DELAWARE-LEHIGH AMATEUR RADIO CLUB Inc.

AUGUST 2023

W3OK CORRAL

Club Meeting August 3, 7 PM at the
Nancy Run Firehouse.
3564 Easton Avenue, Bethlehem, PA 18020

"PLEASE NOTE TO START TIME FOR MEETING"

AUGUST MEETING PROGRAM

It's About Time

By George, N3SQD

JULY MEETING MINUTES

The General Meeting was held at the Firehouse.
President Doreen, K3PDL, called the meeting to order at 1900 hours.
Pledge of Allegiances: Led by Doreen, K3PDL
President's Thoughts: Informed all present about Wayne Hillmann, N3HIL who became a silent key on July 1, 2023. There was a moment of silence for him.
Guests: There were two guests. Bill Carlsen, KD3FLY. The other guest was Mike McMaster who is looking forward to the Fall Classes to get his license.
Secretary's Report:
Terry, KC3JHT, as Acting Secretary, asked if there were any additions or corrections to the Meeting Minutes as printed in the last Newsletter. A motion to accept the Minutes was made by Dean, AB3BD, and second by Dave, N3EYT. All were in favor, motion passed.

NOTE: *We still need a* ***PERMANENT SECRETARY*** *and if interested, contact any Board Member.*

Treasurer's Report:
Larry, KC3JTK, presented the report for May. A motion by Dean, AB3BD, to accept the report. Wayne, KG5MGN, seconded the motion. All were in favor, motion passed.
Committee Reports:
Membership: Terry. KC3JHT reported that there are 145 members. 14 of them are Associates and 7 Life Members.
Club Station: Al, W3CE, reported that all radio stations have computers, monitors, keyboards, and mice. Some are wireless.
Tech Committee: George, N3SQD, reported that the Rotator was back. It needs to be calibrated. Charley Adams wants the Tech Committee to calibrate the Rotator which he will assist so that they know how to do it in the future if needed.
Website: No report
Repeater: No report. It is working.
Old Business: A report for Field Day 2023 was given. There were 53 participants with most getting on the air which is great. There were 324 QSO's on 2A. 175 QSO's at the GOTA Station. A reporter from The Morning Call, Rick Kintzel, visited during the noon hour, took a lot of pictures, and interacted with all present. His story was

on the front page of The Morning Call on Monday, June 26th. The food must have been good because of the need to resupply on Saturday afternoon. All had an enjoyable time. During the VE Session during Field Day, there were 7 people that took the tests. Further information will be coming.

Dave, N3EYT, asked if anyone needs a Club badge. He had some with him and asked members present to check to see if he had their badge.

New Business: George, N3SQD, asked about the Club getting another CD. Have the new one off set the other one. May make more money for the Club eventually. This will have to be discussed at a Board Meeting.

Announcements: There still a need for a Secretary for the Club. The person taking it will have a lot of help to get going. If interested, contact someone on the Executive Committee.

Awards: None

Adjournment: There being no further business, the meeting was adjourned at 1915 hours.

Program: The program was SKYWARN by Sarah Johnson

If you did not make the Meeting, you missed an excellent program on SKYWARN by Sarah Johnson who is the Warning Coordination Meteorologist out of the Philadelphia/Mt Holly Office.

She did an excellent job explaining everything from the cloud formations to the several types of tornados. How to tell the difference between a funnel cloud and a tornado. She explains the scales that tornadoes are categorized and how those scales were updated.

She had different pictures of what to look for during a very severe Thunderstorm. The different cloud formations and their name.

She talked about how lightning is dangerous. If you can hear thunder, you can be hit by lightning. She explained why you do not stand under a tree during a lightning. You can be seriously injured.

She also told everyone present that the biggest killer of severe weather is flooding. More people die in flooding than by any other severe weathers. This all has to do with cars caught in flooding water. If you cannot see the road under flooding water, turn around and find another way to go. If you try to drive through the flooded road, there may not be a road underneath and it does not take much water to wash your car down away from the road.

