



marcoOgram

Official Publication of The Montreal Amateur Radio Club Inc. Box 53047 - RPO Dorval, Dorval Quebec H9S 5W4

A MARC Monthly Newsletter

Volume 51, Number 3 November 2005

Meeting - Wednesday 30 November 2005

Ragchew and Fleamarket: 19:30 Club meeting: 20:00

St. Ignatius of Loyola Parish Church

4455 West Broadway (corner of Terrebonne) in N.D.G. - Montreal

(Please enter by the back door)

ACTIONS REGARDING BPL (see page 3)

November Meeting

Jim Nagle (KF4OD) will be continuing the overview of GPS. This meeting he will present an overview of differential GPS with a detailed discussion of WAAS.

Jim was the lead project engineer at Inmarsat for the design and launch of the navigation payloads hosted on the Inmarsat-3 satellites that provide the space segment element of WAAS.

(see page 3)

A Word from The President

Hello,

Winter must surely be coming given the temperatures outside these days.

The days are getting shorter and indoor activities are becoming more at-

tractive. Thanks to those who have been helping with the MAB antenna work the HF antennas are now operational and you'll read more about this later in this issue. With the antennas working I hope many of you will lend a hand at the MAB with the November Sweepstakes.

As was mentioned at the October meeting Industry Canada is soliciting comments regarding Broadband over Power Lines and the deadline is November 28. The directors feel that this is an important issue and we will be submitting comments on behalf of the club however it will also be helpful if individual amateurs submitted comments as well. Leo Nikinnen, VE2SI has set up a website (www.ve2si.ca) which should have some helpful pointers for you by the time you read this.

At our AGM last month our board of directors was elected and all of the directors have continued and I welcome Ron Campbell, VA2RJC, to the board as our newest director. Additionally, with this issue, Craig Brander, VE2YGK, is passing the torch to Ron who is taking over as the editor of the MarcOgram. Thanks to Craig for all of his hard work (not to mention chasing me for my usually tardy president's message!) over the years as editor. I know that Ron will be looking for input so please feel free to contact him if you might have any suggestions for the MarcOgram or if you have an idea for an article - he'll be looking for contributors.

This month's meeting will see part 2 of Jim Nagle's, KF4OD, talk on GPS which should be quite interesting and I hope to see you all at the meeting.

73 de Jim. VE2VE

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Club Call Sign: VE2ARC

Club Website: <http://www.marc.qc.ca>

Repeaters

VE2BG 147.06 MHz (+)

Owned and operated by Montreal Amateur radio Club. Located on the Point Claire water tower.

VE2RED 147.27 MHz (+)

Owned and operated by the Montreal Amateur radio Club.

VE2RJS 449.975 MHz (-)

Owned by the Montreal Amateur Radio Club and operated by the Cote St. Luc Amateur radio Association.

Meetings of the Board of Directors

Meetings of the Board of Directors are open to any member to attend. Board meetings are held on the first Wednesday of the month (Sept. to June) at 7:30 PM at the Montreal Association for the Blind, 7000 Sherbrooke St. West.

Should you wish to attend one of the meetings you are welcome. Just speak to one of the directors before-hand to make certain that the meeting has neither been cancelled, nor the location changed.

The MarcOgram is published nine times per year on the second to last Wednesday of September through June, excepting December, by the Montreal Amateur radio Club. Advertising and copy deadline is one week prior to publication.

Editor

Ron Campbell, VA2RJC va2rjc@rac.ca

Tel: 514-767-2804 Cell: 514-825-8954

Annual Fees are:

General Members... ..\$23.00

Associate Members ...\$23.00

White cane members ...\$10.00

Family members (per family) ..\$30.00

The membership year runs from September 1 to August 31. Membership received on or after June 1 commences immediately and extends through the subsequent membership year - covering a period of up to fifteen months.

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James R. Hay, President

From the New Editor's Desk

Seasons Greetings from Your editor

The October 2005 MARC meeting announced a new editor for the MarcOgram.



