



# The SPARC

**Amateur Radio - Communicating Worldwide for A Century**

Newsletter of the Boston Amateur Radio Club

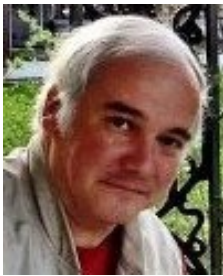
**Serving Hams in the Greater Boston Area**

June 2019 - VOLUME 31, NUMBER 6

[www.barc.org](http://www.barc.org) - [w1bos@arrl.net](mailto:w1bos@arrl.net)



## Message from the Editor – Joe Chapman, NV1W



Field Day is less than two weeks away, on June 22 and 23, and as usual, BARC will be operating from the Bare Cove Fire Museum in Hingham. This is a high point of the year for me and for many other BARC members as well. If you've never been to Field Day before, consider joining us on Saturday, Sunday, or both. At the very least, consider coming for the cookout on Saturday.

We'll start setting up on Saturday morning, and in addition to helping out, you'll also learn a lot about setting up a station and erecting temporary antennas. It's always fun to see what equipment others bring, and if you avoid buying ham equipment in the weeks after Field Day you have more self-control than I do.

Operating starts at 14:00 on Saturday. There will be plenty of Extra class licensees available to pair up with Technicians who want to try out HF. You may want to learn about a new mode like PSK31, or just watch experienced operators work. Even old dogs will find plenty of new tricks to learn.

I hope at long last to demonstrate a successful satellite contact. The SSB/CW satellite FO-29 will have a nice high pass starting at 16:40 on Saturday afternoon that looks perfect. To quote Bullwinkle J. Moose, this time for sure!

Thanks also to Greg, KC1CIC, and Dan, KZ2X, for contributing articles this month.

## In this Issue of The SPARC

- A FEMA/Red Cross traffic exercise
- Building a Slim Jim antenna
- Meetings and events



## BARC General Meeting, Thursday, June 20, 7:30 p.m.

The next BARC General Meeting will be held on Thursday, June 20<sup>th</sup> at 7:30 p.m. at Brookline Police Headquarters in Brookline Village. Directions can be found at <http://barc.org/directions-to-brookline-police-headquarters-brookline/>. This is the elections meeting and our last meeting until the fall.

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### **BARC's Online Discussion Group – Joe Harris, N1QD**



BARC has an online forum at Yahoo groups. The Yahoo group serves as a sounding board for members to post their suggestions and comments, and is intended to foster discussion. The group can also be used to share photographs from club events! Come visit us at: <http://groups.yahoo.com/bostonARC>.

### **20 Years Ago in *The SPARC* – Joe Chapman, NV1W**

In the June, 1999, issue of *The SPARC*, the upcoming Field Day was the topic of the month — Bob, WA1IDA, provided a recap of ham support for the Aviation Expo at Logan Airport — To mark the beginning of hurricane season, the NWS provided some preparation tips — Exercises were being held for the looming Y2K event — Paula Jones, an air traffic controller from Logan, was scheduled to speak on Doppler radar at the June meeting — *And elsewhere, the Bhutan Broadcasting Service brought television transmissions to the kingdom for the first time.*

### **Radio Amateurs Demonstrate Emergency Messaging Capabilities for Red Cross, FEMA – Greg Bennett, KC1CIC**

On May 23<sup>rd</sup> I participated in the exercise. Marcia, KW1U. Eastern Massachusetts Section Traffic Manager, and Peter, KC1HHO, were there as well.

For an overview of the purpose of the exercise please click here: <http://www.arrl.org/news/radio-amateurs-to-demonstrate-emergency-messaging-capabilities-for-red-cross-fema>

I found out about the exercise on May 9<sup>th</sup> and volunteered. The scenario dictated that only one station per state could participate. Each station had to be in the field, be able to operate voice and digital, not operate on commercial power, have a minimum RF output of 100 watts, and be able to operate on 80, 40, or 20 meters. The digital software required was *fldigi* and *flmsg*.

