The SPARC

Amateur Radio - Communicating Worldwide for A Century

Newsletter of the Boston Amateur Radio Club

Serving Hams in the Greater Boston Area

October 2014 - VOLUME 26, NUMBER 10

www.barc.org - w1bos@arrl.net

Message from the President *– Joe Chapman, NV1W*

I've been playing a lot with microcontrollers of late, a side effect of seeing what Rex Harper, W1REX (the tuna can QRP kit guy), does with PICAXE controllers and the arrival of the new Arduino for Ham Radio *book from the ARRL.*

*Rex sells a staggering array of kits at <**www.qrpme.com**>, including an updated version of the old Rockmite transceiver. You may remember the original Rockmite that Eric, K1NUN (SK), showed the last time he gave a talk at a club meeting: a crystal-controlled QRPp rig built into an Altoids tin. Rex's Rockmite][has a PICAXE chip that adds an iambic keyer. Keep in mind that this is a transceiver that you can cover with one hand that sells for $40.*

Another eccentric qrp.me kit is a small PICAXE-based cricket simulator that uses a temperature sensor to set its chirp rate. A silly thing, but it also illustrates how you can add a microcontroller to a small project without too much hassle or cost. The 8-pin PICAXE-08M2 chip costs about as much as a taco ($2.95 at SparkFun) and while you won't be mining Bitcoin with it, it packs a lot of punch into such a small package.

The other new arrival in the shack was the book Arduino for Ham Radio *by Glen Popiel, KW5GP. It starts with a good introduction to Arduino and how to interface it to various devices. This is followed by about twenty projects, most of which are surprisingly simple to construct. Along the way you get introduced to some interesting components including a lightning detector chip and the Emic 2 text-to-speech module.*

One upcoming Arduino project for me will be a keyboard interface for the KX3 so I can do PSK and RTTY without having to use the laptop. My one attempt to send RTTY via the CW paddles was a five watt QSO with Hans, DL1YFF/p, on holiday in Saxony. It was a success, but for some things I just want to use a keyboard, and RTTY is one of them.

Speaking of building things, I want to draw your attention to this month's general meeting. I met our speaker, Dave Robertson, KD1NA, at an ARRL shindig a year or so ago. Dave has a wealth of knowledge about dealing with surface mount devices, and his enthusiasm for homebrewing is infectious. I could hardly wait to get back to my soldering iron. Even if you've never launched a 1206-size part across the room while trying to hold it down with a dental pick, you'll enjoy this meeting.

In the words of my recently speech-enabled Arduino Uno, "73, carbon-based life forms!"

Joe Chapman, NV1W

October General Meeting

BARC's next general meeting will be held on Thursday, October 16, at 7:30 pm at Brookline Police Headquarters in Brookline Village. Our speaker will be Dave Robertson, KD1NA, who will be giving a talk on homebrewing including tips on dealing with surface-mount devices.

Keeping with the homebrewing theme, we'll be raffling off an Octopart pocket PCB, with SMD outlines on one side and an unusually sensible resistor color code chart on the other.

BARC Meeting Calendar for 2014

Unless otherwise noted, all meetings will take place at the Brookline Police Headquarters; the map is later in this newsletter.

General Meetings

~~February 19~~	~~Wed~~	~~7:30 pm~~
~~March 19~~	~~Wed~~	~~7:30 pm~~
~~April 17~~	~~Thu~~	~~7:30 pm~~ ~~***at the Clay Center in Brookline***~~
~~May 15~~	~~Thu~~	~~7:30 pm~~
~~June 19~~	~~Thu~~	~~7:30 pm~~
~~September 18~~	~~Thu~~	~~7:30 pm~~
October 16	Thu	7:30 pm
November 20	Thu	7:30 pm

VE Sessions

~~April 14~~	~~Mon~~	~~7:30 pm~~
~~July 14~~	~~Mon~~	~~7:30 pm~~
October 13	Mon	7:30 pm

Business Meetings

~~March 6~~	~~Thu~~	~~7:30 pm~~ ~~***at the Cambridgeside Galleria Food Court***~~
~~June 5~~	~~Thu~~	~~7:30 pm~~
~~September 4~~	~~Thu~~	~~7:30 pm~~
December 4	Thu	7:30 pm

BARC Net Preamble

The control operator for the BARC Net is Joe, W1JJF. He rarely misses a net, but when he does any ham can take up the position and run the net. To assist you in opening and closing the net The BARC Net Preamble is printed below. Do not be afraid to step up and take the challenge.

