Garden School Amateur Radio Club Newsletter

1st Quarter - 2017-2018

Welcome to the Garden School Amateur Radio Club!! Our club was started in 2016 with some generous donations from an alumnus and in conjunction with the Hall of Science Amateur Radio Club serving as our mentors.

Garden School ARC Awarded Blue Ribbon at Maker Faire

By: Nancy Massand

In a Middle Ages style setting complete with a fire-breathing dragon at the World Maker Faire in NYC, the Garden School Amateur Radio Club walked away with the blue ribbon for the Editor's Choice Award for innovation, creativity and ingenuity. Just one year old, K2GSG is the only school based radio club in NYC. Through the leadership of advisor John Hale and the mentoring of the National Association for Amateur Radio, the club is quickly distinguishing itself on a national level.

The Garden School exhibit was on the far end of a field dotted with hundreds of tents and tables, but that didn't deter a steady throng of enthusiastic visitors of all ages who wanted to participate in the workshop provided by the club. Members distributed free Morse Code kits and helped faire-goers assemble them at the table. For a solid eight hours on Saturday in 90 degree September sun, the Radio Club's table was surrounded with visitors waiting for a seat to assemble their kits. Wearing protective goggles and wielding soldering irons, club members mentored over 240 visitors who then assembled their own kits, taking home Morse Code keys that can transmit by sound and light. Attendance at the table was so strong that the club literally ran out of kits at the end of the first day.

Among the notables that stopped by the table was Mr. Kupferberg of the Kupferberg Center for the Arts at Queens College, whose family donated Garden's first suite of laptops and launched the school into the twenty-first century. He was impressed by the professionalism of the club and the ease with which the members fielded questions and shared their knowledge.

Club members range from 6th to 12th grade. From the youngest to the oldest, all the members who staffed the exhibit showed unflagging enthusiasm and willingness to engage with the crowds. It's not a surprise that they were noted, but still a thrill that among hundreds of exhibits from all over the country they earned a blue ribbon. Garden is indeed a small school doing great things!

Garden School ARC Plans for 2017-2018

The Garden School ARC is planning a few things for next year. The Club will meet once a week during the school year and will be broken down into 2 sections. The first section will be the Building and Designing Section. This will be open to the Upper Division Students and they will be working on radio direction finding, drone flying and other project. The second section will be the Competition. This will be opened to grades 5 and up and they will be working on the transceivers during competitions to score points by making contacts.

Below is a list of things to come.

First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Drone Building and Flying Competition - School Round-up	Radio Direction Finding & Fox Hunts Competition - Kids Day	Weather Balloons & Satellites Competition - School Round-up	Drone Building and Flying Competition - Rookie Round-up

The Coherer Receiver Radio Before Vacuum Tubes

By: Gerard Pilate, N2WGF

In the days before vacuum tubes and diode detectors were being perfected an ingenious device was successfully used at the first type of radio "receivers". As one can imagine, before amplifications and tuners the sensitivity of these devices was extremely poor and the dimensions of the transmitting and receiving antennas were super critical. Of course, since there were not a whole lot of radio stations at the time tuning between stations was not a big issue but to actually transmit and receive a signal depended on how accurate the lengths of wire on the antennas were. Anyone who has built their own dipole antennas can attest to this, now imagine the problems they would have had before they figured out how to build a tuner.

But that will be the subject of another story.

Somehow early scientists figured out that a small pile of metal filings would stick together in the presence of electromagnetic waves RF radio waves thus permitting current to flow. They called this property coherence. When they put a small pile of the metal filings into a glass tube in between two contacts or electrodes they found out that the resistance of the device would change and allow current to flow through it when the tube was in the presence of RF. So they evacuated the tube (pulled all the air out) attached a couple of wires and called it a coherer.

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The only problem was that when the thing was subjected to radio waves and the metal filings stuck together and the current began to flow the filings would stay stuck together when the rf was removed and the current would continue to

[1] <a title="Public domain in the United States" href="//en.wikipedia.org/wiki/File:Coherer.gif

[2] By J. A. Davidson, specifically JA.Davidson. - The source is the Wikipedia entry, Coherer,

flow. Not a terribly useful communication device. Using a technique as old as science itself somebody gave the tube a tap and the metal filings fell apart stopping the current flow. Fascinating!!! OK so now somebody figured out that is you set up a simple buzzer or alarm bell on the device than you could shake it while it was detecting the RF which would break the connection when the RF was lost the De- Coherer. If RF was detected the coherer would conduct. When the RF was removed or lost then the metal filings would shake apart. The tapper would shake the cohere until it stopped conducting which would shut off the buzzer, Now we may have something we can use.

