



Ottawa Amateur Radio Club

Groundwave

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Check out our Web Page: www.oarc.net

June 2009

Well, this is the last Groundwave before summer and so there are several events to remind you about. First, the OARC Annual General Meeting and Election takes place on Wednesday, June 10 at 19:30 at City Hall.

Second, Field Day is June 27-28 at the usual place, St. Paul's on Main Street. Be sure to let Harold know you're coming.

Third, don't forget the RAC Canada Day Contest on July 1. Details are on the RAC web site.

Fourth, the OARC Hamfest on September 12. Contact Ed Sich, VE3WGO to volunteer.

Time again for this year's kudos. Thanks to Ed Sich for organizing Hamfest and to Harold Hamilton for managing Field Day. Thanks to Brian Campbell for providing coffee and treats at every meeting. A vote of thanks to the OARC executive members and to all our meeting speakers. Thanks to Dave Conn and Dave Green for the club project organization. And thanks to anyone else whom I forget to mention.

I would especially like to thank those who have made my job as editor easier over the last year namely all the contributors to the Groundwave. In particular, Mike Kelly and Peter Gamble

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JUNE MEETING 7:30 pm, Wednesday, June 10th in the Colonel By Room at Ottawa City Hall

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Articles may be submitted for use in this publication provided that they portray events or activities that promote Amateur Radio. Letters and comments are also welcome. Submissions may be made by mail addressed to the Editor care of the OARC, or by e-mail to "ve3igj@rac.ca". Deadline for submissions occurs three days after the regular monthly meeting of the OARC.

Please support your local radio organisations. They support you!

Club Information

The Ottawa Amateur Radio Club Inc. is an association of Radio Amateurs devoted to the promotion of interest in Amateur Radio communications in the National Capital Area and to the advancement and achievement of club members.

Regular Meetings of the OARC Inc. are held on the second Wednesday of each month (except July and August) in the Honeywell Room which is on the second floor of Ottawa City Hall, formerly Regional Municipality of Ottawa Carleton Headquarters, on Lisgar Street. Meetings commence at approximately 19:30 hours. Further details about each meeting is elsewhere in this publication.

Executive Meetings of the OARC Inc. are normally held on the first Wednesday of each month at 19:30 hours. Contact the President to confirm the date, time and place of the next meeting.

The CAPITAL CITY FM Net meets every Monday (except some holidays) at 20:00 hours on the club repeater **VE2CRA 146.940(-)** to pass traffic and to make announcements of interest to Amateurs in the National Capital Region.

The SWAP Net is a service provided and conducted by Ed Seib, VA3ES. This feature appears on the Capital City FM Net. To list items and make inquiries, got to <http://www.ncswapnet.ca>. You may reach Ed at 613-738 8924 or e-mail him at va3es@rac.ca.

The POT-HOLE Net is a SSB/HF net sponsored by the Ottawa Valley Mobile Radio Club and is conducted every Sunday at 10:00 hours on **3.760 MHz**. All amateurs are welcome to check in.

The POT-LID CW Net is an informal slow-speed CW net sponsored and conducted by Ed Morgan, VE3GX, and meets every Sunday, except during July and August, at 11:00 hours on **3.620 MHz**, to promote interest in CW and CW procedures.

The QCWA CHAPTER 70 Net meets every Monday evening at 19:30 hours on repeater **VE3TEL 147.030(-)**. You do not have to be a QCWA member to participate.

The Ottawa Valley VHF/UHF SSB Net is sponsored by the West Carleton ARC. Look for it every Tuesday night (except the first Tuesday of the month) around 21:00 on **144.250**, (roll calls after net on 50.150, 432.150, 222.150, and 1296.100.) Horizontal polarization is preferred.

The Ottawa Amateur Radio Club bulletin "Groundwave" is published and distributed to club members by mail. Publication dates may vary but it is hoped that the bulletin arrives at its destination before the events listed in it have expired. The bulletin is not published for July and August when meetings do not occur. Every effort is made to provide accurate information in the bulletin, however we are all human and mistakes can be made. The OARC accepts no responsibility for any damages that may result from this. The opinions expressed in this bulletin are those of the author.

Voice (VHF) 146.94/146.34 100Hz CTCSS required
 (UHF) 443.300/448.300

VE3TVA Amateur Fast Scan Television Repeater
 Video/audio beacon & input 439.25 MHz (audio sub. 443.75)
 Video/Audio output 914 MHz (FM)

IRLP Node 2040 146.94/146.34 (VE2CRA/VE3RC)
 (Code 411 for info) (Code 204 for activity)
 (Code 88 for time)

For further information please contact the Repeater Chair.

