



NEWS FOR AND BY BARS MEMBERS

AUGUST 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.

Notice: The VE Exam Session scheduled for August 10, 2023 has been CANCELED!

A Message from the President By Doug Bruce, N1WRN

Greetings Fellow Members,

I hope that everyone is staying cool and dry in this hot and wet summer of 2023.

In this space this month, would like to say a few words about Nets and Special Event Stations, that go very well with our Club’s G.O.T.A (Get On The Air) philosophy. These activities give the ham a great opportunity to make contacts and participate in one of the most fun parts of our hobby, nets, either VHF/UHF or HF nets.

For those who may not know, nets are nightly or weekly gatherings of ham radio operators on a set and predetermined frequency. These nets can be either formal traffic nets, or informal rag chew nets. Most nets have a structure, with a net control station acting as the “host” and the “guests” are the various ham radio operators that “check in” to the net, and participate in the discussion part of the program.

Some nets, like the Six O’clock VHF net on the Gloucester, MA repeater on Monday, Wednesday and Friday nights at (you guessed it!) 6:00 Eastern Time, have set topics and content for discussion, while other nets, like our very own net here at B.A.R.S. on Wednesday Nights at 8:00 Eastern Time on the Westford Repeater, which have an open mike policy most nights, where the participants are free to talk about any subject that they may choose.

On HF, there are dozens of nets, both regional, like the Great Maine Potato Net on 3.967 MHz seven nights a week at 5:00 PM Eastern Time, and national nets such as the 3905 Century Club Net, which meets at 00:00 UTC seven nights a week, and is a great net for those wanting to make contacts towards their WAS (Worked All States) Award from the ARRL. Here is a link to many HF nets for your reference and check in pleasure:

[HF NETS - SMARC](#)

Special Event Stations, on the other hand, are ham radio events that are scheduled for certain periods of the year in order to mark a Special Event, like an anniversary, or other special occasion. Usually ham radio Clubs sponsor and organize these on the air events and they apply for and get 1x1 call signs that are to be used only during the time of the Special event. B.A.R.S. ran a Special Event Station in September of 2021 to mark the 100th Anniversary of radio station WBZ in Boston, and the operators made over 5200 contacts over the three day period of 9/19-9/21 of 2021. Our Special Event Station sent out 350 QSL cards to operators in all 50 states and many countries around the world. There is a listing every month of Special Event stations in QST, so take a look in the current issue and pick one that strikes your fancy and go on and make contact with the station or stations on the air. Many Special Event Stations offer specifically designed

QSL Cards and certificates which are fun to collect and decorate the walls of your shack with.

Both Nets and Special Event stations offer any licensed ham to get on the air with a specific purpose or goal for the type of contact that they look make. As I said above, B.A.R.S. is a G.O.T.A. Club and Nets and Special Event stations are the means to get on the air, so key up that mike and make some fun contacts!

73,
Doug
NIWRN

Next BARS Meeting: August 2 at 7:00 PM - Program: "Transceiver Testing" Presenter: Rob Sherwood, NC0B

I am excited to inform the Club that I have secured Rob Sherwood, of Sherwood Engineering to be our Guest Speaker for the August 2, 2023 Club Meeting via Zoom. Here is Bob's bio, which is quite impressive. Bob is the Gold Standard with regard to review and testing of all Amateur Radio receivers. Please join us on August 2, 2023 at 7:00 PM for this presentation, which is sure to be very informative!

Ham radio began for me in 1961 in Cincinnati, Ohio, as both a novice and general-class operator. After graduating college in 1969 with a degree in physics, I moved to Denver and worked for KOA radio as an engineer until 1987. While at KOA, I maintained their 50 KW AM and FM transmitters, microwave links and studio equipment.

1974 saw the beginning of Sherwood Engineering, offering roofing filters and upgrade kits for the Drake R-4C. In 1976 I started measuring receiver performance on dozens of radios, since reviews in QST did not correlate with actual on-air observations at crunch time in CW contests. In 1977 "ham radio magazine" published the first of several of my articles on receiver problems and cures, vertical antenna ground systems and mobile antenna efficiency. Those articles are available on my web site as PDF files. Receiver test data is now web based with 150 transceiver and receiver listings.

www.nc0b.com/table.html.