The ARRL HQ station W1AW was Net Control Station. It was our job in the field to pass digital traffic to them. Once they received all field station digital traffic, they would then relay it to Baltimore MD at a joint meeting of the Red Cross and FEMA.



The digital software proved to be the biggest challenge initially as I had worked only with *Winlink Express* up to now. Peter, KC1HHO, and I had *fldigi/flmsg* running on 2 meters and were able to help each other out getting it to work. For HF I was on my own. Using dummy loads on my “go-kit” HF radio (Yaesu FT-891) and my base station radio (Yaesu FT-991) I was able to establish a lab and work out the various issues of radio, computer, and sound card settings as well as the settings on *fldigi*. Google of course was a tremendous help!

As part of the exercise individual “canned” messages were sent to the participants a week before the test. Participants were instructed to use Red Cross form 5739 and populate the form using their canned

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Simplex: 147.420

449.175 ( - ) DMR CC1

## ***The SPARC***

message data. We were also free to add to the data. I then tested sending that message quite a few times in the lab, tweaking the setting on the radio and the Signalink for a full 100 watts out without overdriving the audio.

On exercise day I set up at my usual location at Wompatuck State Park. First business was using the bow and arrow to get the fishing line over the tree branch and pull through the lanyard used for raising the 80-meter wire antenna as an inverted V. I then set up the generator, the table, go-box, table, etc. While doing this I had a number of curious Park Rangers, staff, and DCR police come watch and ask questions. Once of the DCR officers (Paul) knows me from past years and that I set up often on Saturdays. Marcia, KW1U, and Peter, KC1HHO, arrived at that point. Peter did a fantastic job of educating visitors about what we were doing and with amateur radio in general.



I was ready and standing by when at 10:00am W1AW called the voice net on 80 meters. Nets were simultaneously called on 40 and 20 meters as well. I was happy with how strong the signal was on 80. Massachusetts was the first state called on the net and I replied. He came back that I had a strong signal. Success part 1!

He then called all the other states on voice on 80 meters. I was able to relay for two states that W1AW couldn't hear. Now the big test—sending the message.

W1AW called my station and instructed me change to the digital frequency, wait 10 seconds and transmit. I changed frequency and re-tuned. With the message already opened

and ready in *flmsg* I counted to 10 and clicked on the “Autosend” button. During the 90 seconds it took to transmit the message I had a sharp eye on the SWR/Power meter, the radio's transmit power meter and the amp meter display. Doing this in a lab using dummy loads was one thing, doing this live with a lot of eyes watching was a whole different experience!

Once the message concluded I switched back to the voice frequency per pre-arranged instructions and waited. KC1CIC de W1AW, message received. Success part 2!! Relief and success at the same time. You just can't beat that feeling!

At that point I monitored other stations sending their traffic and was able to show several visitors the traffic downloading live from those stations. W1AW closed the net at around 10:30am. After getting the Jeep packed up Marcia, Peter and I headed off to lunch!

The exercise clearly showed what served agencies are looking for when being supported by ARES and NTS. Voice is good but sending forms via digital radio is what they want more of now and in the future.

The exercise also demonstrated that experience with a single digital software package is not enough. I was experienced with *Winlink* but had to adapt to using another software package and to become knowledgeable in its configuration and use.

*[BARC member Greg Bennett, KC1CIC, is the Eastern Massachusetts Assistant Section Traffic Manager and the DEC/NTS Liaison.]*

## **Member News – Joe Chapman, NV1W**

Send your news for this column to Joe, NV1W, at [nv1w@arrl.net](mailto:nv1w@arrl.net).

