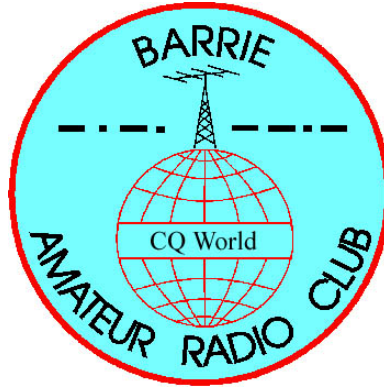


BARC  
Newsletter



Issue # 2007-8  
October 2007

Club call: VE3GCB

Club repeater: VE3RAG  
147.000+

## Barrie Amateur Radio Club Newsletter

### Editorial

The Barrie-Orillia Hamfest 2007 went very well; there are a couple of pictures in this newsletter, and lots more posted on the BARC website.

We will be running another Basic Amateur Radio Course, hopefully starting in November. The length of the course has been increased to 17 classes (2 hours per class) to have more time to cover the material and to include review time and equipment demonstrations. Last course, we tried to fit 2 chapters of the RAC Basic Study Guide into each two hour class – this proved to be too rushed for most students (and instructors).

One important recent event regarding the acceptance of Amateur Radio by the Simcoe County Emergency Management group is the creation of a “HAM Radio Emergency Communications” (HREC) Project to ensure that during a County of Simcoe emergency, HAM radio communications will be available if required. Part of this project involves licensing a large number of County staff as Amateur Radio Operators – the first class to be about thirty people in size. The Simcoe County Emergency Planning website is at:

<http://www.county.simcoe.on.ca/health-and-social-services/emergency-planning/>

BARC will be assisting the Barrie Scouts in JOTA which occurs 20 and 21 October 2007.

To learn more about JOTA check <http://home.tiscali.nl/worldscout/Jota/jota.htm>. This is a special year as they are celebrating the 100<sup>th</sup> year of Scouting and the 50<sup>th</sup> year of Jamboree on the Air. If you are interested in getting involved, contact someone from the BARC executive.

If you have anything you would like included in future issues of the newsletter, please email them to me or bring them to a club meeting.

Editor – Al Duncan VE3RRD

### Permission to Use

Anything in the Barrie Amateur Radio Club Newsletter may be used in other Amateur Radio publication provided credit is given to the author and to the Barrie Amateur Radio Club.

If you have any inquiries, you can contact the club via the following email address:

[HamRadio@barriearc.com](mailto:HamRadio@barriearc.com)

Be sure to visit the Barrie Amateur Radio Club webpage at:

<http://www.barriearc.com/>

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## Next Club Meeting

The next BARC meeting will be on Tuesday, 9 October 2007. Start time is 7 pm and the location is upstairs in the Zehrs Store community room at the corner of Big Bay Point Rd and Yonge St. You do not need to be a club member to attend the BARC meetings. Everyone is welcome.

Minutes of all meetings back to November 2004 can be found by clicking on the BARC Minutes of Monthly Meetings link found on the club webpage.

Back issues of this newsletter for 2007 can also be downloaded from the BARC website.

If you would like to do a presentation or a “show and tell” at one of the BARC meetings, please contact someone on the executive. Come and show off your latest ham project.

## Other Events

Don't forget the regular Monday evening ARES net at 7:30pm on the VE3RAG (147.000+) repeater. Net control is Dave VE3ILA

### **Morning Breakfast Groups**

Currently there are two “Ham” breakfast gatherings in Barrie – everyone is welcome (talk-in is on VE3RAG 147.000+).

- Every Saturday morning at 8am at “Debb’s Place” restaurant located at 352 Huronia Road near the intersection with Big Bay Point road.
- Most Wednesday mornings at 9am at the Paradise Cafe in the Atrium building located at the corner of Cundles Rd. and St. Vincent (check on VE3RAG).

**Jamboree On The Air (JOTA)** – 20 & 21 October 2007 (Oro-Medonte location)

**BARC Elections** – 13 November 2007

**Basic Amateur Radio Course** – 15 November 2007 (exact date and location to be determined)

**Annual Christmas Dinner** – December 2007

*If you can help out with any of the above events, please contact the club executive.*

## From the Virtual Bookshelf

WNYSORC repeater directory: <http://www.wnysorc.org/wnysorc/repeaterlists/index.html>

Presentation on IRLP from the Mississauga Amateur Radio Club -  
[http://www.hamfiles.com/marc/MARC\\_short\\_irlp.pdf](http://www.hamfiles.com/marc/MARC_short_irlp.pdf)

Info on IRLP can be found at: <http://www.irlp.net/>

Info on EchoLink is found at: <http://www.echolink.org/>

For a listing of Fleamarkets, Hamfests etc.: <http://rac.eton.ca/data/racfleas.taf?function=form>

