



Ottawa Amateur Radio Club

Groundwave

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From the Editor:

November 2013

The club is still looking for a secretary to take minutes. Contact the executive if you are interested in helping out.

Remember to bring your \$45 to the meeting if you are interested in signing up for the SDR club project.

November's speaker will be George Roach, VE3BNO, who will be speaking on "The First 50 Years of Repeater VE2CRA".

See you at the meeting.

Ian Jeffrey, VE3IGJ, Editor



Check out our Web Page: www.oarc.net

**Next Meeting 7:30 pm, Wednesday, November 13th
in the Colonel By Room at Ottawa City Hall**

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Ottawa Amateur Radio Club

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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.

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.

Please support your local radio organisations. They support you!

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 Rubber Boot Net runs week days at 07:30 on VE3MPC, 147.150 + hosted by Ed, VE3GX or Mike, VA3TJP. The Rubber Boot net has been running since the early 1980's and is popular for the early risers and the go to work crowd.

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 VE3MPC **147.150(+)**. 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.

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.

The Ottawa Amateur Radio Club bulletin "Groundwave" is published and distributed to club members. 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 100Hz CTCSS required

VE3TVA Amateur Fast Scan Television Repeater
Currently off the air and looking for a new home.

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.



October Minutes

Meeting started at 7:30, chaired by Vice President Tyler, VA3DGN, replacing the President who is out of town.

There were 5 guests present

- Sid - non ham
- John, VE3ZOV - new club member
- Tim, VE3PYC - new club member
- Mike, VA3NMR - newly licensed - new club member
- Alan, VE3CBR - here with guest who wrote his basic exam

Dave, VE3KL, brought coffee and cookies for the guests. Thank you Dave.

Al, VE3ZTU, was taking membership payments. Tyler mentioned again about being a RAC member as well as a club member as this affects the club insurance.

Janice, VA3PAX, and Dave, VE3KL, spoke about the portal station demo that took place on September 14 at Andrew Hayden Park. Everyone had a great time and got to see many different station set ups. Andrew Hayden Park provided adequate room for multiple station. The event was a great success. Janice mentioned that the executive would like this to become an annual club event.

Dave, VE3TLY, gave an update on the Diefenbunker antenna project. The Diefenbunker board of directors is meeting in October to make the final decision on the timing and funding for the antenna installation. Dave will have an update at the November meeting.

Clayton, VE3IRR, proposed an introductory software defined radio (SDR) tutorial for this year's club project. Sign up sheet went around and 25 people expressed interest. Projected cost per person will be \$45 to be collected at the November meeting, to ensure the order is placed before the Christmas rush.

Dates to Remember

2013

- Sep. 7 Hamfest
- Sep. 30 Membership Renewals Due
- Nov. 1 Joe Norton Award Subm. Due
- Dec. 28 RAC Winter Contest

2014

- Feb. 8, 9 Canada Ski Marathon
- Apr. 9 Homebrew Night
- Jun. 11 OARC AGM and Elections
- Jun. 28, 29 Field Day
- Jul. 1 RAC Canada Day Contest

Tyler, VA3DGN, asked for club trip suggestions. Norm, VE3LC, proposed the idea of a trip the ARRL HQ in Newington, CT.

Show and Tell: Tyler, VA3DGN, and Mike, VE3FFK, brought a capacitor drive assembly for a magnetic loop antenna.

Mike, VE3FFK, mentioned that the Tall Pines Rally is looking for radio operators for the rally on November 29/30. If you are interested please contact Mike.

Wayne, VE3CZO, presented his talk about 24-23cm 2 Stage Amplifier Design from Concept to Prototype.

Meeting adjourned at 9:44 with Al, VE3ZTU, winning the 50/50 draw for \$14.50.

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where the batteries are set in an area where you don't have to worry about fumes or leakage, a standard or industrial deep cycle is a better economic choice.