Information on SKYWARN can be found on the following websites. The first one is http://www.weather.gov/SKYWARN where if you scroll down to the bottom there is a lot of information under "Supplemental Information" that can be downloaded to save. The Spotter's Guide is one that you should download and print out. The other one is http://www.weather.gov/phi/skywarn and click on "Resources" and find some more you can download and save.

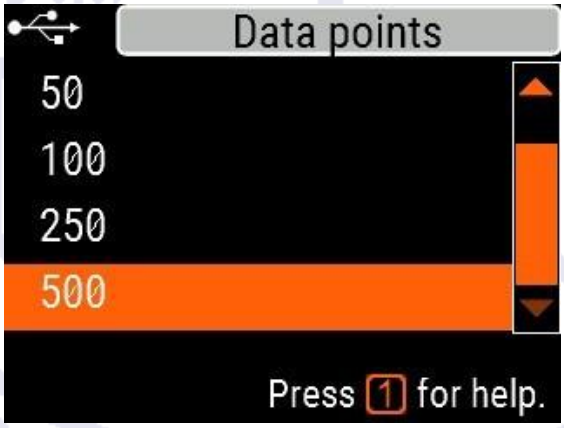
"MAKE A DIFFERENCE, ATTEND A MEETING."

Product Review
Rig Expert AA-650
Zoom by Barry G. Kery, KU3X

If you are building a ham radio station, whether it be a contest station, a station for working DX or just daily rag chewing, this may be the tool you need to help you maximize your signal.

The AA-650 Zoom is a very user-friendly antenna analyzer. It is super easy to navigate through the menu to choose what task you want the analyzer to perform.

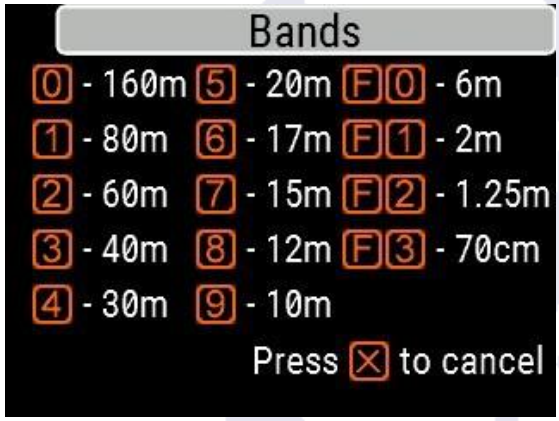
Let us start with frequency range. This unit will cover from 100 khz up to 650 mhz. To get exact readings, you must enter three factors. You must enter, “Frequency, span and sampling points. “Here is one of many areas where the



AA-650 Zoom shines and that is, “Sampling Points.”

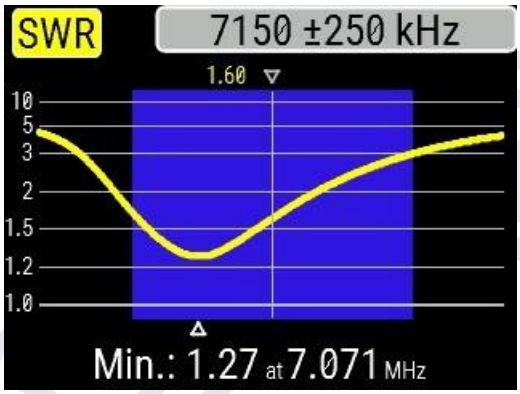
When you sweep a frequency range, whether it is just the 20-meter band or sweep from 7000 khz to 30000 khz, sampling points have a direct impact on the results. Antenna analyzers do not take a reading one hert at a time. They take a reading at many points within your sweep range. You can select how many sampling points you want to use.

