

BARS Billerica Amateur Radio Society

NEWS FOR AND BY BARS MEMBERS

SEPTEMBER 2022

BARS physical meetings are on hiatus until further notice.

The decision to resume in-person club meetings will be made entirely by the Board based on the outlook of this medical emergency.

Meanwhile, virtual club meetings using Zoom have proved an enjoyable substitute. Please ignore the section, below which gives directions and schedule for in-person meetings. It is hoped that we can resume inperson meetings by the new year.

The Board has decided to resume in-person Saturday morning breakfasts at Stelio's Restaurant. However, virtual breakfast meetings using Zoom will continue to provide an enjoyable substitute for those who wish to avoid physical presence.

The VE License Exam Sessions, have gone back to in-person exams – see the VE section near the end of the newsletter for details.

The safety and well-being of our membership is important to us.

--BARS Management.

Next BARS Zoom meeting: September 7 at 7:00 PM: "Linux in Your Hamshack"

Presenter: Andy Stewart, KB1OIQ

This talk will introduce people to "Andy's Ham Radio Linux", a popular Free and Open Source Software collection based on Ubuntu Linux and tailored for amateur radio users.

Andy Stewart (KB10IQ) joined the hobby in 2007 and holds an Amateur Extra license. He has been involved with the Linux community since 1997. Andy has a Master's Degree in Electrical Engineering focus on computer engineering) from Worcester Polytechnic Institute (WPI).

By day, Andy builds and uses computer simulations to test digital logic circuits. By night, he can be found doing ham radio projects, FT8, 2m phone, casual DXing, and vintage radio restoration.



BARS will announce the link to join the Zoom meeting before the meeting, but it will be posted to the BARS email list and should not be shared outside our Club. Are you on the email list? If not, please send an email to bars-subscribe@w1hh.org and then simply reply to the robot response from the server and you will be subscribed.

Observing our Zoom meeting requires only a web browser and headphones/speakers. You do not need a webcam or microphone unless you want to speak or be seen.

Before our meeting date, please go to https://zoom.us/test and see if it will function for you. If you have problems, we can try to assist – feel free to ask questions on the BARS email list.

We are looking forward to "seeing" many of you on Wednesday 9/7 here at 1900.

Billerica Amateur Radio Society

A Message From the Editor

from Marla Wallace, WA1GSF

Don't it always seem to go That you don't know what You've got 'till it's gone?

Your editor has been on vacation in the back woods of New Hampshire (actually, a very nice lakeside cottage at Winnipesaukee) and has had no internet access, despite the cottage being advertised as having WiFi. So this month's newsletter is running late. I had to wait until Saturday afternoon to send it out for review.

The best laid plans o' mice and men gang aft aglee.

Feature Article: Crystals And Grounding (Not New Age Material!)

By Andy Wallace, KA1GTT

Recently, Tom Walsh, K1TW, asked if I would not mind looking into what's wrong with his Ten-Tec R4020 QRP transceiver. A few months ago Ten-Tec announced they were no longer accepting radios for servicing.

The rig is actually a rebranded Youkits HB-1A 40 and 20m QRP CW transceiver, now replaced by the HB-1B (80/40/20/15).



The R4020

He had found that the key and headphone jacks were getting loose, and the major problem was that the rig exhibited an odd microphonic problem. Tapping the case and sometimes just tuning the radio would cause an echoing "BOINGGGGG" sound. It would come and go. He opened the case to try to find the issue and thought he was on track when he touched one of the 4.915

MHz filter crystals and the BOINGGGG got louder. So before I was handed the radio, I had an idea of where to look.

I powered the R4020 up on the bench with headphones and sure enough, the extraneous noises were there. I opened the case and extricated the PCB.

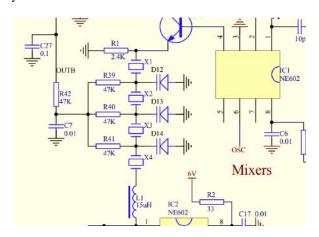
The radio has two AA cell holders attached with a removable cable, making disassembly easier. The BNC jack connections had to be unsoldered to get the board out. Since the problem was on receive I didn't need to transmit to find the issue and an antenna connection was not necessary.



The Innards

The two inexpensive 1/8" jacks had, what I thought, was fairly sparse solder on the pins. I re-soldered the multiple pins on the board and retested. The microphonics were still there but now the headphone jack was more stable.