**145.230 ( - ) CTCSS 88.5/100.0**

**Simplex: 147.420**

**449.175 ( - ) DMR CC1**

## ***The SPARC***

### **Working the International Space Station – Joe Chapman, NV1W**

BARC has received a query from the Ryan Seacrest Foundation asking whether we'd be interested in doing the radio side of a contact with the International Space Station from Children's Hospital in Boston under the ARISS (Amateur Radio on the ISS) program. The event would take place sometime in the first half of 2020.

We've assembled a core team and the Foundation will be submitting their application this month, but it would be great to involve more people. If you're interested in participating, please contact Joe Chapman, NV1W, at [nv1w@arrl.net](mailto:nv1w@arrl.net).

### **Building a Slim Jim Antenna – Dan Cross, KZ2X**

Amateur radio is a social activity. By its very nature, the entire premise of the hobby is communications and while I am usually more focused on homebrewing and tinkering, I recently decided to make it a priority to connect with more local hams.

The obvious and age-old answer to the question, "what is the lonely ham to do?" is to find a club; a quick search led me to the BARC. But after joining I discovered that much of the organized "on-the-air" activity focused on FM phone nets on VHF and above, bands I was not adequately set up for at my QTH in Cambridge.

When I do go on the air, I am usually chasing DX with a combination of SSB and digital modes on HF. My main rig is an Elecraft K3s feeding a G5RV haphazardly strung on the roof of our condo (much to the chagrin of the neighbors. Remember: forgiveness, not permission, though the wisdom of this strategy is debatable when you share an interior wall...) and while I do have an HT, checking into nets on a handheld was unsatisfying. Further, I have a base-station radio capable of covering 2m, 70cm and 23cm that, much like my Harley, really wants to be used. But I was lacking antenna systems for 2 meters and up, save for 222 MHz: I find that band interesting since it is so underutilized, and have a vertical dipole set up on a mobile FM rig as a base station for it. But again, nothing for 2m or 70cm.

Fortunately, in contrast to HF, antennas for VHF and above are pleasantly small, and I'm lucky to have attic access. So a 2m antenna mounted in the attic seemed like an ideal place to start.

### **Requirements and Selection**

No antenna system is ideal for all uses, but for starters I wanted something that I could primarily use for accessing local repeaters. My friend Bill, WS3O, down in Pennsylvania, is heavily into VHF and up contesting and frequently after me to participate. I am also very interested in amateur satellite work, but I was willing to forgo both of those for the time being: as a mostly HF operator, repeaters seemed like a good way to dip my toe into the VHF pool, and I have some limited experience from 1.25m, while both contesting and satellites feel more like tossing oneself into the deep end. On the other hand, if the selected antenna had enough bandwidth that I could dual-purpose it for an SDR receiver or public safety band scanner, that might be interesting. So the idea of an all-around, vertically polarized, omnidirectional antenna with reasonable gain, fairly wide bandwidth and low take-off angle appealed.

I evaluated several potential designs, including the standard  $\frac{5}{8}$  vertical with radials, a half-wave vertical dipole, the discone, and the "J Pole" but I eventually settled on the "Slim Jim," which hit pretty much all of my requirements.

The Slim Jim is an end-fed, folded dipole with a quarter-wave matching section. It has about 6 dB of gain over a  $\frac{5}{8}$  vertical, and a very low take-off angle of approximately 8 degrees relative to the horizon. It will also cover about 8 MHz of spectrum with a VSWR less than 2:1, and I was pretty sure it would fit in my attic.

### **Why Build?**

While slim jims are commercially available, I decided to build one instead of buying a pre-made antenna.

In my day job as a software engineer, I frequently have to ask and answer the question, "buy or build?" That is, do we build something new from scratch, or do we attempt to adapt existing software to our needs? Most often the correct engineering

**145.230 ( - ) CTCSS 88.5/100.0**

**Simplex: 147.420**

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## ***The SPARC***

answer is to “buy,” even if no money trades hands in this day of free and open source software. But it is simply more cost effective to leverage existing work rather than reinvent the square wheel ourselves.