Note: The IRLP link is not connected to ECHOLINK. Please do not try to connect using the alpha keys on your keypad. It just confuses the operator.

Note: The IRLP link is disabled during the Capital City Net each Monday. It is disabled from 2000 to 2145 Mondays except for May to August when the link is disabled from 2000 to 2020.

VE3TEN

Tuning in the beacon so that it makes sense requires you tune to **28.175** on CW and read the tone that is there . The spaces between the elements are the higher tone. If that doesn't work, tune to **28.175.28** on lower sideband for better results.



Dates to Remember

May Minutes

Visitors:
Mark Rogers, who is studying for his license.

Generals:
Dave Conn: The two Dave's are currently soliciting suggestions for next year's club project. The members present offered a big round of applause to Dave Green and Dave Conn for their excellent efforts on the club project.

A reminder that the June meeting is the Annual General Meeting. Tyler Tidman is the nominating "wrangler". Although the current executive is willing to stand for another term, if anyone wished to become involved, several executive members would be happy to make room for new ideas and enthusiasm. Interested individuals should contact Tyler at VA3DGN@rac.ca

RAC is looking for an assistant regional director; this primarily involves representing RAC at the local ham-fests, and this position does not create a large workload.

Field Day:
This year's field day, on June 27-28th, is at 175 Main St, as usual around back of the main building. The loan of a large truck or trailer the day before and after would be greatly appreciated.

Advanced question bank for RAC study questions:
Jean Richard announced that he wrote extensions to the question bank for advanced study <http://www.rac.ca/fieldorg/examiner.htm> More info to follow.

Tyler started a pass-around list for a summer build project; the consensus seems to be some light J-pole type project.

Presentation:
Marcus Leech, VE3MDL "How Luke learned to love the source" Marcus gave an overview of the possibilities of Software Defined Radio using the Open Source GNU Radio project packages. He demonstrated how to create a number of simple tools to easily operate and

2009

Feb. 7, 8	Canada Ski Marathon
Apr. 8	Homebrew Night
Jun. 10	OARC AGM and Elections
Jun. 27, 28	Field Day
Jul. 1	RAC Canada Day Contest
Sep. 12	Hamfest
Sep. 30	Membership Renewal Deadline
Nov. 4	Joe Norton Award Subm. Due
Dec. 19	RAC Winter Contest

enhance the functionality his USRP SDR radio hardware; it was evident by the conclusion of the talk that the possibilities are endless. You can get further information from http://en.wikipedia.org/wiki/GNU_Radio and <http://www.tools4sdr.com/wiki/Tools4SDR>

David Scobie

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08-Feb-09	Canadian Ski Marathon
21-Feb-09	ARRL CW DX TEST
28-Feb-09	OARC PROJECT
04-Mar-09	COLLEGEVILLE
14-Mar-09	OARC PROJECT
17-Mar-09	ARES DISTRICT
28-Mar-09	OARC PROJECT
01-Apr-09	COLLEGEVILLE
18-Apr-09	ARES DISTRICT 10:00 / OARC PROJECT
23-Apr-09	GRANDVILLE
03-May-09	Tour Nortel / CNCYCLE
08-May-09	LANARK FOREST RALLY NCS
09-May-09	LANARK FOREST RALLY NCS
21-May-09	LHFR debrief
27-May-09	COLLEGEVILLE
31-May-09	OARC Build prototype session
06-Jun-09	Rideau Lakes Bike Tour
07-Jun-09	Rideau Lakes Bike Tour
20-Jun-09	OARC ANTENNA BUILD
21-Jun-09	OARC ANTENNA BUILD

Mike Kelly, VE3FFK



mk's Words

Summer is heating up.

The CN Cycle, formerly the Tour Nortel went off pretty well, although we moved around through the repeaters a bit more than some might like. Some would say it was boring, but when your purpose is to handle emergency traffic where cell phones don't work, boring is good.