Moving on, I tried touching components on the board. Once I touched the pair of crystals toward the bottom of the board and the yellow trimmer capacitor I heard the microphonic noise quite clearly.



Partial Schematic: 4.915 MHz Filter

Instead of plug-in filters used on more expensive rigs, frequently homemade receivers and QRP kits will use inexpensive, discrete crystals as a filter circuit for better selectivity. But using such crystals you must be careful of mechanical instability which can cause symptoms like this.

In building kits by Elecraft and others, I found the procedure added grounds to the cans of the HC-18/U crystals. This shields the crystal and puts it at ground potential at the circuit board.

I decided to try grounding the two lower crystals that exhibited the most microphonics, and add grounds to the others for good measure should that help. A multi-meter determined that there were available vias (board holes) tied to the ground plane near each crystal, as if the layout allowed for this but perhaps board assembly eliminated the step.

The trick to soldering to crystals is not to damage the quartz crystal and connections inside the can with too much heat. Using a fine tipped Metcal iron, I added a dab of solder on the top of the cans and ran 30 gauge wire down to the vias.



#30 Wire-wrap Wire and No-nick Wire Strpper

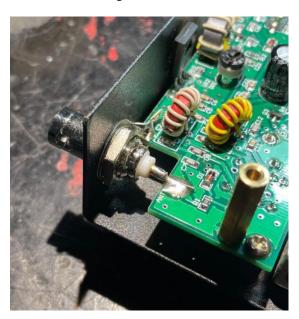
In addition to providing a ground for the crystal, the wire also improves mechanical rigidity, which will tend to reduce microphonic-causing vibrations.

Again powering on the circuit board, I was very happy to find the microphonics were mostly gone! I grounded the other three crystals.



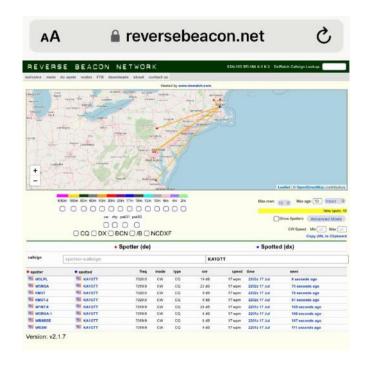
Grounding Wires Attached

The radio went back together without trouble, but at this point, i noticed an additional possible problem. Ten-Tec (Youkits) simply soldered the BNC antenna connector right to the edge of the PCB. I didn't want to trust that for field operations so I added a short length of wire to make things more secure.



A Short Piece of Wire Makes the BNC Connector More Secure

Back together, the rig was happily stable and non-microphonic! I tuned around 40 and tried a couple of CQs for test. The Reverse Beacon Network (www.reversebeacon.net/main.php) heard me in several states!



The Proof of the Pudding: Reverse Beacon Net Reports

Not bad for 3W. I capped off the evening with a QSO with AA3I in Pennsylvania!

So the R4020 will head back to Tom shortly. I am glad my guess as to what was wrong seems to have been correct.

Feature Article: Project Big E - Request to BARS Members

By Larry Krainson, W1AST

Do you remember when you were first interested in ham radio? Do you remember being a new ham? Do you remember the excitement of being a new ham?

Do you remember when you joined your first ham club? Whether it was BARS or another club. The club was excited to have you join.

In these semi post-COVID days, all clubs are lacking new members in the form of new hams to grow your club. Those that have been active keeping your club running, need new members to bring new ideas and club growth into the future.

The Big E in West Springfield MA runs from September 16 through October 2nd. The booth will showcase modern ham radio to the public. Each day, the booth will have 4 to 6 hams from around New England manning the booth and talking to the public. The goal is to get this public signed up to learn more and take ham classes.

[There is more information about Project Big E in the "Strays" column – ed.]

The Big E draws people from all over New England as well as eastern NY. It's not just a local Western MA or northern CT fair, it's all of New England.

We need people to man the booth, to talk to the public, to operate the Special Event Station (N1E) and to help get people signed up. At the end of the Big E, the info of those that signed up will be organized and distributed to clubs close to them. Clubs that helped run the booth get priority with the list of names.

This will be an amazing opportunity for all clubs to help create new hams and to then grow their clubs. Which will then help to grow ham radio in New England!

Being a volunteer is not just for your club board, it's for all hams. This gives you an opportunity to give back to the hobby by recruiting others to join it. Will you help?

There are 17 twelve hour days that need to be filled. Each day has two 6 hour sessions. Some have been completely filled and blocked out, some are still open. Sign up for a session, a day or multiple days.