Is there any further business for the repeater before we begin the Boston Amateur Radio Club Net? This is ***<<YOUR CALL>>****.Calling the Boston Amateur Radio Club Net. This is <<YOUR CALL>>, my name is <<YOUR NAME>> and I am located in* ***<<YOUR TOWN>>****. This net meets each Monday evening at 9 pm Eastern Time on the 145.230 Boston repeater, PL 88.5. This net is an informal round table discussion concerning matters of interest to the members of the Boston Amateur Radio Club and the Boston Amateur Radio community in general. When checking into the net, please say, "this is" and drop your carrier to check on doubling. Then give your call sign, name and location. All amateurs are welcome to join the net. Any check-in's for the Boston Amateur Radio Club Net please call now.*

[Compile the list of the check-in's and proceed with the net.]

Is there any further business for the net before I close? Hearing nothing, this is ***<<YOUR CALL>>*** *closing tonight's session of the Boston Amateur Radio Club Net. I would like to thank everyone who participated in the net and those who stood by while I ran the net. The Boston Amateur Radio Club Net will return next Monday evening at 9 pm Eastern Time. This is* ***<<YOUR CALL>>*** *returning the repeater to general amateur use. 73.*

BARC Badges! -- *Joe Chapman, NV1W*

Rick, NV5A, the Sign Man of Baton Rouge, is now offering BARC badges. They're full-color plastic badges with our logo and your call sign and first name, at a basic price of $11.50 for a badge with a safety pin fastener. Rick was a great help in designing a badge for us, and he does good work and ships promptly.

We have not yet been added to the club page (go to <**www.thesignman.com**>, click on "Club & Group Items", then click on "Other Clubs & Organizations") but we should be soon. In the meantime you can contact him directly and mention the Boston Amateur Radio Club.

Ten-Tec Rebel Model 506 Open Source QRP Transceiver – *A Review by Joseph Chapman, NV1W*

The Ten-Tec Rebel is a five watt CW transceiver for the 20 and 40 meter bands priced at a little under $200. The big deal is that it's a completely open source transceiver built around the Chip Kit Uno32 processor. "Open source" means that both the hardware design and the software are freely available, and you're allowed and in fact encouraged to modify them to your heart's content. The Uno32 processor is an Arduino-compatible microcontroller, which means there are already gobs of software a Google search away, as well as a bus architecture for interfacing sensors, GPS receivers, real-time clock chips, and anything else you might imagine. It would be possible to add a Geiger counter to the Rebel for a complete post-apocalyptic package.

Rebel Model 506 Open Source QRP Transceiver, $199
Ten-Tec, Inc., Sevierville, TN, <http://www.tentec.com>

The Rebel seems to have generated a lot of excitement, enough that it was out of stock in August when I first tried to buy one. There's a Yahoo group, and some hardware and software mods have already been contributed. I bought the rig directly from Ten-Tec, and it arrived promptly once it was back in stock and worked out of the box.

The rig is about the size of a thick paperback; it won't fit in the Pelican 1050 case I carry my KX1 in. It weighs a little less than a pound and a half. All you get is the radio and a minimal manual, though the cables are all standard. There's a BNC for an antenna, 3.5 mm jacks for key/paddle and headphones, and a 2.1 mm power plug that wants 10–15V DC. An access panel with two screws covers a mini-USB socket for programming the Uno32.

One of my gripes was the mechanical design; you remove four screws and the antenna connector to open the thing. Although I obviously haven't had a chance to remove and replace the case a hundred times the threading doesn't feel like the screws are intended to be constantly removed and replaced, and for a "hackable" rig you'd expect them to be. There also isn't any provision for adding connectors and the like in a nice way; all the examples I've seen of external displays have them hanging off on wires like something out of the movie Brazil.

The front panel controls include a power switch, a large tuner knob, pots for volume and RIT, and two push buttons marked SELECT and FUNCTION. There are two sets of three LEDs that display status for the push buttons and an additional cute orange LED in the Ten-Tec logo.

The first annoyance is to switch bands you have to open the box up and move five jumpers. So far I've found two solutions on the Yahoo group: there's a "Rebel Alliance Mod" for which you construct a small circuit board with strategically placed 2.54mm sockets that fit down over the jumpers and a pair of relays. The more Arduinoish approach is a shield design by Glen Popiel, KW5GP, that uses latching relays and also includes a display interface and a jumper for selecting I^2C bus voltage. Glen's design requires a change to the power switch (to select bands), whereas I really want to do this in software, so I suppose I'll have a third way.