I'm Ron Campbell, VA2RJC, senior in age, young in spirit!! I have been a licensed amateur since April 2002, I obtained my basic license after having completed a MARC conducted course. I am now endeavoring to obtain HF Privileges.

My background has primarily been in aeronautical communication and navigation systems. From 1973 until 1992 I was employed by ICAO (International Civil Aviation Organization), my work took me to many countries including; Afghanistan, Bangladesh, Bosnia, Croatia, Egypt, Indonesia, India, Kenya, Lebanon, Malawi, Malaysia, Myanmar (Burma), Pakistan, Sri Lanka, Thailand, DR of Korea (North), and Zambia. Periods of work was anywhere from one month to five years.

While my past work has predominantly been in the planning, installation and operating of navigational aid facilities, I have had experience in working on some interesting communication networks. One that comes to mind is the establishing of a temporary HF communications link between Islamabad, Pakistan and Kabul, Afghanistan in the early 1990s. The purpose of this link was to carry administrative information between two UN offices. I had already establish similar aeronautical point-to-point links between Kabul and Lahore.

Communications was commenced with voice only but after a few months we were able to include rtty service. This temporary link was still in operation in 2002.

I returned to a stable Montreal/ Canadian scene in 1994 though have made several trips back to Afghanistan. I'm still a consultant for ICAO though I am winding down professional work to concentrate on my video productions and of course amateur radio activities.

I am married to Mara (my Italian wife) who fully supports my traveling lifestyle.

I will do my best to provide service to MARC by attempting to replace Craig as editor of the MarcOgram.

I need your input in order to keep this newsletter active. See page 5 for information on submission of material to the marcOgram. For now I'll get back to that desk and get some work done.

Your Ed.... rjcam the video-ham.
VA2RJC

October 26, 2005 Meeting

John, VE2EQL demonstrated the Connect Quick antenna mounting system for portable use. They are available from Radio HF. The website is www.connectquick.net. They have models for horizontal and vertical antennas. For more pictures of the quick connect system take a look at www.wulfden.org/connectquick.

From site: Connect Quick is a mounting plate system that provides a rapid and secure means of attaching items such as antenna booms to masts, solar panels to posts, sound and lighting installations, field monitoring instruments and other similarly mounted devices. Installation and removal are accomplished in a snap! You supply

the U-bolts in the sizes that are required for your mast and boom and these plates will provide the quick mounting by using a unique four point attachment held in place by a spring loaded pin.

Door Prizes

Jim VE2VE again gave out some Jay Tee Shirts as door prizes.

Reference to GPS - WAAS

The Wide Area Augmentation System (WAAS) is a form of differential GPS (DGPS) giving enhanced position accuracy developed primarily for aeronautical navigation but usable by other users. Each Wide Area Reference Station (WRS) provides correction data to a Wide Area Master Station (WMS), which computes a grid of correction data to be uplinked to a geostationary satellite (GEO) via a Ground Earth Station (GES) in the Ground Uplink System (GUS). The geostationary satellite transmits the correction data (and also navigation data) to the user on the L1 GPS navigation frequency (1575.42 MHz). The user GPS receiver uses the downlink WAAS data to correct received navigation data. The goal of WAAS is to obtain at least a 7-meter horizontal and vertical accuracy.

This information was obtained from the following Web site:
<http://users.erols.com/dlwilson/gpswas.htm>

Low-Cost APRS Hardware

For those of you who maybe interested in GPS and APRS, there is an excellent article in the November/ December issue of the TCA magazine. Fred Chen, VE7CX described his use of the Byonics TinyTrak3 GPS Position Encoder along with a Motorola i58sr GPS-enabled Cellular Phone and a 2-metre FM Transceiver.

I strongly recommend those who are interested, visit www3.telus.net/fredchen/aprs.

This with kind permission of Fred Chen, VE7CX

BROADBAND OVER POWER LINES: COMING TO A POWER LINE NEAR YOU?