There are host families available to stay overnight for free if you'll be traveling long distances. Also, each person entering will be re-reimbursed for their admission costs and on Big E fairgrounds parking costs.

We also offer (if notified in advance) the availability of discounted admission costs for family members of \$8 each person vs \$15 regular cost).

We need your help to man the Ham Radio booth at this year's Big E. It's very possible that admission this year will exceed 1.5 million people! If a fraction of those admissions sign up, those are possible new hams that can grow your club.

Please visit the following for more information and to sign up or to join the group:

 $\underline{https://groups.io/g/ProjectBigE}$

https://nediv.arrl.org/project-big-e

https://docs.google.com/forms/d/e/1FAIpQLSd9_iH1ZucHuCFC NwreEuVPWnmLOT5D_s92vHPuEUASS78Tew/viewform?usp =sf_link

If you require further info, please contact Larry, W1AST at W1AST@arrl.net. Larry will be at the HamXpo in August.

Strays

The upper edge of the 300 GHz and up band

Warning: physics ahead!

One interpretation of quantum mechanics says that the universe's dimensions of space and time cannot be divided infinitesimally. In other words, that there is a shortest possible distance and a shortest possible interval (same, thing, really: $\tau = d/c$). This has implications for the radio amateur.

The shortest possible distance turns out to be something called the Planck Length and is a very tiny fraction of a meter. This is, therefore, the shortest wavelength that the universe's space-time can support.

Solving for τ and converting to frequency, the highest possible frequency turns out to be 1.8549×10^{43} Hz. So that's the band edge of our 300 GHz band. Also, this implies that any transmission made on a frequency above 9.274×10^{42} Hz must be pure sinusoids because all harmonics of the signal would be above the Plank frequency.

--de Marla Wallace, WA1GSF

Becoming an ARRL member or is your membership up for renewal?

One of the benefits of being an ARRL Affiliated Club is a commission for recruiting new ARRL members and securing timely ARRL member renewals.

Each new ARRL member earns the club a \$15.00 commission. New members are defined as never having been a member or a returning member that has not been a member for two years. Each renewal earns the club a \$5.00 commission. There is no limit to the amount a club can earn in this program.

Multiyear memberships earn only one commission. Life, Family, International, Blind, and Student memberships are not eligible for a commission. The member will not be eligible to receive a gift or incentive if the club collects a commission on the membership.

Currently at least 82 BARS members are also ARRL members. If we all renewed through the club we could potentiality receive \$410 per year from the ARRL.

If you are interested in renewing your ARRL membership through the club fill out the following form <u>ARRL Affiliated Club Membership Application (pdf)</u>. Then forward it to <u>W1LUS@hotmail.com</u>

Is your Email address on the FCC site up to date? § 97.23 Mailing and email addresses.

Each license grant must show the grantee's correct name, mailing address, and email address. The email address must be an address where the grantee can receive electronic correspondence. Revocation of the station license or suspension of the operator license may result when correspondence from the FCC is returned as undeliverable because the grantee failed to provide the correct email address. [85 FR 85533, Dec. 29, 2020]

I recommend that you log on to the your FCC Registration at https://apps.fcc.gov/coresWeb/updateRegistrationPre.do to make sure that your email address is up to date. Also in the future should you change your home address or your email address be sure to remember to update it on the FCC site.

[The \$35 FCC application fee applies to new, renewal, rule waiver, and modification applications that request a new vanity call sign. The fee will be per application.

Administrative updates, such as a change of name, mailing or email address, and modification applications to upgrade an amateur radio licensee's operator class or to request a sequentially issued call sign, are exempt from fees. – ed.]

-- de Bruce, W1LUS

Project Big E Press Release – ARRL New England Division

FOR IMMEDIATE RELEASE - May 1, 2022

Contact:

Larry Krainson, W1AST 100 Kenmore Drive Longmeadow, MA 01106-2759

Tel: 413-348-3289 Email: wlast@arrl.net

PROJECT BIG E TO HIGHLIGHT MODERN AMATEUR RADIO

Project Big E is a 17-day amateur radio exhibit to be held at the 2022 Big E from September 16-October 3, 2022 in West Springfield, Massachusetts. Western Massachusetts ARRL Affiliated Club Coordinator and Hampden County Radio Association president Larry Krainson, W1AST, is the Project Big E General Chairman.