Similarly, the Lanark Highlands Forest Rally went off without a hitch, with the possible exception of the weather (BIG rain). A few things made it different from the usual car rally. It was a first time event for the organizers, but they pulled it together like they had been running the thing for a decade. The radio end went equally well. The primary repeater was comfortably close to the event, and continued to work flawlessly for the duration. There were a lot of radio rookies among the crew, but surprisingly, there were no significant fumbles with equipment or procedures. All through the last stage I was holding my breath waiting for Murphy to find us. The whole thing left a lot of us ready to sign up for next year. Thanks to those of you who came out to play in the rain. If you want to play some more, let me know and I'll send your name in to VE3WOD, who has a finger in a lot of these rallies. They can always use more radio operators.

Lets hope the Rideau Lakes Bike Tour goes as well.

Speaking of which, the bike is finally back on the road, although not as much as I'd like. With the good weather FINALLY here, I'm running out of excuses, so maybe it will get out to play a bit more. There might even be a radio (or two) on board.

I'm looking forward to hearing how our local traveling hams did at Dayton. I'm sure there are enough stories to keep the rest of us entertained for a good while.

It looks like things are moving forward on VE3DGNs idea of a build session. If you haven't got a J-Pole (or even if you have), give him a holler. Sounds like another fun time.

Just one more session at Colledgeville for the season, and for once I have a full slate of volunteers ahead of time. Pessimist that I am, I figure Murphy is waiting to clobber us with an epidemic of Groundhog Flu, or something.

Speaking of Murphy, after procrastinating for two years on the conversion of my generator to propane, I finally bit the bullet. I called ZTU over, since he knows a lot more about this stuff than I do. We hauled the thing out, took it apart and things were going well until it was time to bolt the adaptor to the carb. Wrong size. Back to the drawing board. The good news is that it all went back together (without any left over parts) and still runs on gasoline.

In the way of purely ham fun, there is a big CW contest, a VHF contest and, of course, Field Day coming up fast. There's always another place to play.

73.. mk VE3FFK

60 Years Licenced!

Congratulations go out to Clare Fowler, VE3NPC, who recently celebrated being licensed for 60 years. Clare was presented with a 60-year pin at the May 19 QCWA meeting.

World's Smallest Radio

Check out the world's smallest radio at

<http://www.arrl.org/news/features/2009/03/27/10727/?nc=1>



Bill 118

This message concerns Bill 118, the new legislation from the Government of Ontario that was recently given royal assent and that concerns the use of cell phones and other electronic devices while driving a car.

The document itself can be found at http://www.ontla.on.ca/web/bills/bills_detail.do?locale=en&BillID=2099

The use of video screens visible by the driver is very limited. GPS displays are exempted. What is of particular interest to mobile amateur radio operators is the following:

“78.1 (1) No person shall drive a motor vehicle on a highway while holding or using a hand-held wireless communication device or other prescribed device that is capable of receiving or transmitting telephone communications, electronic data, mail or text messages.”

It looks to me that the legality of using an HT while driving is unclear. While an HT is a "hand-held wireless communication device" it is generally not used for "receiving or transmitting telephone communications...".

The good news is that it appears that a microphone attached to a mobile rig (i.e. not a wireless hand-held communication device) is acceptable. Also, hands-free operation of wireless communications equipment is legal. Earlier draft bills (Bills 40 and 73 that only achieved first reading) (http://www.ontla.on.ca/web/bills/bills_detail.do?locale=en&BillID=1958) indicate that driving with a headset that only covers one ear would be legal in Ontario.

As you can see, there is ongoing pressure from RAC to amend the legislation for the benefit of mobile amateur radio operators.

We will have to keep an eye on the RAC blog.

73 , Dave VE3TLY

To All Ontario Amateur Radio Club Contacts:

Please be advised that after consultation with other affected groups that use amateur radio mobile equipment and following a helpful and friendly discussion with Ontario Ministry of Transportation staff Radio Amateurs of Canada has recommended on the RAC blog that all Ontario amateurs offer their personal comments to the government consultation website in regards to Bill 118 which could have a negative impact on the use of amateur radio equipment in moving vehicles. See the [RAC Blog](#) for details.

The web address to read the Bill as it stands today is <http://www.ontariocanada.com/registry/quickSearch.do?searchType=current>

At the bottom of that page is a link to a comments page.

This would be the time to encourage all Ontario amateurs to comment prior to the June 17th deadline.

Peter West - VE3HG
905-616-5639
ve3hg@rac.ca

Vice-President, Public Relations

(Continued from page 1)

for their monthly columns, and Dave Green, Greg Danylchenko, and Janice Neelands for photos and bulletins. A reminder that we welcome contributions from anyone and it would be nice to see some additional contributors next year.