By Leo Nikinnen VE2SI

Access to the Internet is becoming an ever more important aspect of modern life and few of us would want to go back to the pre-Internet days. The Government of Canada has an interest in providing its citizens and businesses with access to the Internet and in October 2000 established a Task Force to investigate the best means by which high-speed services could be made available in all Canadian communities by the year 2004. One cannot disagree with enhanced communications but the means to deliver it needs to be examined carefully. Although high-speed broadband Internet connectivity to homes is currently provided through DSL/ADSL systems and cable modems, an alternative system called Broadband over Power Lines, BPL for short, is being proposed.

BPL is a networking method that uses low-voltage (local power to homes and businesses) and medium-voltage (above 600 volts) power wires to distribute and deliver high-speed, or broadband, Internet services. The BPL signal would be carried by RF in the 1.705 to 80MHz frequency range. The problem is that power distribution wires can hardly be viewed as RF transmission lines. The line impedance varies tremendously, and the lines themselves have all sorts of impedance bumps (transformers, switches, etc.) along their length. The result is a network cable that will be a strong radiator of the BPL signal it is carrying. A study done by ARRL showed that some BPL lines, by virtue of their length, would be more efficient radiators of RF than many amateur antennas. The U.S. National Telecommunications and Information Administration (NTIA) studied BPL systems and produced an excellent report that can be obtained at:

<http://www.ntia.doc.gov/ntiahome/fccfilings/2004/bpl/>.

As a first step towards establishing the operating parameters for BPL systems, Industry Canada issued a Consultation Paper on BPL, with a brief description BPL technology and some recommendations. As amateur radio operators our concern, indeed the concern of all radio users, is with section 6.2-a of the Paper as it sets out BPL's emission limits, and that's where the problem is. The Paper suggests an emission limit of 30microvoltsV/m at 30m from a BPL line in the 1.705 to 30MHz frequency range and a limit of 90uV/m at 10m in the 30 to 80MHz range.

In order to judge BPL's effect on radio reception one can use the emission limit field strength to calculate BPL signal levels and compare them to the sensitivity of amateur receivers, the typical ambient noise that is heard in the HF bands and the strength of signals from other amateur stations. To illustrate the effect of BPL, we can use a frequency such as 14.150MHz and look at the signal levels. It must be realized that ambient noise levels and the BPL signal amplitude vary with frequency; please refer to the www.VE2SI.ca Web site for more information.

Our receivers have SSB/CW sensitivities of about 0.2uV (-121dBm, S-1) and minimum discernable signal (MDS) levels of 0.07uV (-130dBm, S-1 minus 9dB) and lower. Typical amateur signals, say in the 1.6 to 25uV region (-103 to -79dBm), are received with signal strengths between S-4 and S-8 and strong signals come in at S-9 (50uV, -73dBm) and above. Ambient noise levels cover a wide range, depending upon location, frequency, season and time of day. Fortunately the ITU has developed expressions that allow one to calculate representative noise levels for different noise environments. If one uses the 14.150MHZ frequency, quiet rural, rural and residential areas will have noise levels that result in received signal strengths between 0.22 and 2.2uV (-120 to -100dBm, S-1 to S-4.5). What about a BPL signal? At the Consultation Paper's reference distance of 30m, a 14.150MHZ BPL signal at its emission limit will be received with a signal strength of -68.5dBm (84uV, S-9+4.5dB).

Is the 30m reference distance specified for BPL HF signals realistic? Not really. Look around you and judge how far you can get from a power line. Remembering that power lines are probably installed in your walls, ceiling and floors, using a dis-

tance of 3m would be more realistic. The strength of a BPL signal varies in a complex fashion as one moves away from a BPL line, but we can make a simplifying assumption. A BPL signal could vary according to the familiar inverse-square law, however we can use a more conservative 1/distance law for the scaling. An inverse-square law would raise the strength of a BPL signal by 20dB when the antenna-to-BPL-line separation is decreased from 30m to 3m, and a direct inverse scaling would result in a 10dB increase in the BPL signal.