The Big E, formerly known as The Eastern States Exposition, is billed as "New England's Great State fair." It is the largest agricultural event on the eastern seaboard and the sixth-largest fair in the nation. In 2021, the Big E had 1.5 million visitors, and over 1.6 million visitors in 2019. [according to Wikipedia.org]

Planning for Project Big E is underway. An impressive ham radio booth will showcase the many aspects of modern ham radio, and provide an avenue for people to sign up for information and courses in their local area.

Features proposed for Project Big E will include:

- an EmComm display
- DMR and/or other digital mobile mode demo
- Digital HF modes on a big screen
- A special event station (N1E) with unique QSL cards
- SSB, CW and digital modes
- Demonstrations of portable stations for field operation (i.e., Parks On The Air, Summits On The Air)
- A live ARISS contact

Project Big E can succeed only if there is a sufficient number of volunteers and radio clubs who agree to participate in the event.

A web page has been created at

https://nediv.arrl.org/ProjectBigE.

Also, a special Groups.io mailing list group has been established. To join, send an email to ProjectBigE+subscribe@groups.io.

To volunteer for specific days/hours, go to the special Google form signup sheet and register.

--de Phil Temples, K9HI

[And some more info about Project Big E has arrived.]

June 9, 2022

Dear New England Section Managers,

Phil, K9HI, suggested that I reach out to you all. As you visit online and in person and speak the clubs in your coverage area, would you please announce the Big E project and urge clubs and individuals to participate?

If you visit in person, please print and bring the attached Big E Recruitment flier and hand them out.

Here are some key points to mention:

<u>Dates:</u> Friday, September 16th through Sunday, October 2nd for 17 days

Why do a booth: To help clubs in New England grow by bringing in new people that want to become hams. All clubs need new members to stay strong and to build a future.

The Booth:

- To showcase modern ham radio to the public
- To interest the public in signing up for more information and ham classes
 - This list will then be first distributed to the clubs that participate in the Big E Booth. They will have priority in receiving interested parties near them.
 - It will then be up to that club to hold a ham radio class and issue testing
 - New hams from these tests are a natural to join the club that helped them get their license
 - Adding new hams to the club ranks to move the club into the future
- Demonstrations of
 - kit building appealing to the growing maker community (various forms from parts to the completed project)
 - Raspberry Pi and what it can do
 - STEM (Science Technology Engineering Math) learning and how it connects to ham radio and an ARISS contact from the Big E for home schooled students with New England Sci-Tech (school)
 - Morse Code
 - DX Work the World through ham radio
 - Emergency Communications & Public Service

VOLUNTEERS

- Plan a club day and sign up for one session or the whole day!
- Sign up individually for days you are available
- Join with friends to be at the booth
- Operate the Special Event Station N1E from the booth
- Morning sessions are 6 hours and run 9:30 am to 4:00 pm
- Afternoon sessions are 6 hours and run 3:30 pm through 10:00 pm

- Volunteer for the whole day, 9:30 am through 10:00 pm
- The option to stay with a host family closer to the Big E vs driving a long distance to home
 - Two host families so far with 6 available beds (more if you want to camp outside in a big tent)

Learn More At: https://nediv.arrl.org/project-big-e

Sign up at:

https://docs.google.com/forms/d/e/1FAIpQLSd9 iH1ZucHuCFC NwreEuVPWnmLOT5D_s92vHPuEUASS78Tew/viewform?usp =sf link

Group Chat: https://groups.io/g/ProjectBigE

Further Questions? Contact Larry, W1AST at W1AST@arrl.net

BE A PART OF IT!

Amateur Radio Exhibit @ The Big E – N1E West Springfield, Massachusetts September 16 – October 2 2022

"Project Big E" is looking for radio club members and individuals throughout New England to staff a large amateur radio display. You'll help explain amateur radio to thousands of people during the 16-day event.

In the past, 1.5 million people have attended The Big E—billed as the fifth largest fair in the nation! The interested public from across New England will be directed to clubs in their respective hometowns for classes, mentoring, etc.

Planning is underway for this exciting ham radio project. Please promote Project Big E to your radio clubs and club members.



Go to https://groups.io/g/ProjectBigE or scan the QR code for more information and to get involved.



Conn. Building at the BIG E

- · Live ARISS space station contact
- Emergency communications display
- · SSB, CW, DMR, other digital mobile modes
- · Highlight youth involvement
- Showcase today's modern amateur radio activities: Parks/Summits On The Air, QRP, kit building and more!