If you are interested in Contesting, try WA7BNM's Contest Calendar:  
<http://www.hornucopia.com/contestcal/index.html>

RDF and Hidden Transmitter Hunting – <http://www3.sympatico.ca/alduncan/ham/RDFing.pdf>

Amateur Radio FM Repeater Basics – [http://www3.sympatico.ca/alduncan/ham/Repeater\\_Basics.pdf](http://www3.sympatico.ca/alduncan/ham/Repeater_Basics.pdf)

My Search for the Ultimate VHF/UHF Station –  
[http://www3.sympatico.ca/alduncan/ham/Ultimate\\_VHF\\_UHF\\_station.pdf](http://www3.sympatico.ca/alduncan/ham/Ultimate_VHF_UHF_station.pdf)

Care and Feeding of Gel Cell Batteries – [http://www3.sympatico.ca/alduncan/ham/Gel\\_Cell\\_Batteries.pdf](http://www3.sympatico.ca/alduncan/ham/Gel_Cell_Batteries.pdf)

Where to Shop for Electronic and Amateur Radio Parts and Equipment –  
[http://www3.sympatico.ca/alduncan/ham/parts\\_stores.htm](http://www3.sympatico.ca/alduncan/ham/parts_stores.htm)

### **Canadian Amateur Radio Licensing Info**

**RIC-7** question bank for Basic Qualification can be downloaded from Industry Canada at:  
<http://strategis.ic.gc.ca/epic/site/smt-gst.nsf/en/sf01900e.html>

**RIC-8** question bank for Advanced Qualification can be downloaded from I.C. at:  
<http://strategis.ic.gc.ca/epic/site/smt-gst.nsf/en/sf01901e.html>

**RIC-3** (replaced RIC-24) Information on the Amateur Radio Service: <http://strategis.ic.gc.ca/epic/site/smt-gst.nsf/en/sf01008e.html>

Other Industry Canada documents relating to Spectrum Management and Telecommunications can be found at: [http://strategis.ic.gc.ca/epic/site/smt-gst.nsf/en/h\\_sf06073e.html](http://strategis.ic.gc.ca/epic/site/smt-gst.nsf/en/h_sf06073e.html)

Links to websites on antennas, electronics and other ham related topics:  
[http://www.martindalecenter.com/Calculators1A\\_3\\_HamAc.html#HAM-ANT](http://www.martindalecenter.com/Calculators1A_3_HamAc.html#HAM-ANT)

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Looking for some “new” ham gear? Check the Ontario Swap Shop <http://www.ontarioswapshop.com/>  
And the LSR swap page <http://www.alslinkwith.com/ve3lsr/swap.htm>

## Recent Events

### June meeting Presentation



Ian Snow VA3QT gave a demonstration of the WinLink and AirMail over packet radio system. The picture on the left shows his portable WinLink system set up at the Hamfest to send email over ham radio.

More information on WinLink 2000 can be found at <http://www.winlink.org/> on AirMail can be found at <http://www.airmail2000.com/>

### Barrie-Orillia Hamfest 2007



There was a good turnout at this years Hamfest with lots of good ham equipment (and junk) exchanging hands. More pictures are posted on the BARC website.

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## The Technical Corner

In the “The Technical Corner”, subjects of a more technical nature relating to Amateur Radio and electronics will be covered. This will include the reprinting of technical submissions from other newsletters. Please send any submissions that you wish included to me, this includes any good articles you have from old newsletters from other clubs.

Editor: Al Duncan VE3RRD

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# Notes on Making a 1:1 Balun using Ferrite Beads

Kevin Purcell - N7WIM  
Edited by Al Duncan – VE3RRD

Baluns are used to connect balanced antennas to unbalanced transmission lines (coaxial cable). They prevent antenna currents from flowing down the outside of the cable. They should be located right at the antenna. The following notes on Balun design are mostly from the QRP List.

A few years ago, George, W5YR (SK), developed a version of the W2DU bead balun using large Fair-Rite beads. The beads for RG-58/8X are about 1/2 inch in diameter and 1-1/8 inches long. Material is type 43 and they are available from Mouser. The balun tested consisted of 5 of the large beads over a short length of RG-8X fitted with a connector on one end. The total choking inductance is about 19uH with each bead contributing about 3.8uH.

The W5YR bead type choke balun is cheap and easy to make, It's five 1-1/8 ferrite beads, type 43 material, Fair-Rite #2643540002. These are the right ID to slip over RG-8X coax. George Baker, W5YR (SK) developed and suggested this balun design in QRP circles. It may not handle QRO power for very long, but I think (no real data here) that its good for 50 - 60 watts, CW duty cycle.. At least it didn't get warm when I put 80 watts through it for 1 minute on 40 meters.