Once you've selected the proper band, it's time to deal with tuning. Using 20 meters as an example, when you turn the rig on it comes up on 14.060 MHz. You then watch the cute LED in the Ten-Tec logo as you turn the tuning dial; it flashes once every 100 Hz/1 kHz/10 kHz (this is selectable from the front panel). Can you say 'QRG?'?

A final common complaint is the lack of a built-in keyer. I assume Ten-Tec didn't want to write their own Arduino keyer (which would have been dumb) or have to include third-party libraries in their base software. In any case modifications to add a keyer have already been written.

As a transceiver the performance seemed adequate, considering the fact that it's a two hundred buck radio. No complaints about the receiver, though it isn't something to rave about either, and it benefits from an external audio filter like the NEScaf. On the transmitting side I got about four and a half watts out with no bad reports on the CW tone. There's no internal antenna tuner, and nobody's designed one yet, so watch the SWR. For lab reports, see the review in August's QST by Glen, KW5GP.

Gripes aside, the fact that the Rebel is so easy to modify makes fixing most problems a simple matter of programming, or waiting for someone else in the user community to do it. I've already found myself planning modifications that would be difficult to impossible with another rig. One group actually modified the Rebel to do JT65, (i.e., converting a CW-only rig to do a digital mode) which I find mind-blowing.

There are certainly better minimalist QRP rigs, and the Rebel isn't going to supplant my KX1 anytime soon. Out of the box, the feature set is limited, enough so that if you're not going to modify it you'll be disappointed, but for a hackable Arduino platform with a usable CW transceiver attached to it I say bravo. Now where did I put that Geiger tube?

I See the Future

Note: There are no BARC meetings in July or August.

13 Oct	**BARC VE Session**
18 Oct	**BARC General Meeting**
20 Oct	MIT Flea (Cambridge)
8 Nov	FARA Flea (Bourne)
20 Nov	**BARC General Meeting**
4 Dec	**BARC Business Meeting**
6 Dec	**SKYWARN Recognition Day (Blue Hill Observatory, Milton)**

(Rp) = BARC Repeater likely to be used

As you might expect, there are many more events (public service, hamfests, flea markets, etc.) taking place - some only peripheral to ham radio. For information on these, covering much of the Northeast, the "Ham - Electronic Flea Market" and the "PSLIST" lists tell the story. Of course, if you know of an event that would be of interest to the readers, please let the Editor know.

Got a Story? Why Not Share It? *-- Joe Harris, N1QD*

We are always looking for articles for the newsletter. I have reserved this space for your articles, tips, how-to's, or other ham related information. Send your submissions to the Editor, Joe, N1QD, at <**n1qd@n1qd.org**>.

Articles for the November issue must be received by November 8.

Businesses Can Advertise Here

The SPARC accepts commercial advertisements. BARC encourages monthly promotion of your products and services which would be of interest to hundreds of our members and others interested in the Amateur Radio Service.
The rates for display advertising are:

1 col x 2 in. (business card)	$15 per issue
1 col x 2 in. (business card)	$75 per 6 consecutive months
1 col x 2 in. (business card)	$125 per 12 consecutive months
1 col x 4 in. (1/2 column)	$30 per issue
1 col x 9.5 in. (full column)	$60 per issue

Originals of ads must be presented to the Editor in MS Word or .jpg format to print 1:1. Other composition will be at extra cost. We will be glad to quote other ad sizes and durations. Members are urged to seek prospective advertisers who are appropriate to our readers. For additional information, contact Joe Harris, N1QD, at 781.844.8684 or <**n1qd@n1qd.org**>; or Bob Salow at <**wa1ida@arrl.net**> or 508.650.9440.

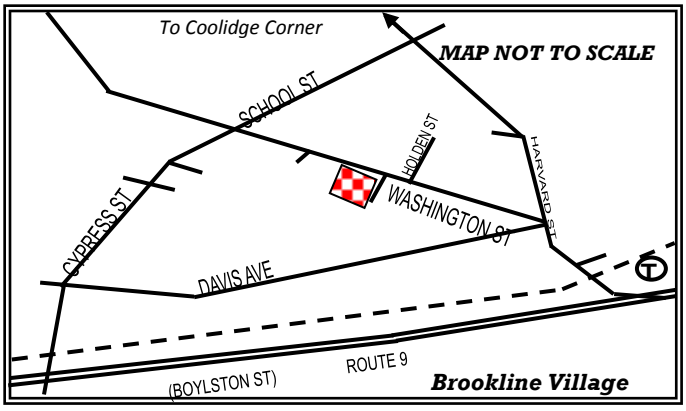
Quarterly Business Meetings -- *Bob Salow, WA1IDA*

As the Bylaws require, BARC has Business meetings quarterly. Unless circumstances warrant, BARC Business meetings will be held on the first Thursdays of December, March, June, and September. The next such meeting will be on **4 December 2014** at the Brookline Police headquarters. All members are urged to attend and participate in club affairs. This is where club functions are discussed and decided, and your help is needed to guide us.