Rob Hanson, W6RH



mk's Word

If you have a good memory, you will remember when I discovered all the nifty stuff available at "dollar" stores, the logical progeny of the old five and dime places of yore. Well, it has happened again. I recently got acquainted with a web site with the unfortunate name of dx.com (unfortunate only in that the domain name should have been picked up by some real DX outfit before these guys came along. But I digress). They used to be "dealextrême.com" before somebody there figured out that all that typing got between them and their customers. Anyhow, in the same way that the dollar stores offered things like audio amplifiers, speakers and other bits and pieces, these guys offer more starting points for nifty toys.

I started out just getting some simple small micro SD cards. It seems to be hard to find little (1-2 GB) cards these days, but they had them. Then it was lithium batteries and chargers of various sorts. Not much room for experimentation there, just little problems that their stuff made disappear. My current order, for which I'm anxiously waiting, is all toys to make stuff with.

First is a digital voltmeter module, with a LED display, that will read the voltage of a nominal 12V battery. At less than four bucks, I can afford to put power poles on one and dedicate it to battery service, without having to either tie up or go and find my DMM every time I want to see how the DC is doing.

Second is one of those Pelletier effect devices that delivers DC out if there is a temperature difference between the sides, or vice versa. I don't do much camping any more, but I thought it would be fun to have a "thing" that I could put on the Coleman stove and get both hot water for tea and a little DC to top up the batteries at the same time. Again, for pocket change, I figure it's worth a try. If it goes well, I can scale it up, since at 4cm per side, I can put a lot of them around a square pot. Any place I camp has enough cold water nearby that I figure I can easily water cool the low temperature side. If

it works it will be much more of an "on demand" source of DC than a packable solar array.

The third gadget I bought is a small DC to DC up converter board. Someone asked me about getting a bit of 12V DC out of the USB connector on their laptop. After thinking about it for a bit, I decided it would be nice to be able to run little 12V things from either a USB port or a few AA cells. Again the price was right, so there is the heart of another project making it's way here from the Peoples Republic. After all, as with bigger things like transceivers, if someone is willing to design, build, test, debug and ship things, why not use their gear as the starting point for the next step?

In terms of radio stuff, you saw at the last meeting where we are in the magloop project. At this rate it should be ready to put into the sky once real antenna weather hits here. With the exception of a minuscule bit of net activity on the Capital City and Pot Lid nets, there hasn't been much RF coming out of the FFK hamshack. I really must do something about that.

The Tall Pines car rally is coming up at the end of November. I think they pushed it later in the month to try to get snow, slush and ice back on the rally route like the old days. It should be an interesting weekend. Look up "tallpinesrally" in your favourite search engine for more info, and maybe come out and join us. The worst of the bugs should be gone by then.

73 mk
VE3FFK

Check out this commercial electrically steerable antenna <http://www.kymetacorp.com/products/fixed-satellite-terminal/>



What Can I Do With a Ham Radio License

Hamfest

Special Event Radio Station OQ4CLM
2013-10-11

Dear OM,

This year our club organise the 32nd. edition of the Special Event Radio Station ON4CLM. Where CLM stands for Canadian Liberation March, a 33km march that the Canadian troops did coming from the town Hoofdplaat in Holland to liberate our town Knokke in 1944.

For this 32nd edition we are granted to use the special prefix OQ instead of ON; which means you will hear OQ4CLM on air this year.

The event takes place from October 16 through November 15 2013.

More information on the special event station you will find at our new website: <http://ww.oq4clm.be>

Looking forward to work you during the event.

Best 73,

Guy Roelandt, ON4RO
Organiser

There are so many things, it's a difficult question to answer, but here's some ideas:

- Talk to people in foreign countries either by ionospheric propagation or via amateur satellites.
- Talk to people (both local and far away) on your drive to work.
- Help in emergencies by providing communications.
- Provide communications in parades or walkathons.
- Help other people become hams.
- Hook your computer to your radio and communicate by computers.
- Collect QSL cards (cards from other hams) from all over the United States and foreign countries and receive awards.
- Participate in contests or Field Day events.
- Provide radio services to your local Civil Defense organization thru ARES (Amateur Radio Emergency Service) or RACES (Radio Amateur Civil Emergency Service).
- Aid members of the US military by joining MARS (Military Affiliate Radio System).
- Participate in transmitter hunt games and maybe build your own direction-finding equipment.
- Have someone to talk to on those sleepless nights at home.
- Receive weather pictures via satellites.
- Build radios, antennas, learn some electronics and radio theory.
- Send and receive live television pictures.