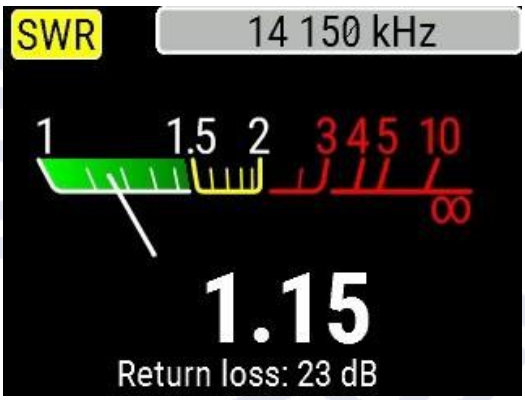
The 650 Zoom gives you 5 options. They are 20, 50, 100, 250 and 500 sampling points. Let us say you want to sweep from 7000 khz to 30000 khz, like the usable frequency range of a 40 meter off center fed antenna. If you choose to use 50 sampling points, the 650 Zoom will take a reading at every 460 khz in that range. Once the sweep is finished, the analyzer takes an average and fills in the display with an SWR curve. So, it guesses what is between each point. Now take that same frequency range but sweep it with 500 sampling points. The 650 Zoom now takes a reading at every 46 khz. Remember one thing, the more sampling points you use, the slower the sweep but the higher the accuracy. For single band use, I like to use 100 sampling points. Most of the time, that is all you need. But let us say the antenna you are evaluating has some quirk at a given frequency. If your sampling points are set too low, your sampling points may not be close enough to detect the problem. So now the analyzer will not know there is an issue and fills in the display with an average reading.



There are two ways to set up the analyzer for a frequency and range. To the left shows where you can manually enter the center frequency and the span of the sweep. Press the “Frequency key” on the keypad to access this feature. Within that display, to the far left you will see meter bands. If you press the “F key” on the keypad, a band will be highlighted. Use the up / down arrow keys on the keypad to select your band of choice. When you let up on the “F key” the analyzer will program that band with a predetermined span.

The picture on the right shows yet another super effortless way to set up the analyzer. To access this screen, press and hold the “F key” and then press the zero key on the keypad. The rest is easy. Pick a number that corresponds to the band you want to check.



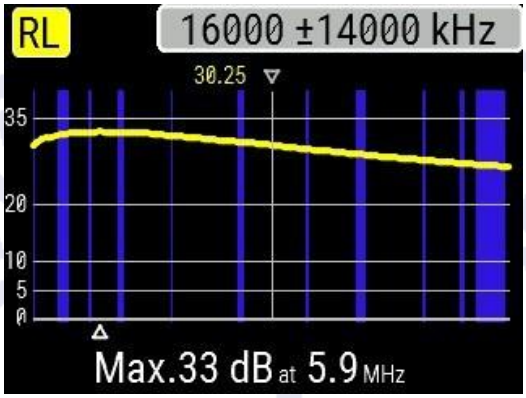


The top left picture shows an SWR curve of my 40-meter beam. This reading was taken from my shack. Take note of the bottom of the display. The analyzer lets you know what the minimum SWR is at a given frequency. On the top of graph, the SWR is shown in relation to the pointer. The top right picture shows the SWR of my 20-meter beam at a given frequency. You may find this feature useful for adjusting a manually operated transmatch or adjusting the tuned inputs of your home brew amplifier. On the bottom of the display, it shows a return loss at 14150 khz.

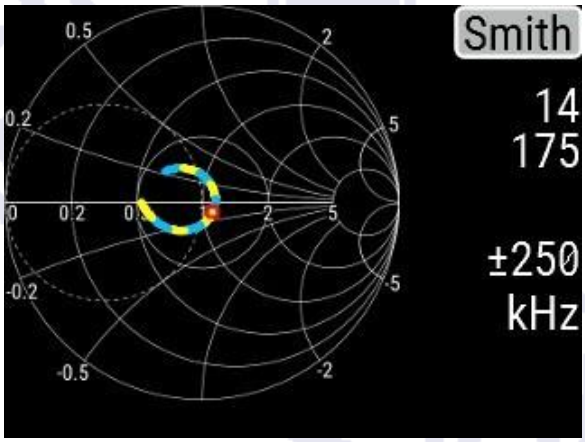
When you sweep a frequency, you can save the SWR plot in any one of the 99 non- volatile memory slots so you can retrieve them later.