Telegraphy was a widespread form of communication from the late 1800's on. Most telegraph sets used a simple DC relay which when activated by the making and breaking of a circuit made the relay to turn on and off making a click clack sound. You could use the relay to switch on and off a light bulb of (not so useful before you had light bulbs) but it made a noise that could be understood by person trained to hear the differences in the timing of the sound the fast click and the longer clack. They stuck the relay in a sort of open faced wooden box which could be said to have been a mechanical amplifier of sorts and the telegraph sounder was born.

Ok now we have a device we call a coherer which when we give it a tap it can make a relay go clickety clack by remote control using radio waves. We add this to a telegraph sounder and now we have the first radio receiver the Coherer Receiver. Kind of convenient since there were a group of well-trained telegraphers available to understand the sounds and transmit the messages using the Morse code of the day. Fascinating what a bit of curiosity can do huh?

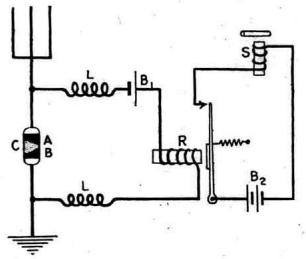

Fig. 101. Marconi 1896 Receiver.

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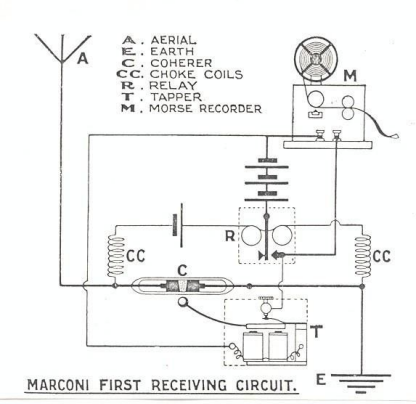
The RF picked up by the antenna would cause the metal filings C to cohere and conduct causing the relay R to kick the coherer causing it to decohere (Tapper not shown). The relay would energize the sounder coil S causing it to clickity clack depending on how long the coherer conducted.



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Incidentally the Morse Recorder was simply a relay that would push a marking device up into the paper as it slowly passed by, The mechanisms used to run the wheel were usually clock work and had to be wound up frequently.

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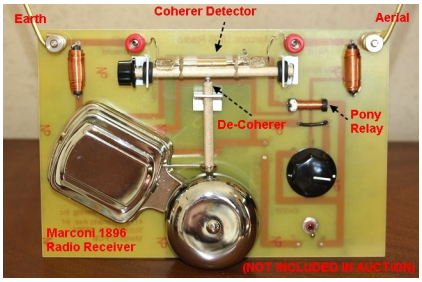
Jerry Pilate, N2WGF

2017-08-08



[3] By Unknown - "Elements of Radiotelegraphy", published in USA 1922 First upload: en:Image:Coherer Rcvr.jpg, Public Domain, https://commons.wikimedia.org/w/index.php?curid=47530357

[4] By Original image: OzeyeDerived image: Chetvorno - Derived from: File:Marconi's Coherer Receiver at Oxford Museum History of Science.jpgAlterations to original image: cropped out transmitter on left, leaving receiver, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=45637711

[5] By Original image: OzeyeDerived image: Chetvorno - Derived from: File:Marconi's Coherer Receiver at Oxford Museum History of Science.jpgAlterations to original image: cropped out transmitter on left, leaving receiver, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=45637711

Garden School ARC in the News

CHOUDHURY, NARMEEN. "Queens Students Use Radio Club to Communicate with Loved Ones in Puerto Rico." *New York's PIX11 / WPIX-TV*, WPIX • A TRIBUNE BROADCASTING STATION, 4 Oct. 2017, pix11.com/2017/10/04/queens-students-use-radio-club-to-communicate-with-loved-ones-in-puerto-rico/.

QUEENS — In the aftermath of Hurricane Maria, New Yorkers are looking for any way they can help Puerto Ricans and while some are doing it with material support, a group of students out of Queens are helping through communication.

A radio program launched out of The Garden School in Jackson Heights just two years ago began as an extracurricular activity, but is now a passion project for more than 20 students involved.