Joe Norton Award

The Joe Norton Award application deadline is 17h00, November 1. Rather than reprint all the detailed instructions here please see the OARC web site <http://www.oarc.net/norton/>.

A group of chess enthusiasts checked into a hotel. They were standing in the lobby discussing their recent tournament victories. After about an hour, the manager came out of the office, and asked them to disperse. 'But why?' they asked, as they moved off. 'Because,' he said, 'I can't stand chess-nuts boasting in an open foyer!'

Battery Basics

Practically all batteries used in Ham Radio power backup systems are Lead-Acid type batteries. Even after over a century of use, they still offer the best price to power ratio.

ALL of the batteries commonly used in deep cycle applications are Lead-Acid. This includes the standard flooded (wet) batteries, gelled, and AGM (Absorbed Glass Mat). They all use the same chemistry, although the actual construction of the plates, etc., varies.

The lifespan of a deep cycle battery will vary considerably with how it is used, how it is maintained and charged, temperature, and other factors.

These are some typical expectations for batteries if used in deep cycle service:

Type of battery: Expected battery life in 'deep-cycle' mode

Starting: 3-12 months

Marine: 1-6 years

Golf cart: 2-7 years

Gelled deep cycle: 2-5 years

AGM deep cycle: 4-7 years

Starting batteries are commonly used to start and run engines. Engine starters need a very large starting current for a very short time. Starting batteries have a large number of thin plates for maximum surface area. The plates are composed of a lead sponge, similar in appearance to a very fine foam sponge. This gives a very large surface area, but if deep cycled, this sponge will quickly be consumed and fall to the bottom of the cells. Automotive batteries will generally fail after 30-150 deep cycles if deep cycled, while they may last for thousands of cycles in normal starting use (2-5% discharge).

Deep cycle batteries are designed to be discharged down as much as 80% time after time, and have much thicker plates. The major difference between a true deep cycle battery and others is that the plates are SOLID lead plates not sponge. This

gives less surface area, thus less "instant" power like starting batteries need. Although these can be cycled down to 20% charge, the best lifespan vs. cost method is to keep the average cycle at about 50% discharge.

Golf cart batteries are quite popular for small systems and RVs. The problem is that "golf cart" refers to a size of battery (commonly called GC-2 or T-105), not the type or construction – so the quality and construction of a golf cart battery can vary considerably – ranging from the cheap off brand with thin plates up to the true deep cycle brands, such as Crown, Deka, Trojan, etc. In general, you get what you pay for.

Marine batteries are usually a "hybrid", and fall between the starting and deep-cycle batteries. In the hybrid, the plates may be composed of lead sponge, but it is coarser and heavier than that used in starting batteries. It is often hard to tell what you are getting in a "marine" battery, but most are a hybrid.

Gelled deep cycle batteries, or "Gel Cells" contain acid that has been "gelled" by the addition of Silica Gel, turning the acid into a solid mass that looks like gooey Jell-O. The advantage of these batteries is that it is impossible to spill acid even if they are broken. However, there are several disadvantages (must be charged at a slower rate and lower voltage to prevent permanent damage; in hot climates, water loss can be enough over 2-4 years to cause premature battery failure).

AGM, or Absorbed Glass Mat, deep cycle batteries have all the advantages (and then some) of gelled, with none of the disadvantages, and they can take much more abuse. Since all the acid is contained in the glass mats, they cannot spill, even if broken. This also means that since they are non-hazardous, the shipping costs are lower. In addition, since there is no liquid to freeze and expand, they are practically immune from freezing damage. Nearly all AGM batteries are "recombinant" – what that means is that the oxygen and hydrogen recombine INSIDE the battery. AGMs will cost 2 to 3 times as much as flooded batteries of the same capacity. In many installations,

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Reforming Electrolytic Caps

Many hams know about the aging of electrolytic capacitors. Vintage radio gear that has not been powered up for a long time needs to have its capacitors “reformed”.