Palomar has kits of beads, material unknown to me, that are about the same size as those from Fair-Rite. The cost is about \$9 and \$18 for the two size kits. Shipping is \$8 per order.

[http://www.palomar-engineers.com/Balun\\_Kits/balun\\_kits.html](http://www.palomar-engineers.com/Balun_Kits/balun_kits.html)

If you look at the (large) beads they sell

[http://www.palomar-engineers.com/Ferrite\\_Beads/ferrite\\_beads.html](http://www.palomar-engineers.com/Ferrite_Beads/ferrite_beads.html)

Only two match the dimensions quoted in the balun. And they're type 43.

Given the dimensions, the frequency range and the beads they sell I suspect they use eight FB-56-43 (\$1.65/each) in their RG-58 balun kit Model BA-58 for \$8.50 and eight FB-102-43 beads (\$3.30/each) in their RG-58 balun kit Model BA-8 for \$16.50.

Comparing dimensions of the bead used by W5YR (a Fair-rite 2643540002 - a Round Cable EMI Suppression Core) appears to be the same as the FB-56-43. At 77c each that's \$6.16 for 8. A bit cheaper than Palomar. Fair-rite 2643102002 (Mouser 2643102002) appears to be the same as the FB-102-43 for \$1.67 instead of Palomar's \$3.30 a piece.

<http://www.mouser.com/search/ProductDetail.aspx?R=2643102002virtualkey62300000virtualkey623-2643102002>

The Wire Man also has balun kits that seem more "price competitive" and smaller Amidon /Fair-rite EMI Suppression Beads in both type 43 and type 73 (Amidon FB 43-2401 aka Fair-rite 2643002402) and FB 73-2401 aka Fair-rite 2643002402). These are six times shorter than the long beads (0.190")

and W2DU used 50 of them giving a balun about 9.5" long -- the same as the Palomar balun. As you can get them for \$0.25ea/50 that's \$25 for a balun. The long beads are a good deal, unless you want type 73.

<<http://thewireman.com/baluns.html>>

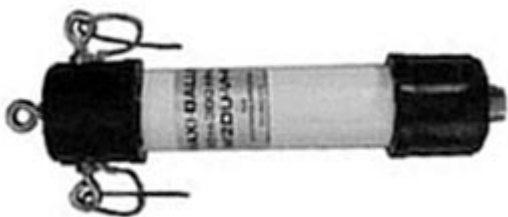
W8JI has also measured these sorts of baluns (along with solenoid and scramble wound air-core baluns). I'm suprised that none of them get to > 1000 ohms impedance. He also has a couple of interesting comments:

<[http://www.w8ji.com/Baluns/balun\\_test.htm](http://www.w8ji.com/Baluns/balun_test.htm)>

Adding more beads is very inefficient. W2DU(1) has about twice the beads as W2DU(2), yet it has 53% of the current and 49% of the power dissipation! This does increase power rating by a factor of four, but it is still too low to prevent balun heating [at 1.5kW].

From his measurements, W2DU(1) is more reactive than W2DU(2) (more beads == more inductance) but W2DU(1) is not more lossy (resistive) than W2DU(2). In fact at 30MHz W2DU(1) is less resistive than W2DU(2).

So perhaps eight big beads (9 or so inches) is a good number for this.



W2DU balun for 160 through 10 meters from Unadilla.  
<<http://www.unadilla.com/products.htm>>

W8JI also has some good comments on material selection for baluns. QRPers may well prefer to try type 73 material too.

<[http://www.w8ji.com/core\\_selection.htm](http://www.w8ji.com/core_selection.htm)>

The excellent presentation on killing RFI (by stopping RF currents on shield ... just what a choke balun does). Especially "Different Tools for Different problems".

<<http://www.audiosystemsgroup.com/Ferrites-Ham.pdf>>

The bead balun design is capable of handling powers into the kilowatt range which is overkill for QRP. It does look neater but there's no need to put more weight up at the feedpoint of the antenna than you need to.

For QRPers an HF choke balun wound on a toroid would suffice. And would be cheaper.

You could use type 77 if your interests are to the lower side of HF. Or type 43 covers HF well with a multi turn choke (> 10 turns on type 2.4" OD 1.4" ID Fair-rite 5943003801 toroid -- should fit RG-58). Remember the inductance goes up as the square of the number of turns through the core which is much faster than the linear increase of inductance with the number of beads. You could even use RG-174 to get the turns count up on a smallish core like 0.87" OD Fair-rite 5943007601 or the 1" OD Fair-rite 5943001401.

