



NEWS FOR AND BY BARS MEMBERS

BARS Billerica Amateur Radio Society

JULY 2021

BARS physical meetings are on hiatus until further notice.

The decision to resume in-person club meetings and breakfasts at Stellio's will be made entirely by the Board based on the outlook of this medical emergency. The safety and well-being of our membership is important to us.

Meanwhile, virtual club and breakfast meetings using Zoom have proved an enjoyable substitute. Please ignore the sections, below which give directions and schedule for in-person meetings. It is hoped that we can resume in-person meetings and breakfasts in August.

Starting with the July 8th VE License Exam Session, we go back to in-person exams – see the VE section near the end of the newsletter for details.

--BARS Management.

From the President's Desk

from the President of BARS, Doug Bruce

Greetings, All.

I hope that everyone had a great Field Day Weekend last weekend. It was a time to renew old acquaintances and make new ones, and to make new acquaintances with different modes of our hobby.

I had the good fortune to meet two members of the Westford Club at Field Day this past Saturday, President George Allison K1IG, and Senior Club Advisor and Repeater Owner Terry Strader KA8SCP. We had a great discussion with regard to the possible future of the Billerica 147.12 repeater.

They both gave me invaluable insights as to what it takes for a Club to become a repeater club. There is much more than met my eye, so I am grateful for their advice. George told me that we can use the Westford Repeater on Wednesday nights for as long as we needed to until the 147.12 situation has been resolved. I will keep everyone posted on our progress in this matter.

We will be emailing all members in the next few weeks to get everyone's say with what direction we want to take with regard to becoming a repeater club. We welcome any and all input from members as we make this very important decision for the future of our Club.

Another new mode of our hobby that I have become very familiar lately is the FT8 digital mode. I have been able to make many international contacts on this mode such as Norway, Chile, and Australia! Once you have gone through the setup of the program with your radio and computer, it is a very fun and enjoyable mode to work, and it saves your vocal cords as you do not have to yell and scream to get through a pile up like you do on phone SSB mode! The contacts you make count for all of the ARRL award programs, so it is a good mode for us to use in order to make contacts for various awards like WAS and DXCC with the ARRL.

In other news, the Board is discussing our return to in person meetings, Saturday breakfasts (Yay!) and in person Club meetings. We will keep you posted as to the exact dates when these Club activities will resume in an in person manner. I know I am looking forward to a nice big in person breakfast at Stellios with the gang!

In closing I want to wish everyone good health as we emerge from the pandemic. I hope everyone is staying safe and healthy! I hope to "see" everyone at our Club Meeting on 7/7 via Zoom, and to talking with everyone on 7/14 when I will be the Net Control Station on our weekly Net on the Westford Repeater!

Until next month,
73,
Doug, N1WRN

Next BARS Zoom meeting: July 7 at 7:00 PM

“Programs Helping Hams to Develop New Skills and Get On The Air”

Presenter: Fred Kemmerer AB1OC

Our guest speaker for July will be Fred Kemmerer AB1OC. Fred is a great speaker and we are fortunate to have him talk to our Club. Please join us for this interesting and informative talk featuring the President of the Nashua Area Radio Society!



We 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.

I am looking forward to “seeing” many of you on Wednesday 7/7 here at 1900.

Doug, N1WRN
President, Billerica Amateur Radio Society

A Message From the Editor

from Marla Wallace, WA1GSF

By the time you read this, Field Day 2021 will have been over for about a week. I hope those of you who participated had a good time. I’ve not worked a Field Day since the days when I was a Technician class licensee and was restricted to VHF operation only. At that time, I made 2m contacts via a Gonset Communicator II like the one pictured here



as part of the Chelmsford Amateur Radio Association operations at Robin Hill in Chelmsford and at Fort Hill Park in Lowell. My “shack” was my 1974 Dodge Dart with screens in the windows to provide air while filtering out the mosquitoes.