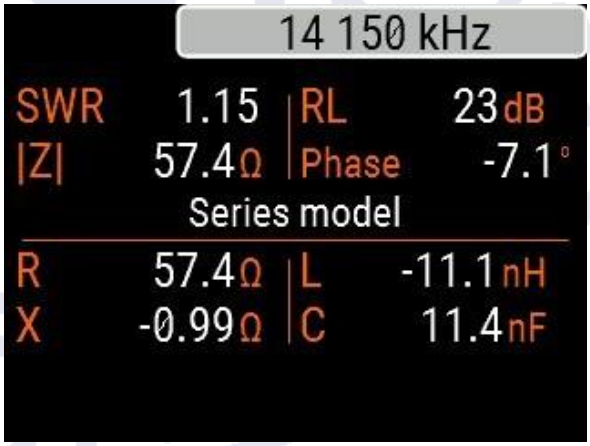
If you want to check more than one frequency at a time, like on a tri band Yagi or an off center fed antenna, the AA-650 lets you pick up to 5 different frequencies to check at one time.

Shown below are return loss figures for a low power 4 to 1 Guanella Current Balun. The balun was designed to be used from 80 to 10 meters. The sweep is from 2 MHz to 30 mhz.



Let us talk about OSL Calibration. Using Open, Short, Load calibration is a way to cancel out your transmission line so you can take a reading of your antenna like you are attaching the antenna analyzer to the feed point of the antenna. Let us take a 100-foot length RG-8X as our coax used for testing antennas. Hook the coax to the 650 Zoom and run OSL Calibration. Once you do that, it is like the coax is transparent. Hook the coax directly to the antenna and take a reading. Now you know what is happening at the antenna's feed point. So why is this useful? Most efficient quarter wave verticals or inverted L's are not 50 ohms. Most delta loops can easily range from 90 ohms up to 200 ohms, even more and sometimes less. Now you need to match these antennas to 50 ohm coax. If you are like me, some kind of matching network or coax stub is used and placed at the feed point of the antenna. Here is where you need to gather as much information as possible. Both Smith Chart and complex impedance readings come into play.



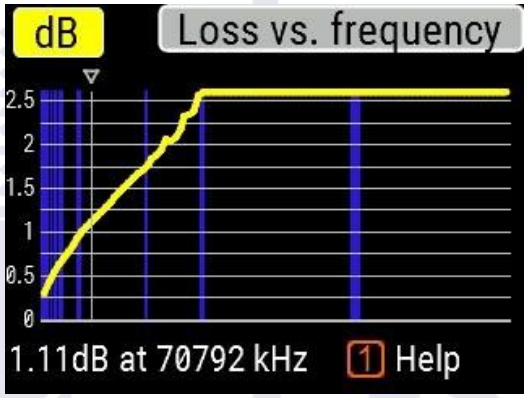


The above readings were taken of my 20-meter beam in the primary

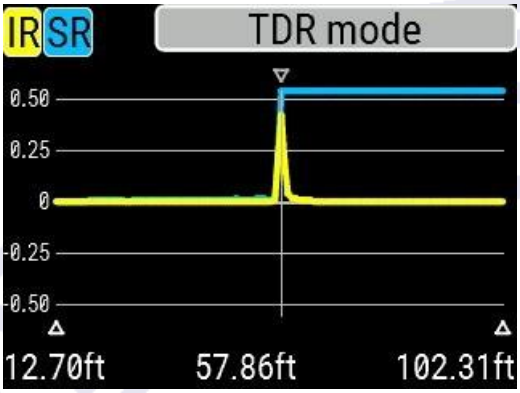
station. But let us assume they were taken at the feed point of my antenna. The feed point of my beam showed 57.4 ohms and the reactance would be -.99 ohms. As close to resonant as possible. If you want a completely perfect match, an L/C network will do fine. I am really splitting hairs here so let us assume it showed R=23 and X = -67. Now you have an issue.

