

SEPTEMBER 1992



NEXT MEETING WILL BE HELD
WEDNESDAY, SEPTEMBER 2, 1992

GROUNDWAVE



Club Call VE3RC

Repeater VE2CRA

The Ottawa Amateur Radio Club, Inc., Box 8873, Ottawa, Ont., K1G 3J2

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Vice-President	Paul Coverdale, VE3ICV	820-6643	763-4277
Secretary	Brian Summers, VE3JKZ	523-1535	836-6860
Treasurer	Mike Kelly, VE3FFK	722-5918	788-5782
Past-President	Dave Goodwin, VE2ZP	684-1432	
Directors	Marcus Leach, VE3MDL		
	Doug Yuill, VE3OCU	567-2700	230-1741
	Ken Willy, VE3CCV		
Packet Group Chairman	Eric Taada, VE3SGG		
Repeater Chairman	Harrie Jones, VE3HYS	739-9365	738-2372
Net Manager	Wayne Greenough, VE3JSQ		
EMI Committee Chairman	Ralph Cameron, VE3BBM	825-1634	225-2850
Membership Chairman	Barry Hall, VE3BXH		
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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 first Wednesday of each month (except July and August) in the Champlain Room (2nd floor of the Old Teacher's College) of the RMOC HQ complex on Lisgar St., Ottawa, at 1930 hours. A bulletin board is available for posting notices of interest to other members about 1915 hours. Further details about each meeting is elsewhere in this publication.

PACKET RADIO MEETINGS will be held at 7:30 p.m. on Oct. 3, Nov. 28, 1991, Jan. 30, March 26, May 28, 1992, at the Group Lobby Room, Museum of Science and Technology. This is an OARC technical meeting open to all who have an interest in packet radio.

THE OARC EXECUTIVE normally meets on the second Wednesday of each month at 1930 hours. Contact the President to confirm the date of the next meeting.

DEADLINE FOR COPY is the second Wednesday of each month. Make yourself better known to fellow members and other amateurs, too, by giving us an article, technical or otherwise, relative to our hobby.

MATERIAL PUBLISHED herein does not necessarily represent the official OARC viewpoint. Items may be reprinted by Amateur Radio or other publications provided that proper credit is given to the author and to the OARC, Inc.

JUNIOR MEMBERSHIPS - To encourage young people to join the club and to participate in amateur radio, the club is opening a junior class of membership. Dues will be at a 50% discount but the junior member must pick up his/her copy of the Groundwave (preferably at the meeting).

RADIO AMATEUR CALL BOOKS are available at many local libraries. Ask at the information desk.

SAFETY BELTS, 2-METER RIG AND AN ENGRAVING PENCIL are available for loan to club members. The 2-meter rig may be borrowed by members who are hospitalized. The engraving pencil (to mark valuables for

identification in case of loss or theft) and the safety belts with pole straps are available to any members. For the belts, a refundable deposit consisting of a cheque equal to the replacement value of the belts is required. Contact the President for the 2-meter rig or the engraving pencil; and Paul, VE3ICV, at 820-6643 (West End) or Brian, VE3JKZ, at 523-1535 (East End) for the belts.

THE CAPITAL CITY NET meets every Monday at 2000 hours on the Club Repeater VE2CRA (146.34/.94) to pass traffic and to make announcements of interest to amateurs in the National Capital Region.

PACKET RADIO VOICE NET meets following the Capital City Net on VE2CRA at 2040 hours. This is an informal net to answer questions about packet radio, pass along operating hints and provide information for future packet operators.

THE SWAP NET is a service provided and conducted by Ed Morgan, VE3GX. This feature appears on the Capital City Net, noted in the foregoing paragraph. To list items and make inquiries, call Ed Morgan at 733-1721.

POT-HOLE NET is a SSB/HF net sponsored by the Ottawa Valley Mobile Radio Club, and conducted every Sunday at 1000 hours on 3.760 Mhz. All amateurs are welcome to check in. The Swap-Net is a regular feature.

POT-LID CW NET is an informal slow-speed CW net sponsored and conducted by Ed, VE3GX, and meeting every Sunday, except during July and August, at 1100 hours on 3.820 Mhz, to promote interest in CW and CW procedures.