Some things never change: a bunch of hams operating with (sometimes unfamiliar) portable gear from a site that often was nothing more than a clearing in a wooded lot at the end of a dirt road, trying to make contacts with other, similarly challenged, hams across the country at all hours of the day and night. The off-duty ops trying to catch some shut-eye between shifts with a gas-powered generator droning in the background. Some things are completely different: we didn’t have computers back then – contacts were logged on (often coffee-stained) paper. And most of the gear used vacuum tubes, so “portable” meant that the rig usually didn’t need two people to carry it.

League News: Fred Kemmerer, AB1OC, to run for ARRL New England Division Director

FOR IMMEDIATE RELEASE: 06/11/2021

NASHUA, NH: Fred Kemmerer, AB1OC, has announced his intention to run for the position of ARRL New England Division Director. Kemmerer has a long history of helping individuals to become licensed, learn new skills, and become active in the Amateur Radio Service. Fred has also served as President of the Nashua Area Radio Society, a club that has provided many hams licensing and development programs over the past six years.

“I believe that Amateur Radio clubs and interest groups play an essential role in bringing new hams into the Amateur Radio Service and in helping hams to develop new skills,” said Kemmerer. “As New England Division Director, I will work with clubs and individuals in New England to help them expand their role as mentors and create a world-class environment for learning based upon Amateur Radio.”

Fred, AB1OC, also serves as an ARISS (Amateur Radio on the International Space Station) Mentor and Ground Station, helping schools around the world to participate in STEM learning based upon Amateur Radio. “I will help groups and individuals in New England to create projects and programs to bring Amateur Radio to young people across the division,” said Kemmerer. “Amateur Radio provides a tremendous opportunity for youths to learn about technical topics and to develop valuable skills that they can use throughout their lives.”

Kemmerer has been an active amateur for over 10 years with a broad range of Amateur Radio interests. “I enjoy many aspects of the hobby, including DXing, contesting, EmCom activities and Field Day, satellites, station building, and weak signal operating on the VHF and higher bands. One of Amateur Radio’s most important strengths is its tremendous diversity and range of interests and activities. We need to work across New England and the ARRL to grow our hobby and protect our spectrum by encouraging our hobby’s broad use.”

Fred, AB1OC, continues to devote considerable time and energy to license new hams and help all hams to upgrade their licenses and get on the air. “I’ve had the pleasure to lead a team of hams who have taught license classes, enabling over 350 people to earn a license or upgrade over the past five years.” Kemmerer has created some innovative approaches to new ham development and getting hams on the air. “We created a very popular program called Ham Bootcamp, designed to help both new and experienced hams get on the air, build their stations, and participate in new operating activities.” The last Ham Bootcamp drew over 480 participants from across the United States. “I hope to help clubs and individuals around New England and across the

ARRL to develop successful programs to license and assist hams to get on the air and have fun in new activities,” he added.

Fred Kemmerer, AB1OC, is an electrical engineer by training and holds bachelor’s and master’s degrees in EE. He has served in many business leadership roles, including Chief Technology Officer, VP and General Manager of a large data networking and communication business, and a Project Leader at Bell Laboratories in the development of wireless and wired data communications technologies. Fred has also served on the FCC’s Technical Advisory Committee where he assisted the FCC in developing public policy related to wireless and broadband communications. Fred holds an Amateur Extra license and has been quite active on the air logging over 90,000 contacts on the HF and higher bands over the past 10 years.

AB1OC has a web site if anyone wants further information <https://ab1oc-4-director.org/ab1oc-run-arrl-director/>.

Technical Article: Victor X-ray Oscar, You Are Off Frequency, OM By Andy Wallace, KA1GTT

A few months ago, a brief fit of insanity made me purchase a bargain on Ebay. For \$75 shipped I got a vintage 1960s Clegg 66'er 50 MHz transceiver...that does only Amplitude Modulation!



I was pleased when it arrived. It was dusty, but considering it was outdated technology seemed to have been treated well. The term “boatanchor” is used by hams to deride old, heavy, vacuum tube equipment as being useless except to fix rowboats in place. The Clegg is pretty light as far as boatanchors go at 19 lbs.

