focused mainly on HF CW and RTTY contesting and DXing. His home station is a fairly typical HF tribander plus wire antennas installation in a small town near Ottawa. In addition to operating from home, he has also operated in contests under various call signs from a variety of locations either while physically present there or as a remote operator, often as a member of a multi-operator contest team.

He began his professional career as a Computational Physicist, but spent the majority of his career working for the Canadian nuclear regulator in a variety of staff and management roles. This work history has given him familiarity with regulatory processes and government operations.

Since his retirement he has served as a volunteer for Radio Amateurs of Canada in a number of capacities. He managed the regulatory portfolio from 2006 to 2011 and again from 2015 to 2021. He is the licensee or sponsor for RAC's club call signs and is a member of the TCA Editorial Review Committee. Richard is also a member of several other Amateur organizations, including CWops, FOC and QCWA. He has managed the weekly CWops CWT mini-tests since 2015, and was also Manager of the QCWA QSO Party for several years. He is the Secretary of Contest Club Ontario, and a member of the development team for the N1MM Logger contest logging software. He is a Past-President of the QCWA Ottawa Chapter 70 and a member of the West Carleton Amateur Radio Club.

Paul Coverdale, VE3ICV

Paul was first licensed in 1965 as G3TZJ 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 President, and is a member of RAC.

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 2005 and then for 15 years was 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 Telecommunication Union's ITU-T where he has worked with delegates from all over the world to develop and approve numerous new standards for telecommunications. He is a member of the IET, IEEE, and is a registered Professional Engineer.

Going forward, Paul's main activity in participating in 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. It is the job of 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.

Bryan Rawlings, VE3QN

Bryan was first licensed as VE2AME in Montreal in 1959. Despite long absences from Amateur Radio while living overseas (Saudi Arabia 1978-88 and 1995-2001 and Russia 1992-1993), Bryan has again been an active Amateur since 2002 – now signing VE3QN from Ottawa.

Bryan's interests are DXing and the digital modes. He has over 260 entities in his DX totals using mostly vertical and wire antennas from a location where terrain makes a beam impractical. When he operates in Quebec, Bryan may use his Quebec call – VE2QNN. Bryan is a member of RAC, ARRL, RSGB, QCWA, the Ottawa Amateur Radio Club, Ottawa Valley Mobile Radio Club and the International Amateur Radio Club (4U1ITU).

Bryan holds a B.Sc. in mathematics from Loyola College (Université de Montréal) and worked in telecommunications for nearly 40 years with Bell Canada, Telecom Canada and with several other employers in Canada, Saudi Arabia and Russia.

From 2008 until 2020, Bryan was RAC's representative with our regulator – currently Innovation, Science and Economic Development (ISED). This has involved countless meetings with ISED's Spectrum Management staff in Ottawa as well as attendance as a delegation member for the 2012, 2015 and 2019 World Radiocommunication Conferences. Bryan continues this work as a consultant with RAC as well as a Technical Advisor for the International Amateur Radio Union (IARU).

For complete information visit: https://www.rac.ca/rac-canada-2021-conference-and-agm