REPEATERS

VE2CRA	Voice	146.94/34	443.300/448.300
VE3OCR		223.34/224.94	
VE3OCR	Packet	145.01(sx)	Inter city links
VE3OCR	Packet	145.07(sx)	Local Area net for QSO and Packet BBS.
56 kbps	Packet	220.55/433.55	
VE3DX	DX Info	146.25/146.85;	packet
		145.11(SX)	

For further information, please contact repeater chairman.

MINUTES OF THE OARC GENERAL MEETING
OF JUNE 3, 1992

Elections were held for executive positions for next year by Harrie, VE3HHS. As there was only one nomination for each position, all positions were filled without a vote after being proposed and seconded by attending members. The new executive is as follows:

- President Peter, Jago, VE3PWJ
- Vice-president Paul Coverdale, VE3ICV
- Secretary Brian Summers, VE3JKZ
- Treasurer Mike Kelly, VE3FFK
- Past-president Dave Goodwin, VE2ZP
- Directors Marcus Leach, VE3MDL
Doug Yuill, VE3OCU
Ken Willy, VE3CCV
- Packet Group Chairman Eric Taada, VE3SGG
- Membership Chairman Barry Hall, VE3BXH

Peter Hafichuck, VE3LBW, volunteered to organize the fall flea market with the following committee to help:

- Dave Parks, VE3GSA
- Marcus Leach, VE3MDL
- Sampson St. Pierre, VE3JSP
- Paul Campbell, VE3CEP
- Peter Jago, VE3PWJ
- and Richard

Doug Yuill, VE3OCU, gave a presentation on packet radio including the history of packet radio in Canada and the evolution of the local packet radio network. He then discussed applications of high speed packet networks with several examples. Many nifty pieces of hardware were exhibited and explained. The presentation was concluded by the answering of many questions.

The meeting then adjourned for coffee at an unknown time. There were no events after the coffee break.

IN CASE YOU MISSED IT

JOINT NEWS RELEASE FROM CRRL/CARF - On Sunday, May 24, 1992, the implementation teams of CRRL and CARF met in Toronto to continue merger discussions.

A legal contract between the two organizations was signed by Presidents Shtun and Hopwood and Secretaries Illott and Loucks. This contract will allow the legal process of creating "Radio Amateurs of Canada" "Radio Amateurs du Canada" and the dissolution of CARF and CRRL to begin.

A vote of all members of the two organizations will take place in the upcoming months, as will the incorporation of RAC by the legal representatives. Announcement of the first board of directors will be released after the results of the members vote.

The actual date of merger is dependent on governmental and Revenue Canada requirements, and is not available at this time.

Signed Dana A. Shtun, President CRRL
J. Farrell Hopwood, President CARF
(Item 1, CARF News Bulletin 10-92.)

CARF/CRRL MEETS DOC - A team of joint representatives from CARF and CRRL met with DOC officials in Ottawa May 21, 1992. Topics discussed ranged from the growth and success of the amateur restructuring program since October 1990, the DOC Quebec Region's study on the possible "privatization" of the administration of the service, the new environmental assessment process - CPC-2-03, problems involving radio susceptible equipment and possible future WARC's affecting amateur radio. (Item 2, CARF News Bulletin 10-92.)

RESTRUCTURING A MAJOR SUCCESS - The DOC reported the number of amateur radio licenses in Canada is now 33,624, an increase of 19.6% in the past year

(5,524 since September, 1990). Our numbers have doubled since 1977 though we experienced almost no growth from 1980 to 1990. Both the DOC and CRRL/CARF expressed much satisfaction with the new interest and growth of the hobby since the re-structured program began in the Fall of 1990. (Item 3, CARF News Bulletin 10-92.)

PRIVATIZATION OF ADMINISTRATION - Mr. Denis Colbert of the Quebec Region DOC announced a plan to "empower" amateurs through their proposed new national organization, to manage the day to day administration of the amateur radio service. This would include the examination and licensing process in total as well as the assignments of callsign blocks.

DOC is planning to open up a dialogue with amateurs on this issue through a series of meetings to focus attention on the plan and its empowering purposes. CARF/CRRL believe the plan has merit, however, a major issue is the cost of administering the amateur service. DOC plan "focus" meetings in Montreal, Toronto and Winnipeg. (Item 4, CARF News Bulletin 10-92.)