Upgrading Your License? Here's a Resource

If you are thinking of upgrading your license using one of the Online exam sites. I recommend that you take some free practice exams on HamStudy.org. I recommend it because the software used to generate practice exams on HamStudy.org is the same software that is used to create exams for online tests. By doing that when you take an online upgrade exam the test question format will be familiar. With HamStudy.org practice tests you should use the keyboard to select the answer, A,B,C, or D and not your mouse as that is way online exams are run.

--de Bruce Anderson, W1LUS

Making ZOOM available to Elmers

In this time of social distancing we have been using Zoom for our monthly club meetings. I have been thinking that Elmers could also be using Zoom to coach new hams instead of actually going to visit with them. Elmers could perhaps help with programming a new radio with the new ham sharing their computer screen and the Elmer helping to walk them thru the process. An Elmer could have Zoom on their cell phone and show a new ham how their shack was setup. Use your imagination and see how you might use this tool. If you would like to use Zoom for this, contact Bruce, W1LUS@hotmail.com, with a date and a time and a meeting will be setup for you. You may also contact Bruce if you would like training on using Zoom to Elmer someone.

--de Bruce Anderson, W1LUS

Friday and Sunday Night CW Slow Speed Contest

Every Friday and Sunday night, there is a weekly slow-speed CW contest run by the local K1USN guys. This is a good way to polish up your CW skills. See http://www.k1usn.com/sst.html for details. Currently, the schedule is:

Fridays 20:00-21:00 UTC (3-4pm EST) and Mondays 00:00-01:00 UTC (7-8pm EST Sunday).



Secretary's Reports

from Marla Wallace, WA1GSF, Secretary

BARS General Meeting August 3, 2022, 7 PM, EDT.

Gary called the Zoom meeting to order at 7:05PM. He invited the attendees to introduce themselves and say a few words about their current ham activities.

The program on HamXposition (formerly Boxboro) by Program Chair Phil Temples, K9HI, began at 7:25.

The program ended at 8:10.

A motion to pay \$255.55 for insurance made and seconded. The membership voted by Zoom poll and the motion passed unanimously.

We adjourned 08:15.

There were 26 participants

There was no August BARS Board of Directors Meeting.

BARS Membership

Our current combined membership is 149. To date 67 members have paid for 2022 membership. 44 members from 2021 have not yet renewed their membership. Anyone with a question about their renewal status can email me at w1LUS@hotmail.com to get your current status.

2022 BARS Member Dues

A \$15 annual BARS membership now runs from January 1st and expires on December 31st. Any renewal or new membership made after September 1 will be valid until December 31st of the next year. Memberships allow us to

- Pay our bills;
- maintain our great web page;
- fund field day;
- and bring the membership a great variety of informative meetings and speakers.

Treasurers Report for September 2022

from Bruce Anderson, W1LUS, Treasurer

In August our expenses were \$257.55 for the club liability insurance, Zoom \$15.93, PayPal \$2.57. We had 2 new/renewals for an income of \$30 and \$7 in donations.

-- de Tom Walsh, K1TW

September, 2022

After a re-balancing of our two bank accounts we now have \$668.39 in the Bank and \$916.48 in our PayPal account for a total of \$1584.17.

We are accepting renewals for 2022. For 2022 dues will remain at \$15.

Dues can be paid several ways:

- Via bank to bank transfer with Zelle, Venmo, PayPal, etc. by sending \$15 to bars.dues@outlook.com.
- With credit card by using the Join/Renewal membership form on the W1HH.org website.
- With cash or check by mailing \$15 to Billerica ARS, 16 Regis Road, Tewksbury, MA 01876

BARS Needs You!!!

We are looking for a few good hams to act as net control on the regularly scheduled Wednesday night nets! All it takes is one night a month; if you are interested contact Doug, N1WRN.

Also, the club needs volunteers for light tasks of ~ 1 hour a month. Are you able to pitch in? Contact Tom Walsh, K1TW.

Wednesday Night Net

Join us on the Westford 146.955 Repeater for the weekly BARS net each Wednesday at 8:00 PM (except on the first Wednesday of the month which is club meeting night). Note: Thanks to the Westford Police Amateur Radio Team (PART) for their generous act of making their repeater available to us.

Repeater info: WB1GOF 146.955 MHz -600 kHz (normal) offset Encode CTCSS 74.4 Hz

Reminder: "kerchunking" the repeater is not only impolite, it's illegal. It constitutes an unidentified transmission. If you need to check that you're making the repeater, say something like "This is <your call> standing by on the frequency." Thanks for your courtesy.