But this is usually the less personally satisfying answer: I like building things. Fortunately one of the joys of the amateur radio hobby is that we are not constrained by such pragmatic concerns: this is a hobby, not a job, and I am a ham in large part because it gives me the opportunity to build things and put those things to use.

So while I could buy a pre-built, tuned and tested Slim Jim from someone like KB9BVR over at [www.jpole-antenna.com](http://www.jpole-antenna.com), I decided to build one from scratch instead because I thought it would be fun and hopefully I would learn something.

### **Materials, Measurements and Building**

Many amateurs construct slim jim antennas using a section of 450 Ohm ladder line, but I took a cue from the [jpole-antenna.com](http://jpole-antenna.com) site and decided to use ½” copper pipe instead. I swung by Metropolitan Pipe and Supply in Somerville and picked up several 10’ sections of schedule “M” pipe for about 80¢ per foot. I also bought several 90° elbow pieces and end caps: construction calls for four elbow pieces and two end caps, but at pennies each I splurged and picked up a couple of extra spares in case I made a mistake during construction. As it turns out, I deformed one of the corner pieces applying too much heat while braising, so one of the spares came in handy. I already had a panel mount UHF connector and some 12 gauge solid copper wire.

Materials in hand, I needed dimensions. UK amateur John, M0UKD, maintains an online “slim jim calculator” at <https://m0ukd.com/calculators/slim-jim-and-j-pole-calculator> that I used to determine the section lengths for the antenna: one enters the center frequency one would like to tune for and the velocity factor of the antenna material, and the calculator produces the antenna’s dimensions. I used the site’s defaults of 145 MHz and 0.96 velocity factor, despite using copper pipe of larger diameter than the assumed copper wire: this meant that the resonant point of the antenna would be slightly higher but that was okay as I wanted to be able to span the entire band, and 145 MHz is only a quarter of the way in: I hoped for resonance at approximately 146 MHz.



I used metric units throughout the build, as I have a metric/standard tape measure and that’s what the calculator gave me. A pipe cutter was used to cut sections of the 10’ pipe segment to length: I find that a pipe cutter gives a much more precise cut than a hack saw and it’s simple to use. I measured the dimensions as best as I could, marked the pipe segment with a sharpie (in one case making my daughter hold the end of the measuring tape as I marked the required length), and lined up the cut as accurately as I could. While there is a lot of variability in each of those steps, the cuts turned out very nicely and were very accurate.

One of the things to be careful about in a build like this is accounting for how the size of the elbows and end caps affect the overall length of each segment. For the elbows I bought, I measured the side length at 3 cm, but the inner length that would fit onto the straight tube sections at 1.25 cm. I similarly measured the thickness of the end cap at 0.05 cm. So whereas M0UKD’s calculator listed the length of the half wave radiator at 99.3 cm, this section also has one elbow and an end cap, meaning that the actual cut length of the pipe section is  $99.3 - 3 + 1.25 - 0.05 = 97.5$  cm.

For assembly, I decided to secure the pieces using lead-free plumbing solder and flux, heated by a blowtorch. This is not something to use an iron or even a soldering gun for: the copper pipe will absorb too much heat to create a good connection, and the resulting cold joints will be mechanically weak. I used the plumbing solder simply because it is thicker than the spool of Kester I keep on my bench and would feed the joint better during soldering. I prepared the pipe by buffing the ends, elbows and end caps with 150 grit sandpaper and applying a healthy dose of flux to ensure good wicking and a good connection.

**145.230 ( - ) CTCSS 88.5/100.0**

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Braising is also not something I do ordinarily, so it was a bit of a learning curve over the course of the build. It frequently looked like solder was just disappearing, but it was in fact being wicked into the joint. Lack of confidence here led to me applying too much solder, which was annoying to clean up.