ENVIRONMENTAL ASSESSMENT PROCESS - CPC-2-0-03 - CARF/CRRL complained of the continuing difficulty of interpreting this new policy. Concern was expressed that the antenna tower structure policy puts amateurs at a disadvantage in dealing with municipalities. Also, applying RF radiation emission standards to amateurs, who use low duty cycle transmissions, is questionable. The FCC has exempted American amateurs from complying with such standards.

CARF/ARRL submitted a joint paper to DOC outlining these and other serious concerns over the interpretation and application of this new policy. Other industry and government services have expressed dissatisfaction with this policy through the Radio Advisory Board of Canada (RABC). (Item 5, CARF News Bulletin 10-92.)

RADIO SUSCEPTIBLE EQUIPMENT - Comparing the small number of complaints registered over the past few years, the DOC believes this is not a serious issue. CARF/CRRL disagreed pointing out the formidable problems an amateur faces living next door to people who possess RF susceptible equipment. The DOC has not planned to go beyond the current voluntary guidelines to manufacturers with respect to the provision of equipment. (Item 6, CARF News Bulletin 10-92.)

BY THE TIME YOU READ THIS:

field day will be over, summer will be winding down, I will have logged a bunch of bicycle mobile hf contacts (2 so far), you will have provided communications for a couple of thing-a-thons, the spring crop of new hams (dozens of 'em) will be old timers, some will be thinking about back to school, others will be glad were done, people will have quit complaining about the heat, and started about how short the days are getting.

Every season has something to say for it.. even as the evenings cool off, the static crashes start to ease on the low bands. With fewer outdoor things going on there's more time to spend in the ham shack, rag chewing, dxing, building stuff, or just plain puttering. Put away the sailboard and scuba gear its ham season again.

(You've probably noticed.. any season is ham season for some of us!)

73.. mike k. VE3 FFK

FLEA MARKET

Flea Market - Peter Hafichuck, VE3LBW, is in charge this year.

LIGHTNING

.. a summary of the presentation of Bill Wilson at the May meeting of the O.A.R.C. as well as I can follow my own notes!

- 1749 Ben Franklin suggests lightning rods, does a few experiments.
- 1752 Dailbert tries these rods ... much time passes ...
- 1933 High speed cameras are used to photograph lightning strikes
- 1942 Recording oscilloscopes are used to examine electrical characteristics of lightning.

In good weather, the earth is charged negatively, and clouds are positive. In storm conditions, the polarities are reversed. Before the beginning of a lightning strike, a "stepped leader" starts down towards earth, as streamers start up. When they meet, a high current return stroke moves from earth to cloud as it finishes, a dart leader moves down the ionised path left by the discharge, a second return stroke follows. This pattern repeats from three or four, up to 26 times. Each stroke is 30 to 300 microseconds long. The rise time is a few microseconds long, with a slightly longer fall time. The current is on the order of 30 kiloAmps, rarely exceeding 100kA. The path is around 20 cm in diameter. There is much variation in the descriptions in the literature, with the data coming from the south indicating larger and more powerful strokes.

Hazards:

Side Flash Hazard: A stroke will hit a high point that has a relatively high resistance to ground, then move sideways toward a lower, but better grounded point. For example, lightning may hit a tree or chimney, then flash over to a tower.

Earth Potential Gradient Hazard: Because the earth is resistive, the area

around a strike will have a high potential gradient. A person or animal standing near a strike point may have one foot at a much higher potential than the other(s). This voltage difference can be enough to electrocute.

Surge Hazard: Even a nearby strike will induce a voltage in long metallic lines, such as feedlines, pipelines, water pipes, or power lines.

Direct Strike Hazard: Any discharge able to ionise a column of air 20 cm in diameter and several hundred meters long would not have much problem doing the same to anyone unfortunate enough to be at the strike point.