In the 80s I was invited to be a forum speaker at the Dayton Hamvention on several occasions, discussing both receiver and antenna performance issues. In 2004 I returned to the Dayton Contest Forum, giving a talk on the status of receivers both old and new, with special emphasis on the Orion and the Icom 7800. In 2007 the Drake Forum had me present a talk on the pros and cons of the new batch of DSP transceivers. In 2009 I made a presentation at the Dayton Hamvention Antenna Forum on ground systems for vertical antennas.

2016 included a presentation at the Visalia DX Convention. In 2017 & 2023 I spoke at ARRL Hamcon in Wyoming. Also two appearances at the Duke City Hamfest in Albuquerque, NM. Contest University 2023 will be my 16th annual presentation at this great event.

Other speaking invitations at ham events have included W0DXCC, W9DXCC, W4DXCC, YCCC, New Orleans, Austin, Huntsville, Tucson & St. Louis. Locally around Colorado I have discussed receiver performance at the Boulder Amateur Radio, Northern Colorado Amateur Radio, Colorado QRP & 285 TechConnect Radio Clubs.

Sixteen years ago, my XYL encouraged me to build my dream contest station on 10 acres east of Ft. Collins, Colorado on the Pawnee Grassland. This has made it possible to evaluate top transceivers in major contests in a real-world environment to augment my laboratory data. This rural setting has allowed me to focus my interest on effective antennas. Six towers support 9 mono-band HF Yagis, plus 6m, 2m and 70cm, and wire antennas for 160, 80/40 and 30 meters.

I use WSJT X on the 475 kHz band with a 630 meter transverter manufactured in Australia driven with an IC-7610. I use my 160-meter Marconi T antenna with a separate tuner on 475 kHz. My 630m log of 38 states, including Hawaii, Alaska and Maine using JT9 & FST4. My best DX on 475 kHz is over 8000 miles between Colorado and Australia, having worked Roger, VK4YB, three times.

In person presentations for 2023 so far have been Winterfest in Collinsville, IL, and Contest University the day before Hamvention in Xenia Ohio. I often have Zoom club meetings every month or two in the US and periodically in the UK.



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@w1lh.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

QSOs between the solar flares and thunderstorms (The HF station saga continues)

I’m still learning how to run the rig. The MFJ tuner’s user interface is counter-intuitive and the fact that the instructions are on line doesn’t help. I had a hard time getting the antenna to match on 6m (the tuner will try, but the thing wasn’t really designed to work on that band). But I managed one contact, adding another band to my Worked All North Chelmsford award total.

The antenna stayed up during the severe weather on 7/16. But I need to cut the vine that’s starting to grow up one of the supports before it gets out of reach. I can see that this is going to be an ongoing battle!

Meanwhile, I need to get over being mic shy after a nearly quarter century of not being on the air. Things have changed so much since my earlier time in ham radio!

Stay tuned...

Feature Article: Bob Wallace, W1HH: Supermodel!?!?

By Andy Wallace, KA1GTT

A couple of years ago I was delighted to find a Hallicrafters 5-T receiver at Near-Fest. This is the model they called the Sky Buddy, a five tube receiver from about 1934. They made this set in a few variations throughout the years. It’s a basic BCB/SW set with a BFO. But what was very nice about my find was it was the earliest model, with a special tuning dial. The first version had an image of a boy with headphones, happily using a semiautomatic telegraph key (“bug”). That dial gives this humble set a lot of appeal.

See the nice Sky Buddy article in the AWA Review here, pp. 273 and beyond, which describes them well. [Vol.-27.pdf](#) (antiquewireless.org)

My set had been partially disassembled. Someone had begun replacing the ancient electrolytic and other capacitors in there but had not quite finished the job. This caused me quite a bit of head-scratching – the online schematics for the 5-T were incorrect! The grids on some tubes were reversed. It was times like these that I wish my (and Marla’s) dad was still around to ask questions of. But I was able to puzzle things out, finish the wiring – and get the set working! It cleaned up very nicely too. But something struck me about that “Boy” dial – the image reminded me of Dad!