Given the heat and exhaust involved, I made sure to do the construction outside, and I wore welding gloves and a face mask I keep for when I'm using my bench grinder: safety first. However, I also wore open-toe flip-flops and some solder did give me a nasty surprise as it dripped off the pipe and the back-splatter landed on my foot. Ouch. I was not hurt, but did learn a lesson that "safety first" extends to footwear as well: next time, it will be the leather work boots in addition to the hand and eye "pro." A picture of the soldered antenna is attached: my neighbor, who was working in his garden while I was assembling asked if it was a trombone.

Aside from burning my foot, the hardest part of the build was attaching the panel-mount connector. This antenna is tuned through placement of the connector and its center conductor, and M0UKD's calculator says that the feed point should be 5cm from the bottom, but I wanted to get a good match at 146 MHz so I fiddled with it a bit. I soldered a length of 12 gauge solder copper wire to the center post of the SO-239 connector; the outer braid would be attached somewhere along the quarter wave matching section, eyeballed at approximately 5cm. The central challenge here was keeping the connector relatively stable while I adjusted the position and measured the return. I ended up using rubber bands to hold everything in place as best I could while I attached a length of RG-8u coax to the antenna and ran the other end into an antenna analyzer. I took VSWR readings across a 4 MHz span centered on 146 MHz, thus covering the entire 2m band, and tweaked the connector's position things until I had something very close to 1:1 at center. This was tedious, and moving things even slightly had significant effects on my readings.



Finally I had things just right, but now had a conundrum: by this time, I was back inside the house at the work bench, and using the braising torch wasn't really an option. Moreover, I was not at all sure that soldering wouldn't move the connector so as to throw off the resonant point: would the rubber bands simply melt and snap off? Would I clumsily bump the connector and move it? I compromised and decided to try a soldering gun to make a point connection strong enough to hold until I could take the entire apparatus back outside and braise it properly. Sadly my soldering gun didn't provide enough heat to make even a weak connection. I ended up using two soldering irons in tandem with some lower-melting point leaded solder to make a tack joint that was "good enough" to last the short time required to go back outside and reflow things properly. Luckily, as indicated in the attached image, VSWR was still spot-on across the band despite the improvised process and lack of relevant skill: a qualified plumber I am not.

But at this point, the antenna was fully assembled and tuned and ready for permanent installation.

## **Installation**

The penultimate step was to mount the antenna in the attic and run a transmission line back down into the shack. I chose to use a 25' run of RG-8u, which has about 2.8 dB of loss per hundred feet at 150 MHz; since I was only running 25' cable, loss should be less than 0.7 dB. I made about 6 or so turns at approximately 4" meter through a large diameter ferrite toroid to act as an RF choke to attenuate common mode currents along the outer braid which still left plenty of cable to get from my intended mounting point back down to the radio.

Our building was built in 1890, and we have a flat roof. Moving around in the attic is always something of an adventure: I have bumped my head up against the rafters enough times to justify buying myself a hardhat. That and a sturdy pair of work gloves are both worth way more than what I paid for them. Again, safety first. And yes, I always wear boots up there.

**145.230 ( - ) CTCSS 88.5/100.0**

**Simplex: 147.420**

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## ***The SPARC***

Some former resident had installed ceiling speakers, and the connection point for those happens to be in the shack: I had high hopes I'd be able to use the existing faceplate to snake my feedline up into the attic, but I couldn't find a sufficient opening into the electrical box. I ended up taking a 2 ¼" holesaw to the wall to create an aperture large enough to accommodate the coax and PL-259. I fed a short section of rigid copper electrical wire bent into a loop through the hole in the wall, with the ends sticking out into the shack. Then I climbed up into the attic with the antenna, coax, 30 feet of mule tape and a flashlight. I tied one end of the mule tape near one of the PL-259s on the feed line and carefully dropped the other end through the copper wire loop I'd pushed into the wall. I went back down into the shack, and pulled the copper wire loop out of the hole, bringing the free end of the mule tape with it: then it was a simple matter of slowly pulling the mule tape, and ultimately the UHF connector and some of the coax, back into the shack. That completed, I went back into the attic and secured the antenna vertically, lashing it to the rafters and joists with nylon twine. The antenna was now fully installed.