Protective Systems Objective: To provide a low impedance path to ground for points likely to be hit. Note that word impedance.. because of the short rise and fall times, D.C. resistance is not a complete measure of the effectiveness of a ground system. Braid or pipe will be more effective than a solid wire of equal resistance. A low impedance path limits the potential across your equipment and shortens the time of exposure by facilitating the operation of protective devices. It reduces the amount of heat ($I^2 R$) built up and reduces the forces generated in high impedance hits. Because the strike current produces a large motor type force in the conductors, they must be physically restrained as well, as they will try to move sideways, or straighten out at bends. Determining the need for protection - factors to consider:

1. Occupant safety (Is the building occupied, or a remote facility)
2. Building nature and contents (What is the structure made out of)
3. Relative exposure, the product of incidence of storms (30 days/yr. in Ottawa) and severity of storms (varies with latitude)

4. Operational requirements (must you operate through the storm, or can you shut down for a while)

Suggestions:

For a tower going up, use a mast about 2 feet over the top of the beam. Attach a number 2 wire from over the top of this mast to the ground system. Ground coax feeders at the top and bottom of the tower. Put surge protectors at the tower take off point (where the coax leaves the tower). The service entrance ground is sometimes suspect. Check it. Supplement it if necessary. All grounds should be tied together. The ground system should be at least two feet outside of the foundation. It should also be outside the tower foundation, so a lightning strike won't blow the cement apart.

The ground electrodes can have many configurations. Use copper or copper clad ground electrodes, do not use aluminum ground electrodes. Use clamps, not solder to attach ground wires to the tower and ground electrodes.

Ground configurations:

Single vertical rod, ten feet long, in ground;

Single horizontal rod, 18 feet long, two feet below ground;

Vertical rod, six feet long, two feet below ground, connected at that level to horizontal rod, six to twelve feet long, with additional six foot vertical rod placed six feet away from the rest of the system;

Metal plate, two by two feet by 1/16 inch, buried two feet down, with additional six foot vertical ground rod placed six feet away from the rest of the system.

To reduce the possibility of side flash, all nearby conducting bodies (siding, fences, eavestroughing, well casings etc.) should be connected to the ground system. The old idea of a "cone of

protection" has been modified over the years. It was thought that a grounded structure protected an area under a 60 degree cone around it. Current thinking on the subject says that if an object has a height of 10 m then its protected radius is 10 m. If it is 20 to 40 m high, then its protected radius is 15 m. The C.N. tower regularly gets hit on its side.

Gas Gap Protectors are a refinement of the spark gap protectors in use for a long time. They are two electrodes separated by an inert gas. They will change from non-conductive to conductive at a reliable, constant voltage.

They will carry a high current, although not for long. They are available for service entrance use and in low capacitance versions for transmission line use. Protectors should be put between each conductor in the power entrance ie line to ground, neutral to ground, and line to neutral. If tying the power line ground to the lightning ground that you have carefully built up causes radio noise to increase, then put an isolation transformer on the power entrance to your shack, and put a gas gap type surge protector between the power line ground and the radio ground.

References:

- Lawrence Marshall, "Lightning Protection" Wiley 1973
- R.H. Golde, "Lightning Protection" 1973", QST 82/2
- Canadian Electrical Code Part 1 section 54

This stuff is from my notes of the talk, so spelling mistakes are all mine...

73 VE3 FFK

NAME BADGES

The club is considering a group purchase.

FIELD DAY

by Bob Havens, VE3IYO (VE3MPS)

Does Mexico City and 1968 bring a picture to mind? I close my eyes and can still see Bob Beaman with his feet tucked around his ears shattering the world long jump record. What is more incredible is that his record is still in place after 23 years. Only the gathering of the world's best can produce such amazing results. So it is with Amateur Radio and field day!

Local Clubs

My induction to amateur radio involved a year of C.B. communication, dances and other gatherings followed by a winter course near my home and then the D.O.C. exam. It worked out well. We had just moved to Mitchell and were making new friends. Al (Whipper Snapper) and Dorothy (Buttons) from our C.B. days have remained our closest friends. Times change and the C.B. clubs just don't exist in the same way as they did back in the later '70s. I recommend you search out a local ham club and attend one of their meetings. Our Stratford club has several unlicensed members who are studying to become amateurs or who just enjoy short wave radio communications and the company of others who do as well.