The rig had multiple issues, all mechanical it turned out. Rx was very poor and barely heard my signal generator at the highest level setting. I pulled the tubes one by one and tested them and many were the original Squires-Sanders ones and plenty strong. I

used Caig De-Oxit spray when I reinstalled them to clean the socket pins. This brought the receiver back to life and when I had it on the antenna I was astonished to hear some W4-landers – on A.M. – coming thru in sporadic-E skip!

To use it on transmit I needed a microphone. I pulled out an Astatic D-104 lollipop mike, but the connector was wrong. I wired a ¼” three conductor plug – and found that the push to talk switch inside the tube was broken. I don’t know if a ham-fisted CBer had this before me or if the mic had been dropped. I disassembled things and found the bar had been squeezed so hard it separated a wafer section from the rivets! Yeesh! I had to put things back together with super glue. However on transmit my voice sounded like a kazoo, no good.

Some advice from fellow 6M AM friends had me checking parts in-circuit and I found what they had me check was in spec. While I had the Clegg upended on the bench I noticed a piece of coax inside had a slight soldering iron burn. Clegg’s construction was very neat, even using wire lacing along the harnesses. SOMEONE had been in there. I began looking for iffy solder connections or swapped components. In the process I discovered that the S-meter potentiometer, on the back of the rig, was bashed in! My ebay purchase was packed well so this must have happened in earlier life. Something had impacted the stubby pot adjust shaft (short because it was meant to be adjusted once at the factory) so hard that the back of the potentiometer (the metal cover) and wiper arm had deformed. The cover tabs had been bent out. Wow. I removed the pot, bent the tabs back, and successfully repaired it. NOW the S meter was not so stingy!

But of course the transmit audio still sounded like the guitar in Spirit in the Sky. So further tracing with the meter led me to the voice audio gain pot – ALSO on the back panel. That had a long shaft for the user to adjust based on the mic used. It was not bashed in but it WAS bashed! Someone had bent an outside lead of the pot right against the wiper containing the speech signal! I measured the short with a meter to make sure that was true. It was. I separated the leads and now I had transmit audio! Finally!

....but I was not transmitting on the 50.400 A.M. calling window! My 8.400 MHz FT-243 crystal was actually being multiplied six times up and winding up on 50.396 MHz. Well, some folks on our weekend roundtable use things like Flex radios and other modern gear and get very ...antsy if people are way off frequency. I figured before the Clegg was ready for primetime I would see about getting the crystal “padded” to frequency. Being off four kHz at 6m meant it was only off 4/6 kHz or at the fundamental, or 0.667 kHz. Padding a crystal 700 Hz should be possible.

In previous web surfing I found this fascinating article about padding crystals for QRP operations. This is called a variable crystal oscillator, or VXO.

[CrystalPullArticleFinal.wps \(kc9on.com\)](#)

AB7SQ and KC9ON ([Amateur Radio and Electronic Hobby Kits, Parts, and Accessories - 3rd Planet Solar / KC9ON](#)) show a really interesting technique of paralleling multiple crystals and pulling the frequency using a capacitor and inductor to ground. Since this precious 8.4 MHz crystal was my only one, I had to make a trial run with only one crystal and see what happened. The highlighted portion of this circuit was what I focused on.

Q1 PN2222a, PZT2222a, 2N3904, etc .

