



NEWS FOR AND BY BARS MEMBERS

SEPTEMBER 2023

BARS Billerica Amateur Radio Society

BARS meetings will continue to be “virtual” until further notice!

We intended to resume in-person club meetings with the April meeting, with the plan to continue to also allow members to attend virtually using Zoom. However, due to insufficient bandwidth with the Wi-Fi at the Chelmsford Bible Church, this “hybrid” meeting style appears to not be possible at this time. So we are going to continue to hold our meetings via Zoom, as we have been doing since the start of the COVID era.

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

--BARS Management.

A Message from the President By Doug Bruce, N1WRN

Greetings Fellow Members,

I hope that everyone is having a great summer. Hopefully the Old Farmer’s Almanac is wrong about the snowy winter forecast they just issued. Keep that snow shovel handy though!

Now that we are approaching DX season, we should all make every effort to get on the HF bands, as the combination of the upturn in the Solar Cycle, as well as the winter months, will make DX’ing a real pleasure over the next several months. It will be a great opportunity for all of us to pad our DXCC numbers!

I recently purchased an Ameritron AL-80A amplifier for the shack. I learned a lot with my trusty Collins 30L-1 amplifier, most importantly, do not make it a habit to use it on FT8, as FT8 is a high duty cycle mode and it took its toll on the 30L-1’s 62 year old transmit relay. I guess that is how you learn in this

hobby, by on the air experience! I love the FT8 mode, but the Collins 30L-1 did not!

Now that I have the AL-80A, I can focus more on SSB DX over the coming months. Nothing beats a great QSO with a distant country! Today, I worked Germany and it was as if he was sitting next to me, and he gave me a great 5/9 signal report. I was using the amp with 500 watts of output power! You do not need the full legal limit of 1500 watts in order to achieve great DX.

In fact, the difference in signal when going from 600 watts to 1500 watts is only ½ of 1 S Unit, so why bother getting the legal limit amp, which will cost you thousands of dollars more than a 600 watt amp? That is just my two cents worth.

Here is a link to ongoing and upcoming DXpeditions, which are a lot of fun to try and work, no matter how modest or extravagant of a station you have! [Announced DX Operations: 2023 \(ng3k.com\)](https://www.ng3k.com)

On another note, the Board will be discussing the resumption of in person Club Meeting in the near future. It is my hope that we can do in person and Zoom meetings at the same time starting possibly in October or November of this year. I will keep everyone posted on in person meeting resumption as soon as the details become available.

As always, the Club is a G.O.T.A. Club, so get on the air and enjoy some really good DX opportunities in the coming months!

Until next month,

73,
Doug
N1WRN

Next BARS Meeting: September 6 at 7:00 PM - Program: "Antenna Installations versus Covenants"

Presenter: Mark Noe, KE1IU

It gives me great pleasure to announce our Guest Speaker for the September Club Meeting on September 6, 2023 at 7:00 PM, Mark Noe, KE1IU. Mark is an accomplished DX'er, having attained the 9 Band DXCC Award from ARRL, while working within the HOA covenants at his residence in Connecticut. I am sure everyone has worked with a compromised antenna system at some point in their ham journey as Mark has done. He will give us tips and suggestions in order to maximize our antenna system set ups, no matter how compromised they may be. Mark comes highly recommended by our ARRL New England Area Assistant Director, Phil Temples, K9HI, so this will be a great and informative presentation that you won't want to miss!



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 8/2 here at 1900.

Doug, N1WRN

From the Editor's Desk By Marla Wallace, WA1GSF

I didn't burn up in the Lahaina fire.

I'm back from my Hawaii trip. I arrived in Maui on August 1st and spent six days there before moving on to Kaua'i. So I managed to be off the island of Maui a couple of days before the fire started.

The fire is a terrible blow to Maui! Lahaina, a town with a population of about 13,000 people, is the former capital of the Hawaiian Monarchy and was the center of the whaling industry for the Pacific. So the town was full of historic buildings. In recent times, many of these buildings, especially along the waterfront, have been re-purposed as high-end restaurants boutiques and art galleries. Those structures are all gone. About 75% of the town has either been damaged or destroyed. Over 125 people died. Hundreds are still missing. This is perhaps the worst natural disaster to ever hit the island of Maui. And it was but one of six fires to ignite that week in the state of Hawaii.