They're taking the skills they've learned to now connect loved ones in New York with family and friends in Puerto Rico.

More than two weeks after Hurricane Maria devastated the island, modern forms of communication on the Puerto Rico remain virtually cut off, so students at Garden School wanted to do more. Their teacher and founder of the Amateur Radio Club K2GSG, John Hale helped them do just that.

"I think for the kids it gives them the empowerment that they can help. It lets them get a one to one connection," said Hale.

Students receive messages by email, then transfer those messages to a Radiogram form using no more than 25 words. The radiogram is sent out through what's known as the Big Apple Net and the National Traffic System and from there the message is relayed from New York, New Jersey and Florida and then eventually to Puerto Rico. It is then left up to emergency radio networks set up by the likes of the Salvation Army, Red Cross or FEMA to transmit out to Puerto Ricans.

"We have to revert back to things we can rely on like radio and even though it may seem archaic, it works," said Garden School Senior, Jasmine Petrov.

President of the club, Lea Marie Medina said, "I think of these messages, I read them and I say this needs to be done and that's what I wake up to every morning."

The radio club's equipment was donated to the school by an alumni and the New York Hall of Science Amateur Radio Club. The program within a city school is one of the only ones of its kind in the New York area.

What is the National Traffic System

Mike Shanahan, WO2H

What is the National Traffic System?

The National Traffic System (NTS) consists of American Radio Relay League (ARRL) affiliated and independent amateur radio networks ("nets") which pass non-commercial messages on behalf of third parties as a public service. A variety of communications modes are used. CW and other digital modes are most often used for "long-haul" interstate traffic. Regional traffic is handled using both CW and SSB, while local (city or county) nets most often use FM repeaters.

The NTS has been in operation since 1949, established by the ARRL in response to membership demand. It carries on a proud tradition of message relaying, established by Hiram Percy Maxim when he founded the ARRL for the purpose of handling message traffic in 1914. The NTS is the tightest, and solidest organization within the ARRL framework.

The goals of the NTS are to provide two things:

1. Timely and reliable movement of formal written message traffic from origin to destination as a free public service to the amateur community and the general public.
2. Training of amateur operators in handling of written traffic and participating in directed nets.

Training of amateur operators in the processing of third party messages in directed nets continues the existence of a reserve of well trained radio communications personnel. The NTS also supplies communications during states of emergency on behalf of ARES and RACES, especially for medium and long range messages. It is important for these organizations to work together to provide the communications capabilities expected by served agencies.

Whatever the reason, traffic handling is a rewarding activity with which every amateur should be familiar. Few hams participate in traffic nets on a regular basis but those who do so are a very dedicated group and welcome new members. Check into a net and try this interesting facet of our hobby.

How are the nets organized?

Formal written radiogram traffic usually enters the system on local nets. In the Eastern New York section, the local FM repeater nets are Capital District Traffic Net, Hudson Valley Net, and Southern District Net. Next, liaisons move the traffic from the local nets to a section net. New York has four sections, and instead of individual section nets we have statewide nets — New York Phone and New York Public Operations Net on SSB, and NYS on CW. From the section/state nets traffic then moves to a regional net, in our case Second Region Net which serves New York and New Jersey. Next the traffic moves to an area net, in our case Eastern Area Net. Next, the traffic goes to a member of the Transcontinental Corps (TCC), a dedicated group of amateurs who handle long-haul traffic between areas. The TCC then moves the traffic to another area net, where the whole process happens in reverse. When the traffic makes it to the remote local net, an amateur takes the traffic for delivery to the recipient, usually by telephone.

The NTS Staff is responsible for oversight of the system as a whole.

Station and net reports are forwarded monthly to the ENY Section Traffic Manager (STM) Mike WO2H and Section Manager (SM) Pete N2YJZ. Active stations are eligible for the Public Service Honor Roll (PSHR) and the most active of these receive Brass Pounders League (BPL) awards. All traffic handlers in the section are recognized in the ENY monthly traffic reports.

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As of publication the Garden School ARC has passed 30 messages over the National Traffic System. 18 Welfare and 12 Routine messages.