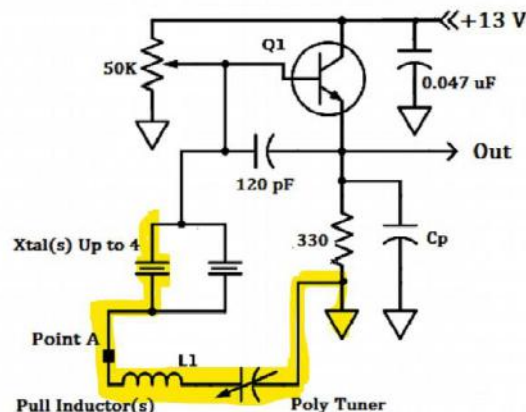


Figure #1 Crystal Pulling Test Circuit

I scrounged my supply of parts and came up with a 3-15 pF trimmer capacitor and I had a range of molded inductors handy. I used a meter and found the top pin of the Clegg crystal socket is the grounded one. That one should go to the rotor (moving part) of the variable capacitor. The stator of the cap then goes to the inductor, and then to the crystal, and one crystal pin goes to the other socket pin on the rig.. I cobbled everything together using clip leads and was astonished when checking the frequency using my Icom that not only did it oscillate, but it was oscillating at 50.403! Adjusting the trimmer cap gave me about a 2 kHz range.



I experimented with other inductance values and settled on 1.8 uH. That gave me a range of 50.3995 – 50.401. Good enough!

Not to settle for a lash-up, I took an old out-of-ham-band crystal holder and worked some mechanical magic to enclose all this into it. The trimmer cap faces out the crystal and the socket on top takes my 50.4 rock. I used my one and only FT-243 socket. I arranged things such that when the proper pin is in ground the trimmer faces right, making it handy to adjust. Once I packaged this all up it was nice to see the adjustment range was the same.



So the good news is I made my debut that week with a vintage 10 watt AM transceiver on 50.400 exactly. Now that I have made this VXO circuit work it might be fun to adapt this into an external VXO for use with vintage rigs, like:

[Wiggle room. | 73, de N2HTT](#)

And since I have several QRP crystals of the same frequency, like the 7.023 ones supplied with Chinese Pixie kits, I will try the KC9ON circuit for QRP also.

Welcome to the Second BARS CW Corner By Tom Walsh, K1TW

How nice to hear from new BARS member, Mike, KE1LU, who wrote to me in response to last month's CW Corner. Mike is getting back on CW and working out some rustiness at 13 wpm. Mike writes: "I very recently got a HF rig and Bencher paddle. No outside antenna yet, but I can receive CW with a length of wire just to listen in."

That led to an interesting email exchange with Mike over the choice of antennas. Antenna discussions might fill many volumes and often do. Recently, I began experimenting with the "End Fed Half Wave" or "EFHW" antenna. This antenna has become extremely popular in recent years especially with the low power QRP community.

Thanks to another new BARS member, Eric KC1OAV who, while I was helping him get licensed, helped me experiment with an EFHW. Eric and I have on a couple occasions now been setting up a couple of QRP radios in the field. The results with his 40-meter EFHW have been fantastic.

The beauty of the EFHW is they are inexpensive to make, lightweight, and great performers. No antenna tuners needed either because they are half wavelength (i.e, resonate with a simple toroid).

Of course, I sent in my own order for not one - but two - "QRPGuys Portable No Tune End Fed Half Wave Antenna" kits. Each kit is \$20. You wind the toroids and supply the wire for the frequency band of your choice from 80-10 meters. Then, Get on the Air (GOTA).

Quoting QRP Guys: "It is designed as a highly portable wire antenna, easily set up as an inverted V, horizontal, sloper, or in the case of higher frequencies, a vertical radiator. The high impedance, half wave wire is matched to your 50-ohm feed point by an integral impedance matching toroid transformer and rated at 20 watts."

K1TW Caution: Note this is a QRP antenna so do not exceed 20 watts if you build one!

Check them out at: <https://qrpguys.com/qrpguys-end-fed-wire-antenna>



QRPGuys No Tune End Fed Half Wave Kit

But wait there's more.....

ARRL is also promoting the beauty of the EFHW and has a nice kit available for \$69.95 from the ARRL store.

The ARRL EFHW antenna can be a nice addition to your home antenna farm. Read the story about this antenna at "Build an End-Fed Half-Wave Antenna From a Kit" at: <http://www.arrl.org/end-fed-half-wave-antenna-kit>

Another advantage of the ARRL EFHW is the ease of construction, it is versatility in a variety of installation configurations (sloping, horizontal, L, etc.), no tuner is needed, and this one works on 4 bands: 10, 15, 20, and 40 meters.