I can't imagine my interest or enthusiasm for ham radio continuing on steadily from year to year as it has without abundance of local radio clubs to spark my fervour. Although you don't need to belong to ANY amateur organization to have fun and be active they offer support and companionship - much needed commodities in today's busy, non-personal world. To thoroughly enjoy the full impact of field day, attend a club site.

What and Why

Do you remember the Jamaican hurricane or the Mexican earthquake of a few years

back? If so, you have the why. Any time of the day or night you can tune my Drake transceiver and listen to two people talking somewhere around the world. It might only be someone in Toronto in conversation with someone else in Ottawa or it could be a ham in British Columbia meeting a time schedule with his buddies back in Great Britain. It is always busy - much like a global party line! When disaster strikes anywhere on planet earth you will hear very specialized conversations on the Drake. They involve hams from that country relaying messages of need and safety to other family members in a country far removed from the disaster. Often it is the ONLY form of communication these people have with the outside world!

This may spring forth a very logical question in your mind. You may recall seeing great arrays of antennae lurching skyward and being informed they belonged to a ham. If so, wouldn't they be destroyed during an earthquake or hurricane? The answer is - yes. All hams keep spare wire for any untold emergency. Part of the fun in this hobby is to see how well you can do with your home-made antennae and during the times of such emergencies they are all you would have. There is often a ham operator on the air within an hour of any disaster. Field Day affords amateurs the opportunity to practise emergency procedures much as you would do with a mock disaster (another area where hams are welcome) and also provide supplementary communications for the fire departments, etc.

What Happens

Some radio clubs use the same site each year for their field days. In true emergency fashion others change every year. The first step is to designate a location and man it with equipment. Field Day affords the opportunity to see many different radio and communications taking place simultaneously.

This will give you a feel for the true range and versatility of this hobby. Site and equipment chosen, you are ready to go.

Some clubs, depending on their size, may establish a very rigid timetable to ensure there is someone operating through the entire weekend. Other groups don't have enough active hams to take this approach or they are more comfortable with a relaxed atmosphere.

In the true nature of emergencies, antennae are to be constructed and erected. Equipment is to be powered through auxiliary means and everyone should have a job to do. Power the radios and call CQ FIELD DAY. Log your contacts and have fun! Remember, although you may not be a licensed operator, you are permitted the privilege of operating the equipment under supervision of other licensed hams! If you are offered the microphone don't be shy - it could be the beginning of a lifelong friendship!

Over my 14 years in this hobby I have met some very interesting people. There are only two conditions that need to be met if you are going to talk to someone on the other side of the world. Number one - they must be on the air at the same time as you. Number two - your signal must bounce in their direction. We can predict certain radio patterns according to the weather or solar flare activities but nothing is guaranteed. What happens on field day more often than at any other time is the abundance of people world-wide on the air at exactly the same time thus increasing the chances for worldwide communications. One winter's evening shortly after I received my license I tuned the radio to the 10 metre portion of the band. It was dead silent. I decided to call and see if anyone was listening. In the next hour I chatted with a retired business man from Canada living in Haiti, a pharmacist in Edmonton who had once lived in Mitchell, a fisherman

from Minnesota and a ham from Kitchener. All knew exactly where Mitchell was except for the ham from Kitchener. Small world.

This Year

My daughter was planning a grade eight party for everyone in her class the weekend of field day. I still wanted to attend the BLUEWATER CLUB site if even for a few short hours. I set out about 11:30 AM on Saturday, June 22nd. Arriving at the site I couldn't help but notice Will was up the tree and Bill, VE3JEC, was on the other end of a 20 metre antenna. In Bill's words it was "...made out of some old scrap wire and home brew insulators..." in true field day tradition.

Before I left the contacts ranged from Florida to British Columbia on this scrap metal masterpiece.

The pot of chili was ready as I arrived and although mild by some standards I still have no sensation in my lower lip. Field day is good fun; there is plenty of food and an opportunity to communicate with others worldwide doing exactly the same thing. There are definitely no barriers in this hobby.

While at the site I met newly elected BLUEWATER PRESIDENT Stan - VE3VAC - who works for CKNX TV as their senior audio man. Stan has 18 receivers in his shack and he has a computer program to decode Russian cryptic but that's another story....

Thanks to Chuck Adler, Editor of Electronics & Technology Today for permission to reprint this article.