One of the photos I discovered after my father’s death is now my very favorite of him. I’ve reversed the image here, so you can see the similarity to the Boy. Bob is at the key of station W1JKZ. The photo is undated, unfortunately, but W1JKZ, Hector French of Carlisle MA, appeared for the first time in the Spring 1936 Callbook:

[Spring 1936 Radio Amateur Callbook.pdf](#) (leehite.org)

Dad was licensed as W1MQV in 1940, and found himself in the Army in 1941, so it’s likely the photo was from those years.

Hector was still alive to at least 1964 (the February 1964 73 magazine has an article by him).

Dad's image and the Boy are so similar. The Boy is using a bug also – the triangular plate gives it away as a Vibroplex Lightning Bug. Dad is using what looks to me like a Speed-X or Cedar Rapids black wrinkle bug. And of course all proper hams operating in the 1930s wore ties at the station! But it's the joy on my dad's face that strikes me. I wish he smiled at us like that more often.

So, anyway, it's highly unlikely Bill Halligan used our dad as the model for the Boy but I think the doppelganger is neat.

The Electronics of Radio

By Marla Wallace, WA1GSF

This month's first question: How many watts are lost at 2:1 SWR? 3:1?

Answer: SWR is the ratio of reflected power to forward power. Specifically,

$$SWR = (1 + \sqrt{Pr/Pf}) / (1 - \sqrt{Pr/Pf})$$

Doing a little algebra, we can solve for the ratio of reflected to forward power. We get

$$Pr/Pf = ((SWR - 1)/(SWR + 1))^2$$

For an SWR of 2:1,

$$Pr/Pf = ((2 - 1)/(2 + 1))^2$$

Or

$$Pr/Pf = (1/3)^2$$

So

$$Pr/Pf = 1/9$$

Therefore, about 11% of the forward power is reflected.

For a 3:1 SWR, 25% of the power is reflected.

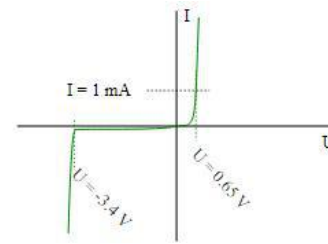
At an SWR of 10:1, 67% of the power is reflected. While your antenna tuner might get the rig to match a 10:1 SWR, only 1/3 of your signal is actually being radiated. The rest will go to heating up the coax and the components in the tuner!

You can learn more about SWR at Wikipedia. See https://en.m.wikipedia.org/wiki/Standing_wave_ratio

This month's second question: How does a zener diode work and how should it be used properly?

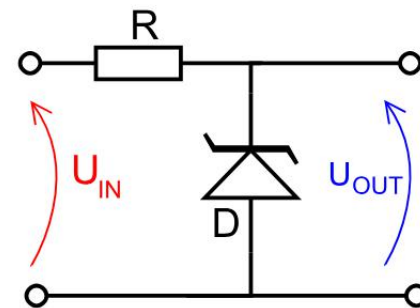
Answer: A Zener diode is a special kind of semiconductor diode. In an ordinary diode, current flows only when the diode's PN junction is forward biased. In the Zener diode, current also flows when the applied reverse voltage exceeds a particular value

(called the Zener voltage). So the diode's current-versus-voltage characteristic looks like this¹:



Current-vs-voltage curve for a 3.4V Zener Diode

And to take advantage of the reverse current characteristic to make a regulated voltage, use this circuit:



U_{out} will be the diode's zener voltage. U_{in} must be higher than that and R must be small enough that some current will always flow through the zener diode. In a typical design, the current through R will be at least 110% of the maximum current required by the load connected to U_{out} and U_{in} will be U_{out} plus the voltage drop across R when that current is supplied. Since the zener diode must draw power at all times, zeners are rated for a maximum power dissipation and will sometimes require a heat sink. Note that the zener draws maximum power when the load is not drawing any power – if there is the possibility that the load could be accidentally disconnected, then the zener must be chosen such that it can dissipate this power.

For further information, see [Zener diode - Wikipedia](#)

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

Strays

Announcement: 2023 Northeast HamXposition is Aug. 25-27

The Northeast HamXposition, the New England ARRL Division Convention is coming up soon, from 25-27 August, 2023.