The ARRL EFHW Kit Assembled

You can buy one from ARRL at <http://www.arrl.org/shop/End-Fed-Half-Wave-Antenna-Kit-for-10-15-20-40-Meters/>

Next month in CW Corner:

Unless some other story takes precedence, I will try to introduce you to the perfect activity for CW operators, namely, County Hunting. CQ magazine offers the USA County Award (USA CA) for anyone confirming 500, 1000, 1500 counties and every 500 more all the way to all 3077 US counties! There is a spotting net too at <https://ch.w6rk.com/>. I like to leave my radio on in the background tuned to 14056.5 kHz during daytime hours and catch the county action throughout the day as folks mobile across America. But beware, they have a strict procedure to follow, which I will describe in detail next month.

Listen in for now on 14056.5 kHz to get the hang of things or email me if you really cannot wait until next month to get started and I will explain the procedures.

Enjoy the world of CW... until next month.

73,
Tom K1TW

Strays

Found on the web

If you ever saw an antique AM radio from the 1950s, you may have noticed that the dial had two of these logos:



These marked the 640 kHz and 1240 kHz frequencies on the dial. Back in the Cold War era, the US was worried that bombers from the USSR would home in on radio broadcasts. But the Government needed to be able to send emergency alerts and instructions, so it could not simply shut down all the radio stations. Instead, they came up with CONELRAD (CONtrol of Electromagnetic RADiation), a scheme where many radio stations would transmit in turn on the same frequency. CONELRAD was eventually abandoned when ICBMs made it obvious that bombers homing on radio stations were no longer the main threat. Today, we have the EAS broadcast system, but CONELRAD was the grandpappy of emergency broadcasting. See <https://en.wikipedia.org/wiki/CONELRAD>. Back in the day, hams were required to monitor the CONELRAD frequencies (which were unused for ordinary broadcasting purposes) and QRT if they detected a transmission. Typically, this was done by hooking up an indicator of some sort to the AGC line of an AM radio tuned to 640 or 1240.

--de Marla Wallace, WA1GSF

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, WILUS@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

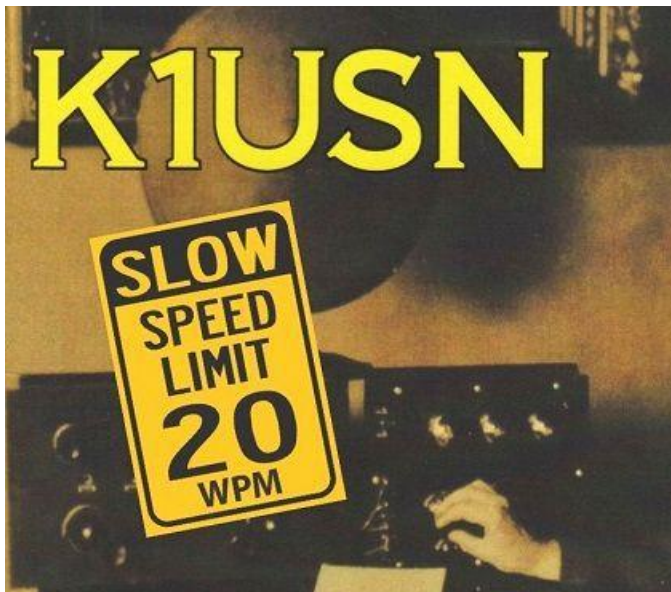
Upgrading Your License? Here's a Resource

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

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 4-5 PM EDT Friday and 8-9 PM EDT Sunday. – ed.]



-- de Tom Walsh, K1TW

Secretary's Reports

from Scott Ginsburg, K1OA, Secretary

BARS General Meeting June 02, 2021

President Doug Bruce, N1WRN called the Zoom virtual meeting to order at 7:15 PM.

Terry Stader, WB3BKN, gave a talk on wire antennas for Ham Radio operators.

There were 28 attendees. N1WRN closed the meeting at 9:00 PM.