The final step was connecting it to the radio and tuning around. I could key up the W1BOS repeater pretty easily, so it was working. Huzzah! Success!

### **Conclusions, Next Steps and Lessons Learned**

The antenna appears to work very well. I've gotten good signal reports from local repeater users, and I can break into the W1GLO repeater 30 some miles away: not bad from the relatively low attic mounting in my electrically noisy QTH in a semi-urban environment.

The next steps will probably be to neaten the cable run into the shack, and put a faceplate of some sort over the hole I cut in the wall. I need to get back up into the attic and do something to improve the mounting of the antenna: relying on what amounts to old string isn't a particularly good solution.

Using the braising torch for this project proved to be an interesting learning experience. Lesson: wear boots. Other lesson: while it may appear that solder is simply evaporating under the torch's heat, it's actually flowing into the joint.

Using copper pipe and joints and this amount of heat was an interesting and honestly not entirely comfortable experience. Whereas with a wire antenna one can often trim the ends to achieve resonance, once you cut the pipe and solder on the end caps and elbows you are committed to working with that you have: measure twice, cut once and work carefully.

Regardless, mounting the UHF connector was the hardest part of the build. The rubber band solution to hold things in place while I tack-soldered followed by braising worked, but I am fairly certain that was just dumb luck. If I were to repeat this build for a future project (or similar: perhaps for UHF?) I would try to come up with a better solution.

As designed, this antenna is not particularly good for weak signal or satellite work: I've tried picking up several satellites including AO-91 and the ISS as their orbits have gone through various elevations relative to my QTH, but I have not heard anything, even weak reception. On the other hand, I can tune the NOAA weather transmitter at Pack Monadnock on 162.525 MHz, almost 60 miles away. Surely the low take-off angle and lack of directional gain are the dominant factors here.

Overall, I am satisfied with how this build turned out: the intent was to give myself an opportunity to start exploring a band I haven't spent a lot of time with and to plug myself into the local amateur community, and it has fulfilled both those objectives.

## ***The SPARC***

### **BARC Meeting Calendar for 2019**

Unless otherwise noted, all meetings will take place at the Brookline Police Headquarters.

#### **General Meetings (\* Business/General Meetings)**

June 20*	2019	Thu	7:30 pm — <i>Elections</i>
September 19*	2019	Thu	7:30 pm
October 17	2019	Thu	7:30 pm
November 21*	2019	Thu	7:30 pm

#### **VE Sessions**

July 8	2019	Mon	7:30 pm
October 14	2019	Mon	7:30 pm

### **New Business/General Meetings – Joe Chapman, NV1W**

The Bylaws require that BARC hold four Business meetings per year. In an attempt to streamline our meeting schedule, BARC Business meetings will now be held concurrently with the General meetings in March, June, September, and November. We will attempt to keep the business portion of these combined Business/General meetings to a half hour. The next such combined meeting will be on **June 20, 2019** at Brookline Police Headquarters in Brookline. 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.

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 Secretary Joe Chapman, NV1W.

### **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-ins 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.*

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## ***The SPARC***

### **I See the Future**

15 June	ARRL Kids Day
16 June	Flea at MIT, Cambridge
<b>20 June</b>	<b>BARC General Meeting, Brookline Police Headquarters, Brookline, 7:30 pm</b>
<b>22–23 June</b>	<b>Field Day, Bare Cove Fire Museum, Hingham</b>
6 July	Deadline for articles for the July SPARC
<b>8 July</b>	<b>BARC VE Session, Brookline Police Headquarters, Brookline, 7:30 pm</b>
13–14 July	IARU HF World Championship
20–21 July	North American QSO Party, RTTY
20–21 July	CQ Worldwide VHF Contest
21 July	Flea at MIT, Cambridge

**▲ Note change from usual date and/or location**

**(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.

For an up-to-date calendar of events, including web links, visit <http://www.barc.org/calendar>.