School Club Round-up Results

Mike Shanahan, WO2H

In mid-October, the Garden School Amateur Radio club participate in the National ARRL School Club Roundup. The objective was to exchange QSO information with club stations that are part of an elementary, middle, high school or college. Non-school clubs and individuals are encouraged to participate.
Sponsored by the ARRL, its Hudson Division Education Task Force and and the Long Island Mobile Amateur Radio Club (LIMARC) to foster contacts with and among school radio clubs. Below are a list of our results.

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 K2GSG's Contest Summary Report for ARRL-SCR
 Created by N3FJP's School Club Roundup Contest
Log
 Version 1.6  www.n3fjp.com

 Total Contacts = 27
 Total Points = 2,106

 Operating Period: 2017/10/16 19:01 - 2017/10/19
13:58
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Total Contacts by Band and Mode:

Band	CW	Phone	Dig	Total	%
40	0	4	0	4	15
20	0	18	0	18	67
2	0	4	0	4	15
70	0	1	0	1	4
	--	-----	---	-----	---
Total	0	27	0	27	100

Total Contacts by State \ Prov:

State	Total	%
NY	5	19
	4	15
SC	3	11
TX	3	11
GA	2	7
OH	2	7
AK	1	4
CA	1	4
FL	1	4
IN	1	4
ND	1	4
ON	1	4
PA	1	4
WA	1	4

Total = 13

Total Contacts by Country:

Country	Total	%
USA	21	78
Alaska	1	4
Bonaire	1	4
Brazil	1	4
Canada	1	4
Panama	1	4
Portugal	1	4

Total = 7

Total Contacts by Continent:

Continent	Total	%
NA	24	89
SA	2	7
EU	1	4

Total = 3

Total Contacts by CQ Zone:

CQ Zone	Total	%
05	13	48
04	7	26
03	2	7
01	1	4
07	1	4
09	1	4
11	1	4
14	1	4

Total = 8

Other Articles and Reports about Garden School ARC

TV & Radio Reports

CHOUDHURY, NARMEEN. "Queens Students Use Radio Club to Communicate with Loved Ones in Puerto Rico." *New York's PIX11 / WPIX-TV*, WPIX • A TRIBUNE BROADCASTING STATION, 4 Oct. 2017, pix11.com/2017/10/04/queens-students-use-radio-club-to-communicate-with-loved-ones-in-puerto-rico/.

Glassberg, Lauren. "Students Use Radio Club to Reach out to Loved Ones in Puerto Rico."*ABC7 New York*, ABC Inc, 4 Oct. 2017, abc7ny.com/education/students-use-radio-club-to-reach-out-to-loved-ones-in-puerto-rico/2489216/.

NY1 News. "Students Help New Yorkers Connect with Families in Puerto Rico via Radio."*Spectrum News NY1*, Spectrum News NY1, 4 Oct. 2017, www.ny1.com/nyc/queens/news/2017/10/04/students-help-new-yorkers-connect-with-families-in-puerto-rico-via-radio.html.

CBCRadio. "When Smartphones Fail: How Students in a Ham Radio Club Are Helping Puerto Rico." *CBCnews*, CBC/Radio Canada, 6 Oct. 2017, www.cbc.ca/radio/day6/episode-358-outsmarting-the-nra-canada-s-magnitsky-act-ham-radios-for-puerto-rico-music-in-dna-and-more-1.4329733/when-smartphones-fail-how-students-in-a-ham-radio-club-are-helping-puerto-rico-1.4329877.

Video, HuffPost. "Teen Radio Operators Relay Heartfelt Messages To Hurricane-Ravaged Puerto Rico." *The Huffington Post*, TheHuffingtonPost.com, 12 Oct. 2017, www.huffingtonpost.com/entry/teens-provide-lifeline-to-puerto-rico_us_59de4c18e4b02a1709f10e8d.

Nash, Skeeter. "Amateur Radio Newsline Report 2085 for Friday, October 13, 2017."*Amateur Radio Newsline*, Amateur Radio Newsline, 13 Oct. 2017, www.arnewsline.org/news/2017/10/12/amateur-radio-newsline-report-2085-for-friday-october-13-2017.

"The Weather Channel." *When Hurricane Maria Wiped out Modern... - The Weather Channel*, The Weather Channel, 29 Sept. 2017, www.facebook.com/TheWeatherChannel/videos/10155878873375921/?hc_ref=ARQtPCfaCxJGwwZbZisLtJuVap7jiCHUGp0DYDLxrh9aiSlxZA2hFcpAUl-XFbmYxRs.