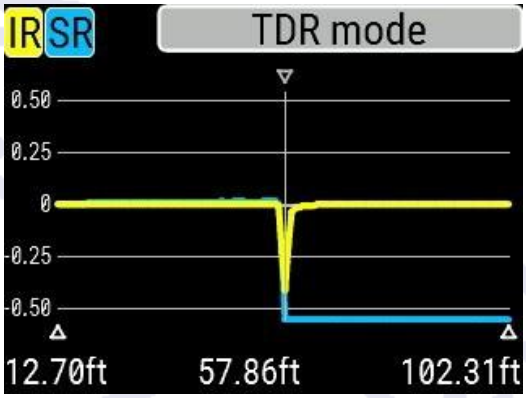
Enter, “SimSmith.” This is a free smith chart download that will let you enter different components for building a matching network. Between my old Rig Expert AA-600 and SimSmith, it was able to build an L/C network to create a perfect match for my 160-meter half sloper. NJ3I, Jon Matson, told me about his inverted L for 160 meters was R=20 X=0. I built him a 22.22 ohm to 50-ohm UnUn and evaluated same with the Rig Expert and he was one happy camper when he attached the UnUn to his inverted L.

How is your coax? Is it new and do you think it is good or maybe just incredibly old. Coax has loss and I had one run that water migrated in and the shield from one end to the other was black. One way you can evaluate coax is to attach a watt meter at both ends of the coax, attach a 50-ohm dummy load to the far end and apply power. Here is an easier way. Attach the AA-650. You still need to get to the far end of the coax. The test is a two-part process. Run the test with first the far end open and then shorted.



The above picture shows a coax loss test of a 50-foot length of RG 58 coax that I use when working portable POTA. At 7079 khz it shows a loss of 1.11 db. The RG 213 coax that I evaluated where the water got in had a loss of over 3 db on 40 meters. So, half of my power was gone by the time it reached the base of the tower. Not all coax is created equal. I ordered a short run of coax with BNCs on each end because I was too lazy to put my own ends on. It was for portable so no rare DX would have been lost by using it. I evaluated it and it was the worst coax I ever purchased. It had a 3 db loss on 20 meters and it was a noticeably short length of coax. I never used it.



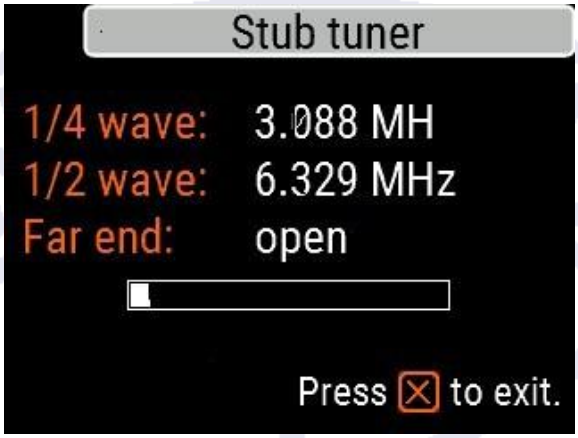


TDR: Time Domain Reflectometer. This is one of the handiest features of the AA-650 Zoom. TDR runs a trace single through the coax to find faults. My beam crapped out and the SWR became extremely high. Now what? Where do I start? Enter TDR.

I went to the shack, hooked the Rig Expert to the coax run that had the issue and ran a trace. At the 89-foot mark on that coax, it showed an open. That was at the base of my tower. At that location was a PL-259 and a barrel connection. I took the tape off the connection and took the connection apart. The connectors were black and had melted. I fixed the same and was back in business.