The high winds and fire disrupted power (and as a consequence, running water), cell phone service and internet. It could be weeks before the infrastructure is repaired. Half of Maui (the part called West Maui) is affected.

Ham radio is one of the few means of communication still up and running on that side of the island. A couple of the VHF repeaters on west Maui had emergency power and are still operational. ARES has been activated and operates nets on HF. The nets operate three times a day: 9AM, noon and 4PM, Hawaii time (3PM, 6PM and 10PM EDT) on 7.088MHz, LSB. It is requested that this frequency be kept clear. (It's in the CW band segment for the mainland but phone operation is permitted in Hawaii.) But if you have an HF receiver, you can listen in.

News coverage has not mentioned ham radio and I feel that this is as it should be. In event of emergency, we hams provide communication without “blowing our own horn” about the job we do.

Meanwhile, please keep the people of Hawaii in your prayers.

Feature Article: The Phoenix Radio By Andy Wallace, KA1GTT

Not the city...this is a radio which I may hope to raise from the ashes!

In the mid 1970s my father (Bob Wallace, W1HH) began collecting and restoring 1920s radios. These were sets he saw as a child, and perhaps even fixed back-in-the-day. 1920s sets were developed before A/C power was common for appliances other than lamps and motors. What we think of today as a multi-output power supply to power electronic circuits was not seen in radios

until late – 1928-29 timeframe. The battery sets used three (or sometimes four) DC voltages to run the handful of tubes in the radios. Filaments (what made the tube light up and begin the flow of electrons) were supplied 1-6VDC, from an “A” battery. B+, the high voltage on the tube plates which attracted the electrons, could be 22, 45, 67, 90 or even higher. And finally, sometimes the audio amplifier tube needed a negative bias of 0-9V, from the “C” battery.

Well it was only this year that I got my first battery set running. It was a friend’s Whitestone five tube radio from the mid-1920s. It used three variable capacitors for tuning – what was called a Tuned RF or TRF circuit. Dan never taught me how – thank goodness for Youtube, the Internet, and radio repair forums. Armed with a new multi output power supply, I traced the Whitestone circuit, and got it repaired and powered up! What a thrill. I wish Dad could have seen it. Battery sets have fewer components than your iPhone charger – if I couldn’t fix these things, time to hang up my soldering iron.

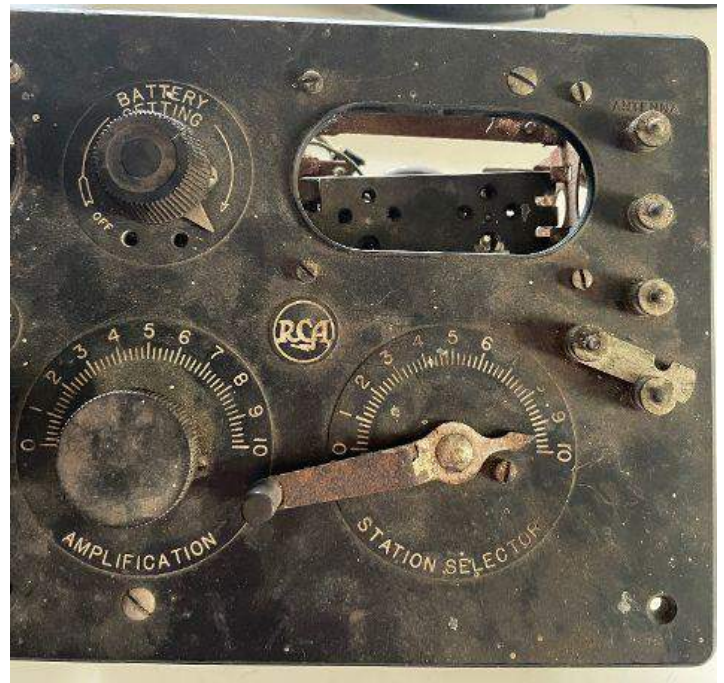
Soon after a friend sold me a Crosley 51 receiver, unfortunately without the wooden case. This was a two-tube regenerative detector radio. Other than a cleanup, it needed very little, and performed surprisingly well. And with careful tuning, I could even pick up 160m SSB.