The numbers, using a BPL signal that is in compliance with the HF emission limit given in Industry Canada's BPL Consultation Paper, are given below:

| Signal Strength (14.150MHz) | | | |
|-----------------------------|----------------|-------------|-------------|
| | dBm | uV | S-units |
| Noise | -120 to -100 | 0.22 to 2.2 | 1 to 4.5 |
| Receiver Sensitivity | -121 | 0.2 | 1 |
| MDS | -130 and lower | 0.07 | below 1 |
| Typical Signals | -103 to -79 | 1.6 to 25 | 4 to 8 |
| Strong Signals | -73 to -53 | 50 to 500 | 9 to 9+20dB |
| BPL @ 30m | -68.5 | 84 | 9+5dB |
| BPL @ 3m | -58.5 | 266 | 9+15dB |

What will you hear if a BPL line is installed near you? You can hear examples of BPL interference at the ARRL Web site (<http://www.arrl.org/tis/info/HTML/plc/aud-vid.html>).

To summarize: Our receivers are able to detect signals in the S-1 range and below, ambient noise levels are S-1 to S-4.5, typical signals are received at S-4 to S-8, BPL signals from a line at 30m will come in at S-9+5dB and S-9+15dB if the BPL line is at a distance of 3m. BPL would truly be armchair copy.

For further information please refer to www.ve2si.ca and the references at the end of that Web site.

Club Activities - Monthly Meetings

Club meetings are held on the last Wednesday of the month. The meetings will be held in the Lounge which is the rearmost door on the South side of the building unless we have reason to hold it in the Parish Hall which is the first door on the South side of the building. An informal flea-market and ragchew session starts at 19:30 with the formal meeting starting at 20:00. STM buses 51, 162, and 105 stop nearby.

30 November 2005

WAAS with Jim Nagle, KE4OD see page 1.

25 January 2006

John VE2EQL will show off the NORCAL 2030 High performance CW transceiver kit.

This transceiver has specs that blows the doors off of the ORION, IC7800, and other mega-buck radios. Check out www.norcalqrp.org and look for the NC2030. It uses mostly surface mount components, and John will have his surface mount soldering station. In addition, if there is interest, a group build of some simple surface mount kits can be done quickly. A group purchase could be made providing there is enough interest. Take a look at www.qsl.net/kd1jv The audio filter can be built in 15 minutes. Inquire via email.

22 February 2006

Don, VE3RM will be giving a discussion on HF operations.

29 March 2006

A preview of the DVDCam-HAM will be given by Ron (VA2RJC). This session will provide some details regarding the pre-production planning, the production stage (taking of video footage) and the post-production stage (editing, titling and sound). A selection of the footage taken will be shown.

26 April 2006

TBA

31 May 2006

Annual Show and Tell Meeting

Radio Classes

Each year the MARC holds a basic radio course. The 2006 course is in the planning stage but at the publication date of this newsletter, there are only two potential students. If there are no additional interest for attendees, the President will have to decide if the course should go ahead.

Other Activities

Other club activities that are in the planning stage. The amateur radio fleamarket to be held on 22 April 2006.

MAB Antenna Activities

The repairs, assembly and installation of the ATB 34 antenna has now been completed at the MAB along with the three of the four support lines on the dipoles have been replaced as well as the attachment line. This work was carried over two Saturdays and

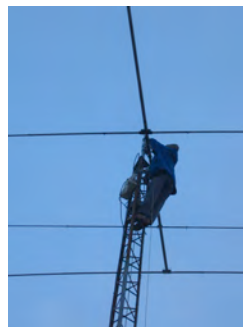


a half-a-weekday by Leo Nikinnen (VE2SI), Nora Hague VE2HAX), Raymond Faguy, (VA2RY), Jim Hay, (VE2VE), Sheldon Werner (VA2SH), Earl Paris (VE2ESP), Paul Mac-Dougall (VA2YQ) and yours truly.