The above two pictures are two bench test traces. The picture on the left shows an open failure at the 57.86-foot mark on a piece of RG 123. The picture on the right shows the same coax with a short on the far end. The trace goes high when opened and the trace goes low when shorted. Without a TDR, how are you going to find a fault if your coax is under ground and the fault is under ground? Let us say you prepare a 150-foot run of coax and put a PL-259 on each end. You check it with an ohm meter, and it shows a short. So which connector do you cut off? You have a 50 / 50 chance. With a TDR, it will show you exactly which connector has the issue.

PL-259's are not 50 ohms. You must look close at the trace and when you do, you can see the impedance bump a PL-259 connection creates. It does not stick out like a sore thumb, but it is there. Another use for the TDR is finding out how long a length of coax is. The coax is still on a spool, and you do not want to remove it. Just put a connector on the free end of the coax, enter the velocity factor of the coax in the 650 Zoom's setup menu and run a trace. Since the other end of the coax is usually open, once the open shows up on the display, you will know how much coax is on the spool.



Have a full-size Delta Loop and you need a quarter wavelength of 75 ohm coax to couple the antenna to your 50 ohms coax? Or maybe you want to make a quarter wave stub to attenuate harmonics? The 650 Zoom will simplify this task. Again, enter the VF of your coax and hook one end to the antenna analyzer. Go into the stub tuner menu and you will know the exact wavelength of your coax. Above is a 50-foot length of RG 58 coax. At 3088 khz it is a quarter wave long and it is a half wave long at 6329 khz. Start out doing a little math and make a quarter wave stub. Quarter wave: 246 / F(MHz) * VF. “Make sure it’s longer than needed!” Hook one end to the 650 Zoom, lay the analyzer on the bench and keep trimming the far end of the coax until you zero in on the needed length.

The 650 Zoom can also tell you the value of capacitors, inductors and with the use of a little coupling loop check traps for their resonant frequency. If you do not know the velocity factor of a known length of coax, you can find out what the VF is with this analyzer. You can also find out what the impedance of the transmission line is.

When I received my 650 Zoom, the firmware was version 1.1 and 1.6 was available. I updated the firmware post haste.

The 650 Zoom is advertised to supply up to 3 hours of continuous use of battery power. If you are doing a lot of bench work you can extend this time by plugging the 650 Zoom, via USB cable, into either a computer or a USB battery pack. The USB cable then supplies power to the 650 Zoom.

There are three ways to program the AA-650 Zoom. It can be programmed with the use of the keypad, as a stand-alone handheld unit, it can be programmed via blue tooth, or it can also be programmed with the use of a computer. You may want to download, “AntScope2” from the Rig Expert web page. By using the computer to work the 650 Zoom, you can sweep with up to

2,000 sampling points. Once the sweep has been completed, you can put your cursor at any test point on the screen and you will be shown all the complex impedance readings at that point. You can save your data to a file, and you can also take screen shots that are displayed on the 650 Zoom and save them to a file.

The Rig Expert AA-650 Zoom is not an inexpensive instrument. HRO price is $700.

Other than the frequency range and the battery choice, the AA-230 Zoom has the same features as the 650 Zoom. The 650 Zoom has blue tooth and the 230 Zoom has two models, one with blue tooth and one without blue tooth. The 230 Zoom with blue tooth costs $429 from HRO. The 650 Zoom uses three each AA size batteries and the 230 Zoom uses four each AAA batteries. Unless you need to be able to cover up to 650 MHz, the AA-230 Zoom may be a better choice for your needs.

IT'S ABOUT TIME

By George, N3SQD

The title is the description… It is about time – the fourth dimension of our existence.

This is the information that I got from George about his program. Now I am looking forward to the program just to see what all is about.

Just a reminder that there will be upcoming Elections for the October 5th Meeting. Make sure to come out.