Electrolytic capacitors achieve their high capacitance by forming a very thin oxide layer on their aluminum electrodes. This layer is formed when a voltage is applied to the capacitor during manufacture and during normal operation. When not powered the oxide layer breaks down over time so that the capacitor leakage current increases. When voltage is again applied to the capacitor the oxide layer slowly forms again. If the capacitor has been powered down for a long time the leakage current at start up might be high enough to overheat the capacitor and even cause a catastrophic explosion.

The process of “reforming” consists of applying voltage to the capacitor through a resistor. The resistor limits the current to a value that will not cause overheating and damage to the capacitor until the oxide layer can reform. As the oxide layer forms the leakage current decreases and the applied voltage can be increased to rated voltage in two or three steps. This reforming process can

take many hours depending on the size of the capacitor and its condition.

This is all well known. What is not as well known is what constitutes a “long time” of not being powered.

A ham friend of mine was recently downsizing his house and offered me some radio gear which had not been in operation for some years. My brother just became a ham and was looking for equipment, so the match was made. I had some other older test equipment I had not used in a while that I was going to give him as well. I began to wonder if the electrolytic capacitors in this gear would need reforming. A search on the web revealed some interesting results.

Kemet, on their documentation, states their capacitors have a shelf life in excess of three years at 40C. Other anecdotal evidence says 5 to 10 years is not a problem. And the DOD MIL-HDBK 1131B “Storage Shelf Life and Reforming Procedures for Aluminum Electrolytic Fixed Capacitors” recommends that non-military grade capacitors should be good for 4 years from date of manufacture if stored under “non-controlled” conditions. An MS thesis from the University of North Texas collected test data and verified that lifetimes were in excess of 5 years. So, draw your own conclusion. But don’t fire up that old boat anchor without some serious body armour!

Leakage Currents in Milliamps for Modern Aluminium Electrolytic Capacitors								
Limits according to EN130300								
µF \ Volt	10	20	50	100	200	350	450	600
1	0.01	0.01	0.01	0.01	0.02	0.03	0.03	0.04
2	0.01	0.01	0.01	0.02	0.03	0.05	0.05	0.07
5	0.01	0.01	0.02	0.04	0.06	0.08	0.10	0.12
10	0.01	0.02	0.04	0.06	0.09	0.13	0.16	0.19
20	0.02	0.03	0.06	0.09	0.15	0.22	0.26	0.31
50	0.04	0.06	0.11	0.17	0.28	0.41	0.48	0.59
100	0.06	0.09	0.17	0.28	0.45	0.66	0.78	0.96
200	0.09	0.15	0.28	0.45	0.72	1.06	1.27	1.55
500	0.17	0.28	0.52	0.84	1.37	2.02	2.41	2.94
1000	0.28	0.45	0.84	1.37	2.22	3.28	3.91	4.78
2000	0.45	0.72	1.37	2.22	3.60	5.32	6.34	7.76
5000	0.84	1.37	2.59	4.20	6.83	10.10	12.04	14.73
10000	1.37	2.22	4.20	6.83	11.09	16.40	19.56	23.92

2013-2014 Membership Application/Renewal

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

- Single \$25 (\$20 after Feb 1, 2014)
- Family \$30
- Junior \$15 (under 18 years of age)
- New Ham - Free (if licensed in current Membership year)
- Emailed *Groundwave* Mailed *Groundwave* (add \$10.00)

Please Note: Membership year is September 1, 2013 to August 31, 2014.

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.

Do you want an OARC NAME TAG? Yes Second or Replacement Yes

ORDER DETAILS - As to appear on badge:

First Name _____ Call Sign _____