### **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 × 2 in. (business card)	\$15 per issue
1 col × 2 in. (business card)	\$75 per 6 consecutive months
1 col × 2 in. (business card)	\$125 per 12 consecutive months
1 col × 4 in. (½ column)	\$30 per issue
1 col × 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 Chapman, NV1W, at 617.267.6349 or [nv1w@arrl.net](mailto:nv1w@arrl.net).

### **Two Ways to See Yourself in Print! (well, PDF) – Joe Chapman, NV1W**

We are always looking for articles for the newsletter. I have reserved this space for your articles, reviews, tips, how-tos, hints, kinks, photos, schematics, or other ham related information. Photos of you operating or your shack are especially welcome. Send your submissions to the Editor, Joe, NV1W, at [nv1w@arrl.net](mailto:nv1w@arrl.net). Articles for the July issue must be received by July 6.

## ***The SPARC***

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 Joe Chapman, NV1W, [nv1w@arrl.net](mailto:nv1w@arrl.net).

## **BARC Volunteer Exam Sessions**

The Boston Amateur Radio Club offers license exams quarterly. **The next exam session will be on Monday, July 8, 2019.** Test sessions are held at Brookline Police Headquarters, 350 Washington St. in the Community Room (across from the information desk).

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 picture ID or two valid non-picture IDs
- 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](mailto:n1icn@arrl.net), or Linda Blair, NA1I, [na1i@arrl.net](mailto:na1i@arrl.net).



## **NEW ENGLAND SCI-TECH**

New England Sci-Tech Inc is a new 501(c)(3) STEM education center, amateur radio training center, and maker space located at 16 Tech Circle, Natick. It is home to New England Amateur Radio Inc (NE1AR) and the youth radio club Sci-Tech Amateur Radio Society (STARS). NE Sci-Tech welcomes memberships and donations via [www.NESciTech.org](http://www.NESciTech.org) or [www.NE1AR.org](http://www.NE1AR.org).



*Our heroes make a Field Day satellite contact*

**145.230 ( - ) CTCSS 88.5/100.0**

**Simplex: 147.420**

**449.175 ( - ) DMR CC1**

## ***The SPARC***

### **BARC Officers and Staff**

President: *(position vacant)*

Vice President: Mark Duff, KB1EKN  
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Secretary: Joe Chapman, NV1W  
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Treasurer: Jim Clogher, N1ICN,  
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Volunteer Exams:

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Linda Blair, NA1I, [na1i@arrl.net](mailto:na1i@arrl.net)

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Public Information Officer: Geri Duff, KB1ISG  
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Membership Services: Linda Blair, NA1I  
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Newsletter Editor: Joe Chapman, NV1W  
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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 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.

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## ***The SPARC***

### **Greater Boston Net Directory**

Daily 7 pm	MARI (Mass/Rhode Island CW Net) (NTS)	3.565
Daily 8 pm	Eastern Mass 2M Traffic Net (NTS)	145.230 (PL 88.5 in/100.0 out)
Daily 8 pm	Slow Speed CW Net	28.160
First Mon 8:30 pm	EMA Section ARES Net	146.610 and all MMRA links
Mon 8 pm	New England DMR Net	DMR New England Talk Group (TG 3181)
Mon 9 pm	BARC Club Net	145.230 (PL 88.5 in/100.0 out)
Sun Mon Wed Fri 10 pm	Heavy Hitters Traffic Net (NTS)	MMRA-linked repeaters: 146.610, 146.670, 146.715, 146.820, and all 222 and 440 repeaters
Tue Thu Sat 6 pm	MA RI Phone Net (NTS)	3.978
Tue 7:30 pm	Clay Center ARC Net	446.325 (PL 146.2)
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	Waltham Wranglers 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)

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