But most 1920s sets were of course, produced for the broadcast band, and coverage ended at 1500 kHz or so.

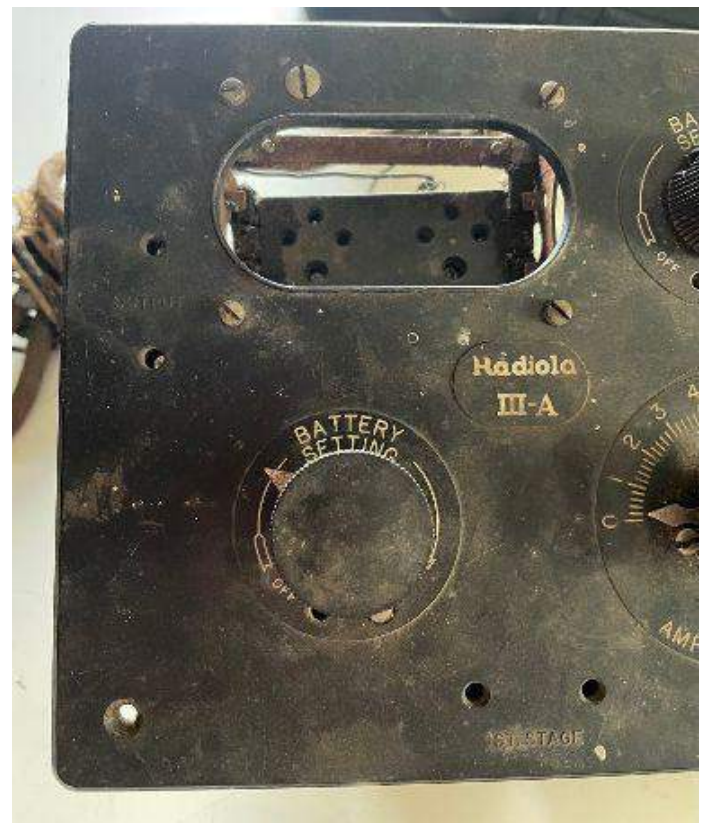


Overall Picture of Radiola III-A Front

Enter a basket case orphan I adopted at the spring Henniker ham radio flea market. It is an RCA Radiola III-A from perhaps 1923. One hundred years old. Oh my – rough, rough, rough. Just the panel, no cabinet! But it was only \$15. The Radiola III-A was a regenerative receiver (two tubes) and an audio amplifier to drive a speaker (also two tubes) in one wooden cabinet. They also produced separate units. Control of each unit was fairly simple.



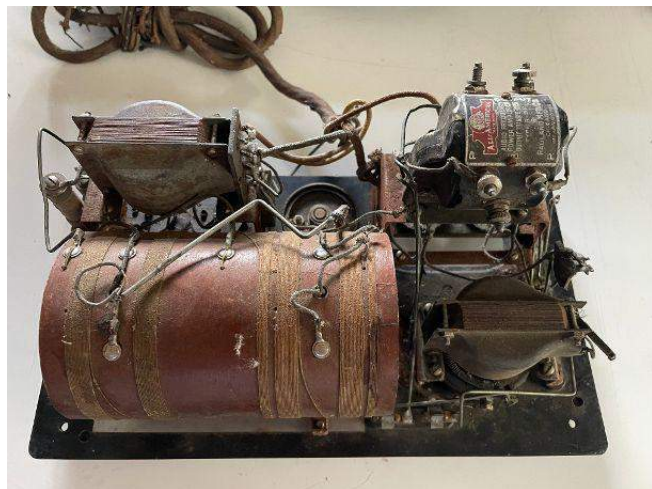
Right Front – Receiver Side



Left Front – Amplifier Side

They are almost as common as dirt and you can find one most weeks on Ebay for under \$100 – less tubes. A big hassle is that these radios used some of the earliest triode tubes, the WD11. These tubes are hard to find, fragile, and command \$50 and up for working ones, EACH. The III-A takes four!