HamXposition is looking for volunteers

HamXposition 2023 is coming to the Best Western Hotel and Conference Center in Marlborough, Mass on August 25, 26 and

27. We are actively looking for volunteers to help keep the convention running smoothly.

Among the duties:

- Setup on August 24
- Ticketing, Flea Market and Forum Speaker Help on 25, 26, and 27
- Take Down on August 27

All volunteers are scheduled into two-hour shifts. Those that work two or more shift receive free admission.

If you are interested in helping, please visit:

<https://hamxposition.org/volunteer.html>

to register.

Thanks and hope to see you there!

73,

Bob - K1IW

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 WILUS@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.

[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.]

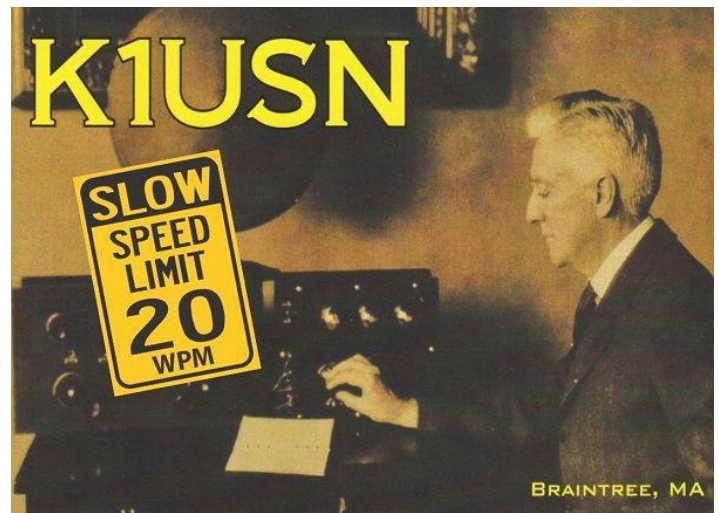
--de Bruce, W1LUS

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 (4-5pm EDT) and

Mondays 00:00-01:00 UTC (8-9pm EDT Sunday).



K1USN SST

Weekly CW Slow Speed [Con]Test

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-- de Tom Walsh, K1TW

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

Secretary's Reports

from Marla Wallace, WA1GSF, Secretary

BARS General Meeting – July 5

I was unable to connect to the Zoom meeting, so I could not take minutes. Bruce Anderson told me in an email that there was no club business conducted at the meeting. Apologies.

I will also be away from my computer during the August meeting (about 5,000 miles away!), so I hope another officer will take the minutes.

There was no BARS Board of Directors Meeting for July

BARS Membership

Our current combined membership is 128. 24 members from 2022 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.

from Bruce Anderson, W1LUS, Treasurer

2023 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 August 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 July 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 \(map\)](#)

July VE Session Report

On July 13th, three people showed up for the VE exam session. All three earned their General upgrade. We again used ExamTools to record the exam session and to send the results to the ARRL.

I want to encourage all of BARS VE to become qualified to conduct ExamTools.org based exam sessions. These are still Fully ARRL exams. Just using online tools instead of a lot of paper. Please sign up at ExamTools.org.

There will be no BARS VE Exam session in August as both Gary and I will be away on the second Thursday.

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](#)

Future Meetings

The 9/6 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, K10A

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>
Aug 5-6	10-10 International Summer Contest, SSB ** http://www.ten-ten.org/index.php/activity/2013-07-22-20-26-48/qso-party-rules
Aug 5-6	North American QSO Party, CW https://www.ncjweb.com/NAQP-Rules.pdf
Aug 12-13	Worked All Europe DX Contest, CW https://www.darc.de/der-club/referate/conteste/wae-dx-contest/en/
Aug 20	ARRL Rookie Roundup, RTTY https://www.arrl.org/rookie-roundup
Aug 26-27	Worldwide Digi DX Contest https://ww-digi.com/

** 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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ⁱ Figure credit: By AlanM1 - This file was derived from: V-A characteristic Zener diode.svg by FDominecOriginal edited to show consistent scale. Used period (instead of comma) separator in text (for use at enwiki w:Zener diode per MOS). Removed empty text element., CC BY-SA 4.0, <https://commons.wikimedia.org/w/index.php?curid=83343647>