A short opening period of each General meeting will continue to be used to bring any immediate business matters to everyone's attention.

To provide continuity of club business between meetings we also have a virtual business meeting via an email list. Any member interested in the affairs of the club can ask to be on this virtual meeting list – just give your name, call and your email address to President Joe Chapman, NV1W.

Directions to the Brookline Police Headquarters, 350 Washington Street, Brookline MA



BARC Volunteer Exam Sessions

The Boston Amateur Radio Club schedule has been revised to suit the needs and interests of the applicants and examiners. **The 2014 exam session schedule is shown elsewhere in this newsletter issue.** Generally, sessions are held at Brookline Police Headquarters, 350 Washington St in the Community Room (across from the information desk). A map is shown above.

We give all exams (Technician, General, and Extra). *Testing is by reservation only.* Please bring the following with you:

- Your current license and a photocopy for the ARRL, if you are upgrading
- Any CSCEs you are claiming, and a photocopy of them
- Valid ID (picture ID preferred)
- A pen and a calculator (if you want to)
- $**15.00** (good for all the tests you take at that session, except for retests)

Note: Written tests can be taken sequentially at the same session for the same $15 fee. The needed FCC forms will be provided.

To reserve a seat or for further information, contact: Jim Clogher, N1ICN, <**n1icn@arrl.net**> or Linda Blair, NA1I, <**na1i@arrl.net**>.

Your Personal Ad Could Have Been Here

Are you a depressed BARC member because you have a treasure you must turn to cash? Cheer up, Bunky! *The SPARC* will run your (non-business) ad for free. Of course, a 10% donation if you sell it will be cheerfully accepted. Just send your ad to the Editor, Joe Harris, at <**n1qd@n1qd.org**>.

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The Boston Amateur Radio Club is a non-commercial association of persons interested in the Amateur Radio Service. The Club is organized for the promotion of interest in Amateur Radio communication and education, for the establishment of emergency communications in the event of disasters or other emergencies, for the advancement of the radio art and the public welfare, for the representation of the radio amateur in legislative and regulatory matters, and for the maintenance of collegiality and a high standard of conduct.

The Club is open to all persons interested in Amateur Radio without regard to race, color, religion, creed, national origin, gender, disability, or sexual preference. Our General and Business meeting locations are handicap accessible. Other meeting and activity locations may be handicap accessible by arrangement.

The Club is an ARRL-affiliated Special Service Club, and is a member of the Council of Eastern Massachusetts Amateur Radio Clubs (CEMARC) and the New England Spectrum Management Council (NESMC). The Club is also an associate member of the Courage HandiHams system.

Greater Boston Net Directory

Daily 5:30 pm	**Eastern Mass/Rhode Island Phone Net (NTS)**	**3.915**
Daily 7 pm	**MARI (Mass/Rhode Island CW Net) (NTS)**	**3.658**
Daily 8 pm	**Eastern Mass 2M Traffic Net (NTS)**	**145.230 (PL 88.5)**
Daily 8 pm	**Slow Speed CW Net**	**28.160**
Daily 10:00 pm	**Heavy Hitters Traffic Net (NTS)**	**MMRA-linked repeaters: 146.610, 146.670, 146.715, 146.820, and all 222 and 440 repeaters**
First Mon 8:30 pm	**EMA Section ARES Net**	**146.610 and all MMRA links**
Mon 9 pm	***BARC Club Net***	***145.230 (PL 88.5)***
Tue 8 pm	**MMRA Club Net**	**146.610 and all MMRA links**
Wed 8 pm	**Wellesley Amateur Radio Society Net**	**147.030; 444.600 (PL 88.5)**
Wed 9 pm	**HHTN Swap Net**	**146.640 (PL 136.5)**
Sat 9 am	**Northeast SATERN Net**	**7.265**
Sun 9:30 am	**Yankee SSB Net**	**50.275**
Sun 8 pm	**Algonquin Amateur Radio Club Net**	**446.675 (PL 88.5)**
Sun 8:30 pm	**NSRA Net (with Newsline)**	**145.470 (PL 136.5)**
Sun 9 pm	**CAARAnet**	**145.130 (PL 107.2)**