DLARC NET QUICK CHECK CALENDAR

August 2023

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1	2 DLARC NET N3WR BEN	3 DLARC MEETNG 7 pm	4	5
6	7	8	9 DLARC NET K3PDL DOREEN	10	11	12
13	14	15	16 DLARC NET KC3JHT TERRY	17	18	19
20	21 BOARD MEETING 7PM	22	23 DLARC NET N3EYT DAVE	24	25	26
27	28	29	30 DLARC NET W3CE AL	31		

WEDNESDAY NIGHT NETS

Additional Net Controls are needed for the Wednesday Night ARES, RACES & DLARC net. If we have enough interested operators, it will only be necessary for each operator to have only one net session in each three-month period. 13 weeks in a period, then 13 net controls would be ideal, and some extras to fill in if needed. This would give us a pool of experienced controls, for any emergency which would arise. Interested operators should contact George, N3SQD at george@bioserv.com. The NIMS IS-700 and ICS-100 courses are not needed to be a net control, but should the need arise, and we do supply controls and operators for real emergencies, then the courses requirement will be in effect and EMA issued IDs will be needed to be on the scene of an emergency.

NORTHAMPTON COUNTY ARES, RACES AND DLARC NET

All Radio Amateurs are welcome to take part in the ARES, RACES and DLARC net. This net meets Wednesday at 1900 hours local time, on the W3OK Repeater 51.76, 146.70 and 444.90 (pl 151.4). With an alternate frequency of 147.135 + DPL 315) W3OI Repeater. QCWA Chapter 17 holds a net Monday evening at 8:30 PM on 3960 +/- depending on conditions. Other inputs are the 146.85 repeater, (151.4 PL) and Echolink at K2PM-R. Mid-Atlantic D-Star Net meets each Tuesday at 7:30 PM. The following repeaters Dstar repeaters are available in the Lehigh Valley. W3OK -145.11000MHz -0.600 Port C – W3OI -147.16500MHz +0.600 Port C, – W3OI - 445.02500MHz -5.000 Port B
All repeaters on the net are linked through **Reflector 020 port A**, so all stations checking into the net should make sure that they have *their local repeater call sign followed by the letter "G" in the eight positions of the RPT2 field*. Otherwise, you will only be heard locally and not over the Reflector. Dongle users wishing to check into the net should Log On by connecting directly to Reflector 20, port A, rather than through your local repeater to conserve local bandwidth.

EXECUTIVE COMMITTEE 2022–2023

OFFICERS

President – Doreen Gramling / K3PDL ---------- gramlingda22@myyahoo.com
Vice President – Terry Swinney / KC3JHT ---------- ldocapt@gmail.com
Secretary – ***OPEN***
Treasurer – Larry Butler / KC3JTK ---------- lrbutler@ptd.net

BOARD of DIRECTORS

Dean Guth / AB3BD ---------- babydean1@hotmail.com
John Barbaz / NT3P ---------- nt3p@arrl.net
Adam Gauntz / N3LAG ---------- agemt1@aol.com
John Holmes / N3IGA ---------- n3iga@ptd.net
Dave Frankenfield / N3LWY ---------- mycallsign@gmail.com
Steve Harper / W3NAM ---------- sharper3152@gmail.com

PHONE NUMBERS FOR THE EXECUTIVE COMMITTEE OF THE DLARC CAN BE FOUND ON THE WEBSITE / MEMBERSHIP LISTING CLUB MEETINGS.

All regular meetings of the D.L.A.R.C. Are held on the first Thursday of each month at 7 PM at the Nancy Run Firehouse. TALK IN ON 146.700 (PL 151.4)
Club Station Telephone Number – 484 291-1527 Email Address – W3OK@arrl.net

THE W3OK TRUSTEE --- Barry Vogt / N3NVA

The W3OK Corral is published monthly and is the Official Publication of the

DELAWARE - LEHIGH AMATEUR RADIO CLUB INC.
14 Gracedale Avenue
Nazareth, Pa. 18064-9211

THE NEWSLETTER STAFF

Editor – John Holmes / N3IGA ---------- n3iga@ptd.net

Web Master – Larry Kaplan / AB3TY ----------lkddalkdds@gmail.com

Circulation – John Holmes / N3IGA ---------- n3iga@ptd.net

Photographer – Dave Blankenship / N3EYT ---------- n3eyt@arrl.net