News Report

Gaines, Jim. "Amateur Radio Club's Humanitarian Efforts Featured on ABC 7 News, NY1 and PIX 11." Garden School, Garden School, 5 Oct. 2017, www.gardenschool.org/amateur-radio-clubs-humanitarian-efforts-featured-on-abc-7-news-ny1-and-pix-11/.http://www.gardenschool.org/amateur-radio-clubs-humanitarian-efforts-featured-on-abc-7-news-ny1-and-pix-11/

Honan, Katie. "Queens School's Amateur Radio Club Offers Messaging Lifeline to Puerto Rico." DNAinfo New York, DNAinfo New York, 2 Oct. 2017, dnain.fo/2fEcICT#.WdvBOgmTjHk.email.

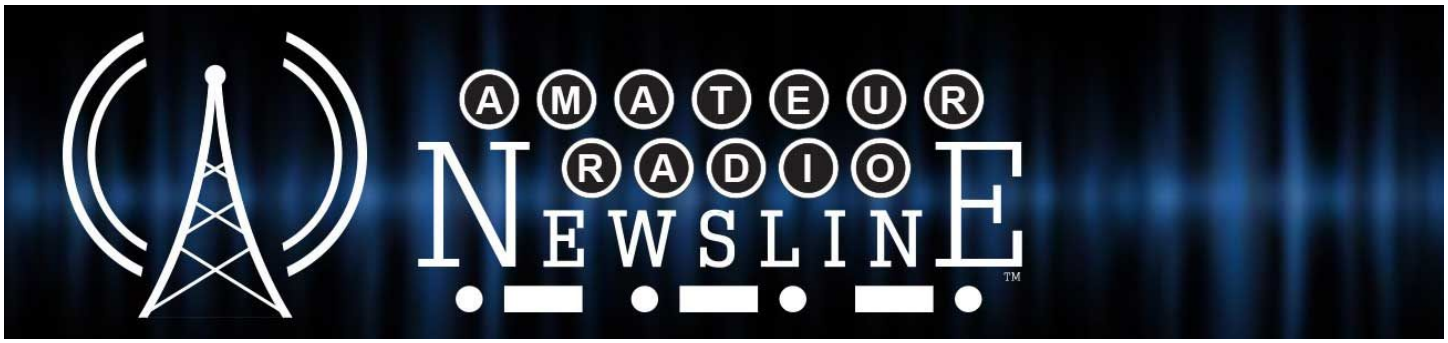
Parry, Bill. "Garden School Ham Radio Club Connects Loved Ones in Storm-Battered Puerto Rico." *TimesLedger*, Community News Group, 29 Sept. 2017, www.timesledger.com/stories/2017/39/hamradio_2017_09_29_q.html.

Neudorf, Samantha. "Here's How Garden School Is Helping Families Get in Touch with Loved Ones Affected by the Recent Hurricanes and Earthquake." *New York Metro Parents*, NYMetroParents.com, 29 Sept. 2017, www.nymetroparents.com/article/garden-school-radio-club-connects-families-affected-by-hurricane.

"Garden School Wins Blue Ribbon At New York Makers Faire." *Queens Gazette*, The Service Advertising Group, Inc., 4 Oct. 2017, www.qgazette.com/news/2017-10-04/Features/Garden_School_Wins_Blue_Ribbon_At_New_York_Makers_.html.

Social Media

ARRL. "ARRL - the National Association for Amateur Radio." *60-Seconds: #HamRadio at 2017 World... - ARRL - the National Association for Amateur Radio*, American Radio Relay League, 24 Sept. 2017, www.facebook.com/ARRL.org/videos/10155203732592408/?fref=mentions.



Amateur Radio Operator's Code of Conduct

The Radio Amateur is

CONSIDERATE...He/[She] never knowingly operates in such a way as to lessen the pleasure of others.

LOYAL...He/[She] offers loyalty, encouragement and support to other amateurs, local clubs, the IARU Radio Society in his/[her] country, through which Amateur Radio in his/[her] country is represented nationally and internationally.

PROGRESSIVE...He/[She] keeps his/[her] station up to date. It is well-built and efficient. His/[Her] operating practice is above reproach.

FRIENDLY...He/[She] operates slowly and patiently when requested; offers friendly advice and counsel to beginners; kind assistance, cooperation and consideration for the interests of others. These are the marks of the amateur spirit.