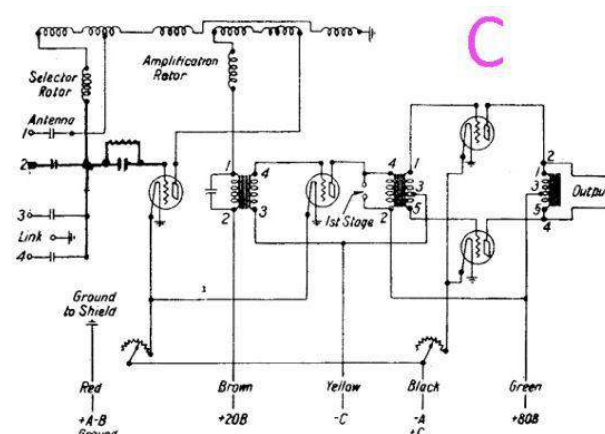
I bought the radio partly because it was mostly-there and I had a spark of an idea of what to do with it. Because they are common, I don't have much guilt about perhaps bringing this receiver into a more useful function: how about converting it to the ham bands? I do not think anyone's done that recently, and this could be a test bed for such an idea. Forget WD11s. I'd use some other tubes in their place. Later tubes from the 1930s? Modern subminiature "pencil" tubes? The idea started to gel. A regenerative receiver can hear AM (amplitude modulated) signals as well as CW or even SSB ones. Perfect!



Rear of Radio



Capacitor Bank and Grid Leak



Model Radiola III-A
Schematic

Behind the panel you can see the small handful of electronic parts. Most of you will recognize the three audio transformers. The tube sockets are on small panels supported by brackets. Special potentiometers called rheostats control the current supplied to the tubes. The strange tootsie-roll shaped parts are tinfoil-and-paper capacitors. What is the giant fiber tube? Well that is two inductive assemblies. The first, in the grid circuit of the detector, is a variable inductor called a variometer. When the coils are oriented such that their magnetic fields in phase (windings line u180 degrees, the fields are out of phase and the inductance is minimum. The other inductive component is a variable transformer that forms the regeneration control. This winding couples to the grid winding but also consists of a variometer, so the transformer will pass an adjustable amount of the detector's plate signal back to the grid circuit. These variometers, plus the capacitors (which are selected by moving a link between a couple of binding posts on the front panel), determine the frequency range of the set and the amount of regeneration (which in turn determines the "amplification" and/or acts as the BFO).

To convert this to a ham band, I will need to experiment with changing the inductance of the variometers or replacing the capacitors, or both, which will require disassembling the capacitor bank and removing (likely) several turns of wire from the inductor windings. I'd like to convert the set to 80m, which is quite far from the original 1500 kHz design intent.

So – this will be a work in progress and I have yet to start. A quick check shows at least one of the audio transformers is bad, so I must deal with that, and of course all the parts are filthy. I will begin by tearing down the set and cleaning parts and reassembling as I go. I'd like to use vintage parts to make it work, but in the end this will be something for me to enjoy on the air. My hand is freer to do what makes sense to make it perform on 80m. The panel shall remain original though! Who knows, I may learn how to glue wood together and make a cabinet!

Stay.....tuned.

The Electronics of Radio

By Marla Wallace, WA1GSF

This month's first question: What are Explain gamma, delta, and hairpin matches and which is used when?

Answer: These matching devices are found at the feed point of antennas. Their physical configuration follows their name. A gamma match looks like the Greek letter gamma (Γ) and a delta match looks like an upside-down Greek letter delta (Δ). The hairpin match looks like a hairpin, or the slide of a trombone.

In all cases, the purpose is to match the impedance of the feed line to the impedance of the antenna. Additionally, the choice of matching network will depend on whether the feed line is balanced (ladder line or twin-lead) or unbalanced (coax). The exact dimensions of the matching network depend on the impedances at the operating frequency.

The delta match is used to connect balanced transmission line to a balanced antenna (such as a dipole); the other two networks connect unbalanced line to a balanced antenna.

This month's second question: What does a snubber capacitor or a snubber circuit do and where is it used?