See you at the meeting, again in the **Colonel By Room** and have an FB summer.

Ian Jeffrey, VE3IGJ
Editor



Year End Report

Directors Report

May 19 - 23 2009

The Radio Amateurs of Canada, Annual Board of Directors meeting was held from May 19 to 23 in Ottawa and Cornwall.



The first two days were taken up meeting with Industry Canada discussing matters of mutual interest. As a result the new band of 135.7 to 137.8 kHz is going out for public consultation. It may be available to Amateurs by late 2009 or early 2010. We also discussed new frequency assignments at 500 kHz and 5 MHz. These last two will take longer.

After we finished with Industry Canada, the Board went to the Nav Can site at Cornwall to have our meetings. We are having trouble attracting and even worse, retaining existing members. If you are a member it is very important to renew your membership and if not a member, would you consider joining? As a board we are going to implement some new strategies to increase and retain members. If you are talking to other Amateurs please ask them to consider the benefits of RAC membership.

We all realise these are difficult times financially for many of us, but is your hobby worth \$50 a year to you? If RAC is no longer representing Canadian Amateurs who will?

The other heads up is that the web page listings of clubs in the North / East Ontario region are woefully out of date. If the club information has not been updated by July 1 it will be removed. Can you please verify any club information in your area? The link is as follows: http://www.rac.ca/cdn_clubs/region_ontario_no.htm

And finally our VP Public Relations Peter, VE3HG is working very closely with Ontario Ministry of Transport officials on Bill 118. Expect some news, hopefully in 30 days.

If you have any questions or concerns please email me at ve3xt@rac.ca.

73

Bill VE3XT

North East Ontario Regional Director

As of the June meeting 14 people have passed their Basic ticket. There have been 2 successful advanced tests completed and 2 Morse tests. There was also one successful candidate for the Restricted Operators Certificate (Aeronautical) There is at least one more exam scheduled between now and Field Day.

Beyond exams, regular and executive meetings, and the weekly RAC HQ volunteer gig, here is the rest of my Amateur Radio Calendar. (Collegeville/Grandville are two days each) So what have other members been doing all year?

- 12-Jun-08 COLLEGEVILLE 08:00
- 29-Jun-08 FIELD DAY
- 17-Sep-08 Collegeville 13:00
- 18-Oct-08 EMRG SPCL MEETING 09:30
- 23-Oct-08 GRANDVILLE 08:30
- 25-Oct-08 RAC TOWER WORK
- 01-Nov-08 SLVRC OTTAWA FIRE TRAINING CTR
- 05-Nov-08 COLLEGEVILLE 13:00 FRENCH
- 08-Nov-08 160m test tune up
- 13-Nov-08 Diefenbunker
- 14-Nov-08 ZBB ANTENNA WORK
- 21-Nov-08 Tall Pines Car Rally
- 22-Nov-08 Tall Pines
- 23-Nov-08 Tall Pines
- 29-Nov-08 EMRG GENERAL MEETING
- 03-Dec-08 COLLEGEVILLE
- 05-Dec-08 160M TEST
- 06-Dec-08 160M TEST
- 07-Dec-08 160M TEST
- 13-Dec-08 EMRG WORK SESSION 0830 RANDALL
- 27-Dec-08 RAC winter contest
- 14-Jan-09 COLLEGEVILLE
- 23-Jan-09 CQ 160 CW
- 24-Jan-09 CQ 160 CW
- 25-Jan-09 CQ 160 CW
- 06-Feb-09 Canadian Ski Marathon
- 07-Feb-09 Canadian Ski Marathon

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EMRG—ARES

EMRG Article #6: OARC Groundwave – June 2009

In April we had our annual Ottawa District ARES Mutual Aid Meeting. The Ottawa district covers most of eastern Ontario and each year members from all the Amateur radio groups that provide emergency communications get together to discuss common issues and improve plans for Mutual Aid. This year was the 5th meeting and things have progressed well from a time when we didn't know each other, through development of a contact list for all group leaders, to a mutual aid plan and this year a tabletop exercise to test out Mutual Aid planning.

One of the first things that we all realized when we started these meetings was that we have the same challenges, and the biggest challenge is lack of people. Mutual Aid was developed out of necessity as we all recognized that no group could function for more than a day, and maybe not that long, without outside help. The tabletop exercise helped us understand just how much we depend on neighbouring groups for help and the continued level of organization required, to make sure we will be effective when called.