When the mast section for the VHF antennas has been

procured, the installation can then be completed. Jim Hay, (VE2VE) suggests that over the winter period, work be carried out on acquiring some wire and a balun and build new 40 and 80 metre dipoles for installation in the spring and at the same time replace the coax.



Apparently there is sufficient coax for this at the MAB.

Our Hi-Flying Leo

2006 Hamfests

Saturday, February 4

Niagara Peninsula Amateur Radio Club Big Event 28 - St. Catharines, Ontario

Location: Canadian Auto Workers Hall, 125 Bunting Road, St.Catharines, ON

Vendors 07:00 - Public 09:00 to 13:00 Admission \$6.00, Tables \$20.00 (includes 1 admission) Talk-in: VE3NRS 147.240 (+) PL 107.2 Hz For Vendor Information please call Peter Vince, VA3PKV at (905) 347-2612, vendors@nparc.on.ca and for General Information contact Brian Kent, VE3BMX at (905)

321-3594, bigevent@nparc.on.ca Web Page: <http://www.nparc.on.ca>

Sunday, February 12

Burnaby ARC Amateur Radio Flea Market - Burnaby, British Columbia

Location: Cameron Recreation Centre, 9523 Cameron Street, Burnaby, B.C. (behind Lougheed Mall)

Vendors 09:00 - Public 10:00 to 14:00 Admission \$5.00, Tables \$25.00 Talk-in: VE7RBY 145.350 (-) Information: Dan Potvin VE7BY 604-582-4252 ve7byy@rac.ca or Lou Beaubien VE7CGE 604-291-1569 loucge@telus.net Web Page: <http://www.ve7bar.org>

Saturday - February 25

Burlington Spring Fleamarket - Burlington, Ontario

Location: Royal Canadian Legion - 828 Legion Road, Burlington, Ontario

Vendors 07:00, Public 09:00. Admission \$6.00 Tables \$10.00 Talk-in VE3RSB 147.210 (+) PL 131.8 Hz Information: Chuck Wilson, VE3IUO at 905-667-8534. Reservations and cheques to Norm at 2129 Larabee Court, Burlington, Ontario, L7P 3S3 E-Mail: barc@cogeco.ca Web page: <http://www.barc.ca>

February 25

Northern Vermont Winter Hamfest - ARRL Vermont State Convention Milton Hamfest - Milton, Vermont Location: Milton High School, Route 7, Milton, Vermont

Time: 08:00 until 13:00. Vendors: Early Vendors Entrance (via rear door) 06:30 - Call or write for more information. Admission: 5.00\$. Under 18 years, free. Canadian money accepted at par from Canadian residents, exact change only. Cash only, no checks. Talk-in: 145.150 (-) WB1GQR. Prerecorded hamfest information and announcements on 146.67 MHz on the day of the hamfest. Information: Phone: (802)-879-6589, before hamfest day or via E-mail at: w1sj@arrl.net Web page: <http://www.ranv.org/milton.html>

Saturday, March 25

HAMEX 2005 - Brampton, Ontario Location: Brampton Fall Fairgrounds, Heart Lake Road corner of Old School Road, Brampton, Ontario

Time: Vendors at - Public at 09:00 to 13:00 - Seminars 1300-1800 Talk-in VE3PRC 146.880 (-) PL 103.5 Hz Admission: 6.00\$ - Tables

TBA. Information: ve3xr@rac.ca or 905-453-6096 Web page:<http://www.ham-ex.ca>

Saturday, April 1

Iroquois A.R.C. 10th Annual Flea Market - Iroquois, Ontario Location: Iroquois Civic Centre

Vendors: 08:00 Public: 09:00 - 12:00 Free Admission / Tables 10.00\$ Talk-in VE3IRO 145.290 (-) Table reservations/Information: Gordon Knights, VE3UGW (613)-657-3640 or E-mail ve3ugw@ripnet.com Web Site: <http://www.iarc.dyndns.org:8080/>

Saturday, April 22

Montreal Hamfest and Fleamarket LaSalle (Montreal), QuÉbec

Location: Royal Canadian Legion Branch 212 (LaSalle), 7771 Bouvier corner of Shevchenko. STM Bus 109 at the door.