Answer: If an inductive load is connected to a changing current source, the inductance opposes the change in current by producing a "back EMF" voltage given by the equation

$$V = -L \times \Delta i / \Delta t$$

The generated voltage, V , is larger if the inductance, L , is large or if the current change ($\Delta i / \Delta t$) is rapid, or both. If this generated voltage is allowed to find its way into the rest of the circuit, it can be destructive. This is especially true if the switched current is being produced by an IC or a transistor.

Enter the "snubber capacitor". Recall that a capacitor responds to a changing voltage by drawing current, the equation for which is

$$i = C \times \Delta v / \Delta t$$

So placing a capacitor across the inductive load will tend to short out the voltage transient that the inductance produces when hit with a rapidly changing current.

But a circuit consisting of an inductor and a capacitor in parallel should remind you of something: it's a "tank circuit". Hit a tank circuit with a current pulse and it will oscillate at a frequency of

$$f = 1 / (2 \times \pi \times \sqrt{L \times C})$$

And the current circulating in this tank circuit can be quite large. So we put a resistor in series with the capacitor to spoil the Q of the tank. This is the "snubber circuit".

Another strategy which is appropriate when the inductive load is being driven with a switched DC source is to parallel the inductive load with a diode, observing polarity so that the diode will conduct the (e.g.: negative) voltage of the "back EMF" without conducting the (e.g.: positive) excitation voltage. The diode must be able to handle the current generated when shorting out the transient (again, a series resistor can limit that) and have

an inverse voltage specification higher than the exciting DC voltage.

Snubber circuits are often seen when motors are controlled by SCR speed control circuits (which produce positive and negative fractions of a cycle of AC) or when relays are driven by switching transistors on a DC circuit.

You can submit questions for this column to me at the address in the masthead. Until next time...

--de WA1GSF

Strays

Support for Baystate Marathon Needed

This year's Baystate Marathon and Half-Marathon race is scheduled for Sunday October 15, 2023.

Amateur Radio operators have been asked once again to support the Baystate Marathon and Half Marathon. This year the event is on Sunday, October 15th. Our operational time period is from approximately 0700 until event completion (estimated 1400). Our assistance has been requested by Lowell Office of Emergency Management and Lowell Fire Department. The communications team will be employing Amateur Radio to provide this communications asset.

Amateur Radio will be used for running the Accountability Net. The purpose of this net is to coordinate with a race public information booth the status of runners who are unable to complete the race for any issue to any one is seeking this information.

Race info may be found at <http://baystatemarathon.com>.

Course map is found at

<https://www.baystatemarathon.com/course-map-description>.

Please contact me if you can assist or would like more information.

Please share with others that may be interested. This is a pretty laid back event and suitable for first time public event participation.

Terry-KA8SCP, ka8scp@wb1gof.org

Project Big E 2023 is Looking for your Support

The Big E is a 17-day New England fair that takes place September 15th to October 1st this year. The start is just 2 weeks away!

It attracts attendees from all over New England and northern NJ and eastern NY. The fair takes place in West Springfield, MA.

Last year the Big E had over 1.6 million attendees from all over the northeast! At last year's fair, we did a booth and we are doing one again this year. 12 clubs and over 100 individuals volunteered last year. We need your help again this year!

We have been provided with a booth for free that is normally worth \$6000. The booth is in the Better Living Center which is the largest building in the fair and attracts the most visitors.

The goal of the Ham Radio Booth is to introduce ham radio to the public and show it is still relevant in today's world. By getting people interested in our hobby, we hope they will sign up for classes and upon earning their license, then go looking for local clubs to join. Thereby growing ham radio clubs in New England!

We learned a lot after last year in the booth and are changing the way we do things in the booth this year. One of those things is the need for only 3 people in the booth this year per six hour session versus 4 to 6 people last year.

We are looking for clubs to reserve a 6-hour session or a full 12 hour day. The booth must be staffed from 10 AM through 10 PM. We ask that volunteers for session one be at the booth from 9:30 AM through 4 PM and session 2 from 3:30 PM through 10 PM.

Clubs may bring banner, handouts, class information and demonstrations to show and use during their time in the booth.

We are also looking for individuals to volunteer. You do not have to be part of a club.