There are still amateurs who like to believe that in an emergency a bunch of local hams will bring a bunch of equipment and good things will happen. Unfortunately if we want to be recognized, respected and complimented for our service, we need to make commitments to our clients. Commitment means we need to make sure we can meet their requirements, which means we need to be organized and practice.

The table top exercise was written with percentages of people impacted, rather than total numbers, so that each group could apply it to their area. For rural areas, the number of people displaced is not as high as Ottawa, but they are spread out more, so the challenge is about equal in terms of providing enough people for all the shelter locations.

In the scenario, 10% of the population had to leave home, with 5% going to friends and family, while 5%

had to be housed in shelters. With a population of 800,000 in Ottawa, 5% is 40,000 people, spread out across 8 shelters with 5000 people in each shelter.



One of the first things we learned from the exercise was that if we go with the theoretical 2 people per location for 8 hour shifts, we won't have enough people. We required the following positions and people for this exercise;

- Emergency Operations Centre (EOC) = 2 people [1 Team Leader + 1 Radio Operator]
- Communications Centre/Net Control = 6 people [1 Ops Manager + 3 Radio Operators (2 nets) + 1 Resource Manager + 1 Liaison (calling mutual aid)]
- Red Cross Headquarters = 2 people [2 Radio Operators]
- Community Services = 2 people [2 Radio Operators]
- 8 shelters = 16 people [2 Radio Operators per site]

This adds up to a total of 28 people per shift, for 3 shifts = 84 people per day. In our EMRG membership we have 50 people, so even if we got a 50% response (considered a miracle), we only have 25 people. If we assume we can double up EMRG members with non trained local amateurs, we have 50 people, so we are still short 34 people.

By changing our plans and going to 12 hour shifts, the total number of amateurs drops to 56 for a day, still more than we have. By expecting the shelter staff to do some of their own operating on voice or data, we can drop some of the shelter operators to 1 person per site and with Mutual Aid, we can fill in the remaining numbers, so that we can function for a few days.

At this point, we are only providing communications for shelters. There is no communications for the hospitals or any other organization. There are about 11 sites that would be added if we supported

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RAC Bulletins

(Continued from page 7)

all the hospital sites, so even at 1 person per site for 12 hour shifts, this adds another 22 amateurs to our requirements, bringing the total to 56 + 22 = 78 amateurs per day.

One of the problems is that we can only absorb a limited number of off the street amateur volunteers. Some sites require skills and understanding that only come from participation in training and exercises, while other sites are sensitive, so we need to be careful who we send. There is also the issue of amateurs understanding who is in charge. If you have a problem in a shelter, there is a shelter manager that runs the shelter and an Operations Manager at Net Control who manages the radio operators.

The important message is that there is a lot of organization required both locally and Mutual Aid, for amateur radio to be an effective emergency communications service. We have the clients who want our services and they are willing to support us. The greatest challenge is the number of amateurs willing to participate by getting involved, trained and practiced in providing that service.

Next time I will talk about some of the positions listed above, what they do and how this ties into a thing called IMS (Incident Management System). Have a great summer!

Peter Gamble, VE3BQP

(ve3bqp at rac.ca)

www.emrg.ca

EMRG – Team Leader, Ottawa ARES – EC

Two Names – One Group – One Purpose

Canadian Hams in Geneva

Two Canadian hams, Ken Pulfer, VE3PU, and Bryan Rawlings, VE3QN, are presently in their second week attending a WRC preparatory meeting in Geneva. Ken is there representing the IARU while Bryan represents RAC on the Industry Canada delegation.



In today's plenary session, Paul Rinaldo, W4RI, representing the ARRL on the US Delegation, announced his retirement after 19 years as a Working Group Chairman. Subsequently, Canada nominated and the plenary approved Ken Pulfer, VE3PU, as Paul's replacement.

RAC wants to congratulate Ken and wish him the best in this new important position.

Band Planning Committee

The Radio Amateurs of Canada President has recently appointed Jim Fisher, VE1JF, as Chair of the LF/MF/HF Band Planning Committee. Jim will take over from Bob Nash, VE3KZ, who resigned after a few years holding the position.

RAC wants to thank Bob Nash, VE3KZ, for the hard work he did on the committee. During his tenure, a complete revision of the Canadian HF Band Plan has been done and the process for an ongoing revision was implemented.