Or perhaps a bead balun on RG-174 with 9.5" inches of small beads. Eighteen type 73 Fair-rite 2673003201 (.105" ID, 0.500" long). Or eighteen type 43 Fair-rite 2643003201 (.105" ID, 0.500" long). Or ten type 43 Fair-rite 2643250202 (.125" ID, 1.00" long) -- the latter are burnished and might be less of a tight fit for 174.

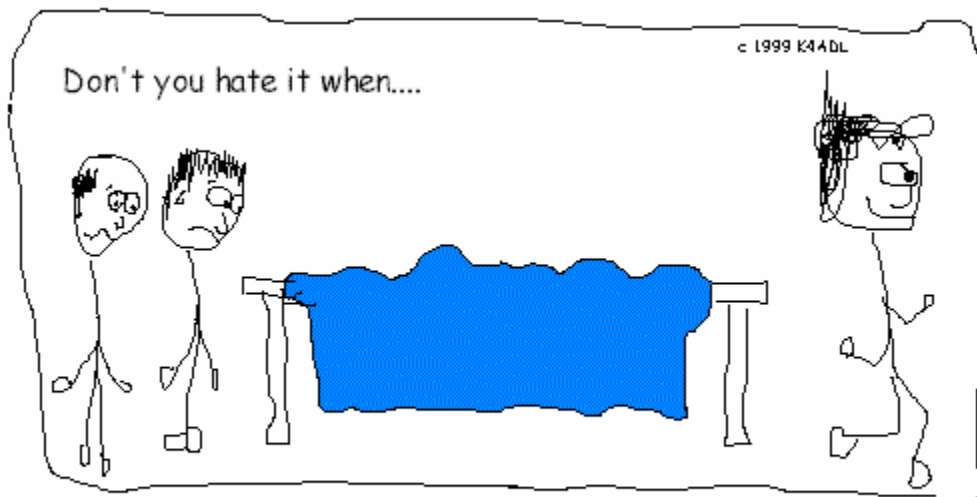
Note the baluns in the last couple of paragraphs haven't been built, so things may not fit (and I've not checked the power requirements, but for QRP I believe they suffice).

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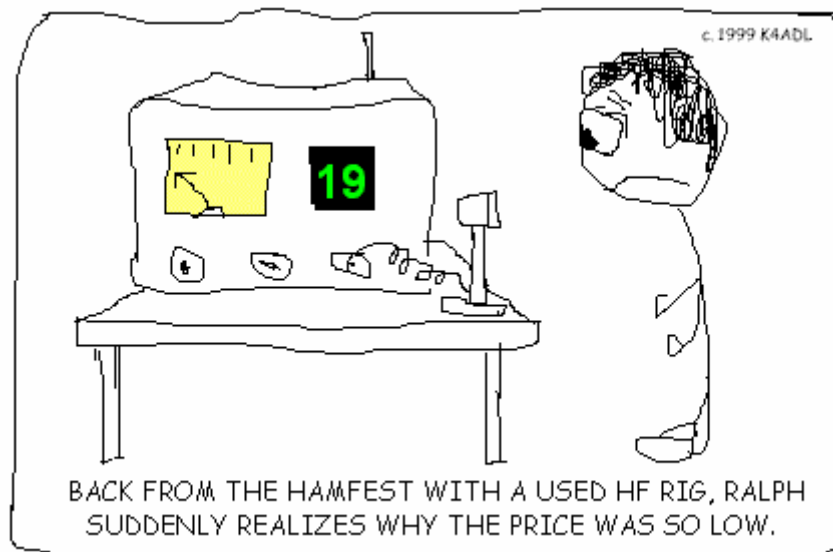
Kevin Purcell

kevinpurcell@pobox.com

More info on the W2DU balun can be found at <http://www.w2du.com/r2ch21.pdf>



WITH HIS HAMFEST TABLE SECURELY PROTECTED FROM EARLY-BIRD BARGAIN HUNTERS BY THE DREADED OPAQUE BLUE TARP, LOUIS HEADS OFF FOR A LEISURELY BREAKFAST.





## **Basic Amateur Radio Course**

(Tentatively starting 15 November 2007 if there is a minimum of 8 students)

**Thursday evenings from 7pm to 9pm**

(17 nights total)

**Barrie Central Collegiate**

**125 Dunlop Street West, Barrie**

(Class location has not been confirmed yet and may change)

**Cost: \$80**

Includes:

Radio Amateurs of Canada Basic Study Guide (\$50 value)

Barrie Amateur Radio Club Membership for 2008 (\$20 value)

Basic Examination on the last night (\$10 value)

Cost for classroom to hold course (\$20/person, based on 8 students)

**For further information contact:**

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Or

Al Duncan VE3RRD (email: [ve3rrd@rac.ca](mailto:ve3rrd@rac.ca)), phone: (705) 734-9081