There is an admission fee (\$15) and parking fee (\$10 per car) to the fair. We have been awarded an ARDC grant and will be reimbursing those fees to everyone who participates after the fair has ended. The reimbursements will be mailed to your Qrz.com address.

We need your support to make this a success!

Please go to this link to sign up:

https://docs.google.com/forms/d/e/1FAIpQLScvo1vUzUUJTHbTtDLeApQQD1m4ZzX9kVe_hF2416e6apho3g/viewform

If you would like further information, please go here:

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

For more information, feel free to contact Larry Krainson, W1AST at: W1AST@arrl.org or 413-348-3289 (VM answers Computer Care, leave a message)

Tech in a Day at HAMEXPOSITION

I proctored the Technician In A Day Class at HAMEXPOSITION on Saturday, August 26, 2023. It was a long Day (8:00am-5:00pm) for the 18 enrolled students but they were ready and willing.

I am happy to announce we have 13 new Technician Class Operators!

I would like to thank the Volunteer Examiners that assisted in the Exam Session: Bill Poulin, WZ1L, Bruce Anderson, W1LUS, Jim Barber, K1TT, Geoffrey Feldman, W1GCF, Matt Wagner, N1ZZY, Susan Benua, WB2OSY and Craig Davidson, K1CWD.

--de Bill Poulin, WZ1L

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 potentially receive \$410 per year from the ARRL.

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

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.

Treasurers Report for September 2023

We are accepting dues for the current year. For 2023 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

In August we had four new/renewals for \$60 income. Our expenses were Zoom \$16.99 and PayPal \$4.04. We now have \$1480.36 in the Bank and \$379.80 in our PayPal account for a total of \$1860.23.

Bruce Anderson
W1LUS

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 Doug Bruce, N1WRN.

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

Club meetings are being held via Zoom until further notice. A link will be sent via the BARS email reflector to all currently paid up members. \

Club meetings are held on the first Wednesday of the month at 7 PM Eastern time.

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 \(map\)](https://www.google.com/maps/place/Chelmsford+Bible+Church+Hall,+128+Gorham+St,+Rear+Door,+Chelmsford+MA+01824-3220/@42.5144444,-71.3888889,15z)

There was no VE session for the month of August.

Our next exam session will be at the Chelmsford Bible Church on September 14 at 7:00 PM. You may now pre-register for BARS VE exams at <https://HamStudy.org>.

Thanks to Peter N1ALO, Gary W1GFF and Bill W1ZL for their help in running the session.

--de Bruce Anderson, W1LUS

Club Breakfast every Saturday

On Saturday mornings around 8:30AM, we have a virtual Zoom breakfast session (a link was provided in email some time ago).

We meet in-person weekly at 8:15AM for a casual, social breakfast at Stelio’s restaurant.

[Stelio’s Family Restaurant, Billerica, MA](https://www.stelios.com/locations/billerica)

Future Meetings

The 10/4 meeting will be held “virtually” via Zoom.

Subscribe to the BARS Mailing List

To subscribe to the BARS email list, send a blank email to bars-subscribe@w1hh.org 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

August 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.

Here are the popular suggestions for this month:

<u>Date</u>	<u>Event</u>
Sep 2-3	All Asian DX Contest, Phone https://www.jarl.org/English/4_Library/A-4-3_Contests/2023AA_rule.htm
Sep 9-10	Worked All Europe DX Contest, SSB https://www.darc.de/der-club/referate/referat-conteste/worked-all-europe-dx-contest/en/
Sep 9-11	ARRL September VHF Contest ** http://www.arrl.org/september-vhf

** Top recommendation 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.k1usn.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:
<https://www.contestcalendar.com/weeklycont.php?mode=custom&week=current>

BARS Leadership Team

OFFICERS:

President: Doug Bruce, N1WRN
Vice President: Mark Nelson, KA1INE
Treasurer: Bruce Anderson, W1LUS
Secretary: Marla Wallace, WA1GSF
BoD: Don Melanson, W1DM
BoD: Bill Poulin, WZ1L
Ex Officio: Gary Frascarelli, W1GFF

VOLUNTEERS:

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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