Jim brings with him an excellent and long experience on the bands that the committee is working on. We wish him all the best in his new position.

Daniel A. Lamoureux, VE2KA
Vice President International Affairs,
Radio Amateurs of Canada



Conspiracy Theory

By Garry Motier

Scimeasure Analytical Systems Inc.

My company was developing a system to drive a CCD (charge-coupled device) at the end of a long cable. This device required 12 separate clocks, swinging between approximately 5 and 10 V, of various frequencies, phases, and duty cycles. We soon found that the ringing of these clocks on the far end of the cable was intolerable, so we added a resistive terminator to each line. We "barnacled" these terminators on the back of the prototype, and everything worked beautifully—at least enough for us to tweak the rest of the circuit. Finally, it was time to re-spin the board, incorporating all the changes we had added to the prototype. Because the clock signals were fairly large, we used through-hole resistors for the terminators. When we powered up the system with the new revision of the board, the results were horrible. We couldn't get an image on the CCD at all, and the whole thing was "worse than dead." But it was a complicated system and a finicky CCD. My boss spent a couple of days fussing with the wave-generating and image-capturing software before concluding that the problem might be in the new board, and the problem landed back in my lap. The first things to look at were the clocks. To get an accurate picture on the scope, I carefully attached the probe ground to the ground side of each terminating resistor before probing the hot side. Every clock was perfect, so I began to look elsewhere for the problem. I finally got a bit lazy with my scope, and, instead of grounding the probe at the optimal place for each signal, I just chose a central ground point and left it there.

The first clock worked beautifully, as did the second and the third. Sigh. But when I looked at the fourth one whoa, Nelly! It was ringing so badly you couldn't tell where the rising edge was supposed to be. Continuing in this manner, I found that half of the clocks were good, but the others were lousy. I figured I'd better get a closer look and went back to my old method of grounding the probe on the resistor, and the

ringing stopped. Eureka! The probe was providing the ground for the terminators but only one at a time—the one I was looking at. That action alone was not enough to change the symptoms of a badly behaving circuit. After I used a bit of wire and solder, the whole system was working like a charm. I next had to find out why those six resistors weren't grounded. I had certainly designed them to be grounded. My CAD program showed that they connected to the internal ground plane in exactly the same way as the other six were. Then, I decided to look at the Gerber files with a third-party viewer. According to the Gerber files and in direct contradiction of the design, those six resistors were actually not connected to the ground plane. But one thing they had in common was that they were rotated from the default orientation. Looking further, I found that my CAD program had an option to either draw or flash the pads. On this design I had somehow inadvertently selected the "flash" option. This program turned out to have a little bug that won't flash plane connections properly on a rotated pad. I had never previously thought much about flash versus draw, but it's now part of my checklist. One more thing to worry about: Your computer lies to you, and your oscilloscope covers up for it.

From Tales From the Cube, EDN Magazine

Diefenbunker Museum

As a result of an OARC donation to the Diefenbunker Museum, the club has received the following member benefit as a Friend of the Diefenbunker.

Donation Level - Plutonium

OARC members have free admission for one year (except for special events and programs).

Membership Application/Renewal
Ottawa Amateur Radio Club Inc., Box 8873, Ottawa, Ontario K1G 3J2

- Single (\$25, \$20 after Feb 1)
- Family (\$30)
- Junior (\$15, under 18 years of age)
- New Ham (Free if licensed in current Membership year)
- Emailed *Groundwave* Mailed *Groundwave* (add \$5.00)



Please Note: Membership year is September 1 to August 31

Family Name: _____ First Name/Initials: _____

Address: _____

City: _____ Prov: _____ Post Code: _____

Home Phone: _____ Work Phone: _____

E-mail address: _____ (For *Groundwave* mailing)

Callsign(s): _____

Qualifications: Basic Advanced Morse Code
Year Licensed: _____ RAC Member? Yes

Other Family Members

Name: _____ Callsign(s): _____

Qualifications: Basic Advanced Morse Code
Year Licensed: _____ RAC Member? Yes

Interests: _____

Comments/Suggestions: _____

All members who are in good standing on or before the December General Meeting will be eligible for a free one-time name badge. Members who wish a second or replacement badge may purchase one at the Club Price (approx \$7.50 plus tax). Ordered badges will be available in January.

OARC NAME TAG Yes Second or Replacement Yes

ORDER DETAILS - As to appear on badge:

First Name _____ Call Sign _____