Club Meetings

Because of the continuing COVID health crisis, in-person club meetings are on hiatus. Club meetings are being held "virtually" using Zoom. We hope to resume in-person meetings in the fall.

Club meetings are held on the first Wednesday of the month.

VE Sessions

Our VE sessions are again being held in-person at the Chelmsford Bible Church. Pre-registration for our in-person exams is suggested. Contact w1lus@hotmail.com for registration information.

VE sessions are held every month on the 2nd Thursday at 7:00 PM at Chelmsford Bible Church, 128 Gorham St., Chelmsford MA. Park in back and enter by rear door. Chelmsford Bible Church Hall, 128 Gorham St, Rear Door, Chelmsford MA 01824-3220 (map)

August 11, 2022 VE Session Report

We had six people show up for their exams. Three passed their Technician exam. Two got their General upgrade and one went from zero to Extra. The three new amateurs are KC1RRZ, KC1RSB and AC1NP. Be sure to say hello if you hear them on the air.

Our next Exam session will be on September 8 at 7:00 PM.

Thanks to Don, W1DM, Gary, W1GFF, Paul, W1PAG, and Bill, W1ZL, for their help in running the session.

--de Bruce Anderson, W1LUS

Club Breakfast every Saturday

On Saturday mornings around 8:30AM, have a virtual Zoom breakfast session (link provided in email if you subscribe).

We also meet in-person weekly at 8:00AM for a casual, social breakfast at Stelio's restaurant.

Stelio's Family Restaurant, Billerica, MA

Future Meetings

The 10/5 meeting will be held via Zoom.

Subscribe to the BARS Mailing List

To subscribe to the BARS email list, send a blank email to <u>bars-subscribe@w1hh.org</u> and watch for an automated reply. Note that bars-subscribe is all one word.

Reply to that message from the list server and you are then subscribed.

To post to the list, address your email to bars@w1hh.org

September Get-on-the-Air Suggestions

from Scott Ginsburg, K1OA

BARS is a "get-on-the-air" (GOTA) club. We encourage members to participate in the varied events on HF and VHF.

Make some time to participate in the ARRL VHF contest this month. There will be lots of activity on 6 and 2 meters including the 2m FM simplex frequencies 146.52 and 146.58. You will likely be able to make some contacts with just a 2m handheld radio!

There are several state QSO parties this month:

- Colorado (9/3-9/4),
- Tennessee (9/4-9/5),
- Alabama (9/10-9/11),
- Iowa (9/17-9/18),
- Texas (9/17-9/18),
- New Jersey (9/17-9/18),
- New Hampshire (9/17-9/18) and
- Maine (9/24-9/25).

These are great opportunities to pick up a new state or county as there will be higher than average activity on the HF band from those states.

Here are the popular suggestions for this month:

Date Event

Sep 3-4 All Asian DX Contest, Phone

https://www.jarl.org/English/4 Library/A-4-

3 Contests/2022AA rule.htm

Sep 10-11 Worked All Europe (WAE), SSB

http://www.darc.de/der-club/referate/referat-

conteste/worked-all-europe-dx-contest/en/

Sep 10-12 ARRL September VHF Contest **

http://www.arrl.org/september-vhf

** Top recommendations for this month

Recurring Events – visit webpage for exact times and dates:

K1USN Slow Speed Test - Every Friday 20:00 UTC / Every Monday 00:00 UTC http://www.klusn.com/sst.html

Straight Key Century Club (SKCC) Weekend Sprintathon – the Saturday following the 6th of every month at 1200 UTC http://www.skccgroup.com/operating_activities/weekend_sprintathon

Details on each contest above and more events can be found every week on the WA7BNM contest calendar at: <a href="https://www.contestcalendar.com/weeklycont.php?mode=custom/weeklycont

BARS Leadership Team

OFFICERS:

President: Gary Frascarelli, W1GFF Vice President: Mike Raisbeck, K1TWF Treasurer: Bruce Anderson, W1LUS Secretary: Marla Wallace, WA1GSF BoD: Don Melanson, W1DM BoD: Bill Poulin, WZ1L Ex Officio: Tom Walsh, K1TW

VOULENTEERS:

Net Coordinator: Doug Bruce, N1WRN Newsletter Editor: Marla Wallace, WA1GSF New Member Outreach: John Fisher, KC1FTJ Field Day Chair: Mark Nelson, KA1INE

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September, 2022