Vendors 08:00 Public 09:00 to 12:00. Admission - 4.00\$ Talk-in VE2RED 147.270 (+) - Information: James R. Hay, VE2VE - (514)-697-7205 E-mail: ve2arc@rac.ca Web page: <http://www.marc.qc.ca/fest/fest.html>

Sunday, May 7

O.C.A.R.C. 2nd Annual Flea Market - Kelowna, British Columbia

Location: Ellison Heritage School Community Centre, 4411 Old Vernon Road, (East of the Kelowna Airport), Kelowna, B.C.

Vendors 08:00, Public 09:00 Admission 2.00\$ Tables 10.00. Talk-in: 146.680 (-) Information: Keith Manhard, VE7KNG, 250-766-2179 or Carl Bertholm, VE7CLC 250-769-4184 E-mail: ve7kng@rac.ca Web page: <http://www.ocarc.ca/hamsale>

Saturday, May 13

Down East Fleamarket - Halifax, Nova Scotia

Location: Halifax Forum Complex at the corner of Young and Windsor Streets

Time: Vendors at 06:30 and General Public at 09:00 - Tables: T.B.A. Vendors must reserve tables in advance - General Public: T.B.A. Talk-in: VE1PSR 147.270 (+) E-mail: Web Page:

<http://www.halifax-arc.org/harcweb/Events/Fleamarket.html>

Saturday, June 10

Central Ontario Fleamarket and Hamfest. - Fergus, Ontario

Location: Fergus & District Community Centre, 10 km north of Guelph off Highway 6. See www.hamfest.on.ca for a map.

Vendors at 06:00, Tailgaters at 07:00 and the Public at 08:00 to 12:30. Admission \$6.00 -- Vendors - \$12.00 plus admission -- Tailgaters

\$7.00 plus admission. Talk-in: 145.210 (-) VE3ZMG, switch to 146.520 simplex in the Fergus. E-mail: info@hamfest.on.ca Web page: <http://www.hamfest.on.ca>

Saturday, July 8

Ontario Hamfest 2005 - Milton Ontario

Location: Milton Agricultural Fairgrounds, Milton ON Times Inside Vendors: 07h00 - Robert Street Gate only -

Tailgaters:08h00 - Robert Street gate only - General Admission: 09h00 - Thomas St gate only. General Admission - 6.00\$ Inside Vendors - 10.00\$ per table plus 6.00\$ per person Tailgaters - 5.00\$ tailgate permit (per space) + 6.00\$ per person. Talk-in: 146.520 Simplex E-mail: Registration: ve3czi@rac.ca or Norm Freidin at (905)-335-8962 - Information:Chuck Wilson, VE3IUO emailve3iuo@rac.ca phone (905) 667-8534 Web Page: <http://home.cogeco.ca/~barc>

Saturday, September 2

Ottawa Amateur Radio Club 10th Annual Hamfest. - Carp, Ontario

Location: Carp Agricultural Fair Grounds, 3970 Carp Rd (at Falldown Lane), Carp, ON

Vendors - 08:00 Tailgaters - 08:00 General Public - 10:00 to 13:00 Forum T.B.A. - 13:00 General Admission 5.00\$ Tables 10.00\$ plus admission Tailgaters 5.00\$ plus admission. Talk-in: VE2CRA 146.940 (-) Greg Danylchenko, VE3Ytz at (613) 236-9291 (H) E-mail: fleamarket@oarc.net Web Page: <http://oarc.net/fleamarket>

SMALL ADS

FOR SALE: A HYGAIN ANTENNA "JUNIOR 10-15-20" IS AVAILABLE FROM MAB. THE ANTENNA WOULD REQUIRE SOME WORK TO BRING IT BACK TO STANDARD. IF INTERESTED PLEASE CONTACT EARL PARIS, VE2ESP, HOME 514-524-4633, WORK, 514-489-8201 LOCAL 1015.