BALANCED...Radio is a hobby, never interfering with duties owed to family, job, school or community.

PATRIOTIC...His/[Her] station and skills are always ready for service to country and community.

- adapted from the original Amateur's Code, written by Paul M. Segal, W9EEA, in 1928

Local Public Service Nets

from "New York City District ARES." *New York City District ARES*, New York City District ARES, 2017, aresnyc.org/public-service-nets/.

If you have a favorite net, know of net that should be included or ones that should be left out please contact us. This list can be very useful if we all help to make it great.

Public Service Nets

- NYC District ARES Net
  - Monday @ 8:30PM on NC1 – W2ABC (VHF) 147.270Mhz +600Khz 141.3 PL
  - (Back-up repeater: CW1 – KC2LEB / 440.550 / +5Mhz / 141.3 PL)
- County ARES Nets
  - Bronx: TBA
  - Kings: Sunday @ 8:00pm on WA2JNF 446.675 Mhz, -5 Mhz, 114.8 PL Tone
  - Queens: (Day/Time TBA) on N2NSA 443.300 +5Mhz, 123.0 PL Tone
  - New York: Tuesday @ 8:30pm on W2ABC 147.270 Mhz, +600 Khz, 141.3 PL Tone
  - Richmond: (Day TBA) @9:00pm on WA2IAF 146.880 Mhz -600Khz 141.3 PL Tone

National Traffic System (NTS) Nets

- Big Apple Traffic Net: Daily @ 8:00pm on 440.600 +5Mhz PL 141.3
- New Jersey: VHF (Early): Daily @ 7:30pm on 146.895 -600 kHz PL 151.4
- Hudson Valley: Daily @ 7:30pm on 146.970 -600 kHz PL 100.0
- Nassau County: Daily @ 7:30pm on 146.805 -600 kHz PL 136.5
- Southern District: Daily @ 9:30pm on 147.060 +600 kHz PL 114.8
- New Jersey: VHF (Late): Daily @ 10:30pm 146.700 -600 kHz PL 141.3

Garden School Amateur Radio Club

Scholarship Opportunities

There are many opportunities for students who are Licensed Amateur Radio Operators out there to help with college tuition. Below is a list just some of these opportunities that are available to students in our area. Most do require that the student is a Licensed Operator. We are offering a class in February to help students get those licenses. If you are interested please contact Mr Hale at kd2lpm@jrhaleteacher.me.

- Androscoggin Amateur Radio Club Scholarship- $1,000
- The ARRL General Fund Scholarship- $2,000
- The Ernest L. Baulch, W2TX, and Marcia E. Baulch, WA2AKJ, Scholarship- $3,500
- The Richard W. Bendicksen, N7ZL, Memorial Scholarship- $2,000
- The Henry Broughton, K2AE, Memorial Scholarship- $1,000
- The L. B. Cebik, W4RNL, and Jean Cebik, N4TZP, Memorial Scholarship- $1,000
- The Dayton Amateur Radio Association Scholarship- $1,000
- The Alfred E. Friend, Jr., W4CF Memorial Scholarship- $5,000
- The Ted, W4VHF, and Itice, K4LVV, Goldthorpe Scholarship- $500
- The K2TEO Martin J. Green, Sr. Memorial Scholarship- $1,000
- The Dan Huettl, WZ7U, Memorial Scholarship- $1,000
- The Dr. James L. Lawson Memorial Scholarship- $500
- The Scholarship of the Morris Radio Club of New Jersey- $1,000
- The Victor Poor, W5SMM, Memorial Scholarship- $2,500
- The Don Riebhoff Memorial Scholarship- $1,000
- The Bill, W2ONV, and Ann Salerno Memorial Scholarship- $1,000
- The Carole J. Streeter, KB9JBR, Scholarship- $1,000
- The Robert D., W8ST, and Donna J., W9DJS, Streeter Scholarship- $1,000
- The Alan G. Thorpe, K1TMW, Memorial Scholarship Fund- $1,000
- The W1FDR Scholarship- $1,000
- The Betty Weatherford, KQ6RE, Memorial Scholarship- $1,000
- The William C. Winscott, N6CHA, Memorial Scholarship- $2,500
- The YASME Foundation Scholarship- $3,000
- Yankee Clipper Contest Club Youth Scholarship- $1,200

Our Contacts - Worldwide, USA & Canada