BARS Board of Directors Meeting, June 14, 2021

Board Members present: N1WRN, W1LUS, KA1GTT, WA1VAB, K1TWF, W2IRY, K1OA

Guests Present: Bruce Blain, K1BG, Ken Caruso WO1N, Phil Temples, K9HI, Larry Krainson, W1AST.

A very productive discussion on the upcoming WBZ 100 year special operating event was held between the Board and invited guests. The Board agreed to collaborate with the Hampden Count Radio Association under the direction of Larry, W1AST, who brings to the table much experience running such events along with very useful on-line tools.

BARS Membership

Bruce, W1LUS, our BARS Treasurer reports that as of 6/1/2021, we had 90 members. To date 16 members from 2020 that have not renewed their membership for 2021.

2021 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 July 2021

from Bruce Anderson, W1LUS, Treasurer

In June our expenses were Zoom \$15.93, and a PayPal fee of \$2.22. We had three new/renewals for an income of \$45 and a \$3.00 donation. We now have \$364.68 in the Bank, cash \$5.45 and \$1239.03 in our PayPal account.

Dues for 2021 are due and remain at \$15 for 2021.

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, PO BOX 832, Nutting Lake, MA 01856

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 Chris, KC1IUK. 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 Billerica 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: We are now using the Westford Repeater, due to system difficulties with the Billerica Repeater. Thanks to the Westford Police Amateur Radio Team (PART) for their generous act of making their repeater available to us.*

Repeater info:

WB1GOF

146.995 MHz

-600 kHz (normal) offset

Encode CTCSS 74.4 Hz

Club Meetings

When we resume in-person meetings, they will be held on the first Wednesday of the month at 7:00PM 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](#)

VE Sessions

Since December, 2020, we have been doing exams on-line. Our next exam session, on July 8th, will be held in-person at the Chelmsford Bible Church. Pre-registration for our in-person exams will be required. 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 \(map\)](#)

June 2021 VE Session

On June 19 we had our seventh online VE Exam session. We had four people signed up. Three passed their Technician exam. The fourth had internet issues and could not connect.

I would suggest that anyone considering taking an online exam use the exam prep site HamStudy.org for practice as that is the same site that is used to generate the online exams.

Thanks to Niece, K1ULN, Andreas, KC1NTL, and Tom K1TW for their help in running the session.

Bruce Anderson, W1LUS

Club Breakfast every Saturday

On Saturday mornings around 8:15AM, we also meet weekly for a casual, social breakfast at Stelio's restaurant. [Stelio's Family Restaurant, Billerica, MA](#) Note: currently in hiatus due to COVID restrictions.

Future Meetings

It is planned that the 8/4 meeting will be held in person at the Chelmsford Bible Church. Be sure to check the club's information sources (the August newsletter, <http://www.w1hh.org> and the email group).

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

July Get-on-the-Air Suggestions

BARS is a "get-on-the-air" (GOTA) club. We encourage members to participate in the varied events on HF and VHF. Here are some popular suggestions for this month:

Date	Event
Jul 8-9	Walk for the Bacon QRP Contest <u>https://qrcontest.com/pigwalk40/</u>
Jul 10-11	IARU HF World Championship ** <u>http://www.arrrl.org/iaru-hf-world-championship</u>
Jul 17-18	North American QSO Party, RTTY <u>http://www.ncjweb.com/NAQP-Rules.pdf</u>
Jul 24-25	RSGB IOTA Contest ** <u>https://www.rsgbcc.org/hf/rules/2021/riota.shtml</u>

** Top Recommendations for this month

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

President: Doug Bruce, N1WRN

Vice President: Kayla Creamer, W2IRY

Treasurer: Bruce Anderson, W1LUS

Secretary: Scott Ginsburg, K1OA

Net Coordinator: Chris Lobdell, KC1IUK

Newsletter Editor: Marla Wallace, WA1GSF

New Member Outreach: John Fisher, KC1FTJ

BoD: Mike Raisbeck, K1TWF

BoD: Henry Christle, WA1VAB

Ex Officio: Andy Wallace, KA1GTT