A GIFT: FOR A NEED PERSON OR CHILD THAT COULD USE A CRT 14" MONITOR. PLEASE CONTACT BOB STEIN, VE2MHO AT: robs@vsn.ca



Our John, VE2EQL with the real Ronald McDonald at the Montreal Shiners Hospital

Submissions for entry into marcOgram

For submissions of text only it is preferable that you send as a ".txt" file, however, MS Word is acceptable.

For pictures please use "jpg" format with maximum size 400 x 240. Where possible use at least 240 dpi.

For clip art if possible use "gif". Maximum size 480 x 340 pix. This will give a picture size of approximately 8 Kb.

Contact me at:

va2rjc@rac.ca va2rjc@marc.ca

Home Tel: 514-767-2804

Snail mail: Ron Campbell, 201 Du Club Marin, Apt. 209, Verdun, QC. H3E 1T4

IN CASE OF EMERGENCY

Montreal 911 Centre
.....514-280-2121

Laval 911 Centre
.....450-662-4240

Longueuil 911 Centre
.....450-646-8570

Surete du Quebec 911 Centre
.....310-4141

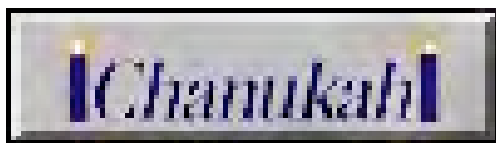
Kahnawake Peace keepers
.....450-632-6505



HOLIDAY DINNER

Christmas Dinner 2005

Merry Christmas



Door Prizes

Good Food

Great Company



Date: Saturday December 10th 2005
Time: 7:00PM
Where: Buffet Fu Lam, (across Plaza Cote Vertu)
 3550 Cote Vertu,
 St. Laurent,
 Tel: 514-333-8828

Free Parking - Access via Cote Vertu Metro

RRSP: Roman Massanova, VE2RKM
 H: 514-934-3235
 John Grow, VE2EQL
 H: 450-672-1545

Response required by: November 27th, 2005

Special Package: \$ 18.25 per person CASH
 - includes buffet, coffee, tea, desert, tips & taxes.
Wine, Beer and Spirits Extra

We will have our own enclosed separate area, only if we have 48 to 50 persons. This is a non-smoking area. It is important to call to reserve your place,. Friends and family are welcome.



RADIO HF

C.P./BOX 67063-Lemoyne
St. Lambert, Quebec
J4R 2T8

Sheldon Harvey, Prop.
VE2SHW

TELEPHONE & FAX: 450-671-3773

SANS-FRAIS/TOLL FREE:
1-800-463-3773

E-MAIL/COURRIEL:
info@radiohf.ca

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www.radiohf.ca

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PARADYNAMICS, RANGER, ROAD NOISE, SHAKESPEARE, SOLARCON/ANTRON,
UNIDEN, VALOR/PRO-AM,
WILSON, WORKMAN

FAMILY RADIO SERVICE (FRS) / DISPOSITIFS RADIO DOMESTIQUES (DRD)
AUDIOVOX, COBRA, ICOM, KENWOOD, MOTOROLA

ANTENNAS / ANTENNES
ALPHA DELTA, ANTENNA SUPERMARKET, ARROW, ATOC, BUTTERNUT, COMET,
CREATE, CUSHCRAFT, DIAMOND, FIRESTICK, FORCE 12, HUSTLER, HYGAIN,
LARSEN, MFJ, MIRACLE ANTENNA, OUTBACKER, PRYME, SCANMASTER,
VALOR/PRO-AM, VAN GORDEN, WORKMAN

SPECIALTY PRODUCTS / PRODUITS SPECIALISES
AMERITRON, ASTRON, BENCHER, DAIWA, D.C.I., GARMIN, GEOCRON, HEIL,
KANTRONICS, KIWA ELECTRONICS, L.D.G., MAGELLAN, MAHA, MFJ, MIRAGE, NYE
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PUBLICATIONS / PUBLICATIONS
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