

# The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

January 2020

Volume 26 Issue 01



Reported by  
Marv Beeferman

**The ON-LINE Broadcaster**  
**The Jersey Broadcaster is now on-line.** Over 160 of your fellow NJARC members have already subscribed, saving the club a significant amount of money and your editor extra work. Interested? Send your e-mail address to [mbeeferman@verizon.net](mailto:mbeeferman@verizon.net). Be sure to include your full name.

HAPPY NEW YEAR! Hope all our members enjoyed the holidays and, for those who attended, our annual Holiday Party. This year, we paid tribute to our museum historian volunteers for their exceptional work in assisting our visitors, both young and old, in appreciating the work of the great minds of the past that created the "Information Age." Perhaps some of these youngsters were inspired to go on to bigger and better things and some "oldsters" were inspired to revive a long-forgotten hobby.

A special thanks goes out to president Richard Lee whose high "spirits" inspired the evening, to Bill Zukowski for handling arrangements with the Country Club and to Sal Brisindi for the great music.

## CALL FOR DUES

With the new year comes our call for 2020 dues. Your E-Board, with the support of an excellent job by treasurer Harry Klancer, has held the annual cost at \$25 (\$30 for a family membership). This still remains quite a bargain in light of the many club benefits:

- Twelve issues of the *Jersey Broadcaster*.
- An entertaining and informative web site.
- The NJARC Communicator - an efficient forum for the exchange of member

information.

- Two convenient and historic meeting locations.
- Unique technical presentations by knowledgeable members and experts in the field.
- Repair clinics and challenging contests.
- Capacitors, tubes and parts at bargain prices.
- Resources for schematics and technical information.
- An award-winning radio museum, an expanding technical library and a vintage radio repair facility for member use.
- Auctions, "PAL" swapmeets and an InfoAge tailgate.
- A subsidized Holiday Party.
- A ham radio station...and much, much more.

Dues will be collected at monthly meetings and other club activities or you can mail a check made out to the "NJARC" to our membership secretary:

**Marsha Simkin  
33 Lakeland Drive  
Barnegat, NJ 08005**

Payment via PayPal is also available at the club's website but it will cost us a fee. Membership cards will be mailed to those who have paid in advance and to honorary and lifetime members.

For members receiving the *Broadcaster* by mail, check the code next to your name on the mailing label. Honorary (H) and Lifetime (L) members are exempt from paying dues. If you're receiving your *Broadcaster* by email and you're not sure about your membership status, it will be provided when you pay your dues. You can also contact Marsha at 609-660-8160 / [mhsimkin@comcast.net](mailto:mhsimkin@comcast.net).

Finally, if you're planning to offer items at our Members Only Auction, please note that you must be a member in good standing to participate. Also, please limit your items to those of "reasonable" quality. This is **not** an opportunity to clean out your basement or garage of items that have been collecting dust, mold, rust or varmint nests over the last 25 years.

## Upcoming Events

January 17 to 26 - NJARC BCB DX contest

February 8 - Winter Repair Clinic at InfoAge room 9032A

February 14 - Monthly meeting at Princeton's Bowen Hall; Al Klase talks about Bluetooth installation in antique radios

March 13 - Monthly meeting at Princeton's Bowen Hall; presentation by Prof. Mike Littman, topic TBA

March 28 - Spring swapmeet/hamfest at Parsippany PAL

April 10 - Monthly meeting at InfoAge room 9032A; Larry Rubins talks about audio HiFi

April 25 - International Marconi Day celebrated at NJARC station W2RTM at InfoAge

May 7,8,9 - Kutztown radio swapmeet

May 15 - Monthly meeting at InfoAge room 9032A; Show & Tell and Hints & Kinks

May 23 - Spring Repair Clinic at InfoAge room 9032A

June 3 - E Board meeting at the RTM at InfoAge

June 12 - Monthly meeting at Princeton's Bowen Hall; Joe Jesson presents "What You Didn't Know About the AR-88"

June 19, 20, 21 - ARRL Field Day on InfoAge grounds

July 25 - Summer Tailgate/Hamfest on InfoAge Grounds

**THE JERSEY BROADCASTER** is the newsletter of the New Jersey Antique Radio Club (NJARC) which is dedicated to preserving the history and enhancing the knowledge of radio and related disciplines. Dues are \$25 per year and meetings are held the second Friday of each month at InfoAge or Princeton University. The Editor or NJARC is not liable for any other use of the contents of this publication other than information.

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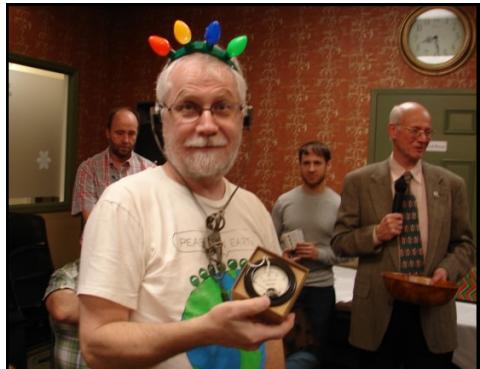
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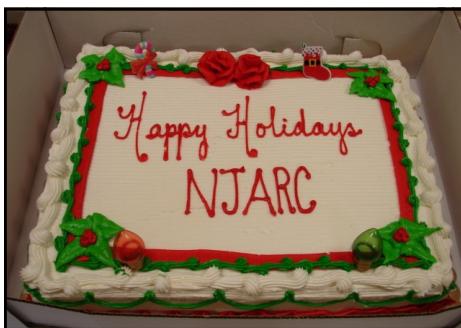
## JOHN MIHAL PASSES

By  
Marv Beeferman

The NJARC sadly announces the passing of longtime member John Mihal, 92, on October 7, 2019. John was a graduate of Garfield High School, New Jersey, and served in the United States Army in Nuremberg, Germany from 1944 to 1946. He attended Bucknell University and then worked at ITT as a technician for over 50 years. John had a passion for electronics and cars and served as a volunteer at St. Peter and Paul Russian Orthodox Cathedral in Passaic, NJ, for many years.

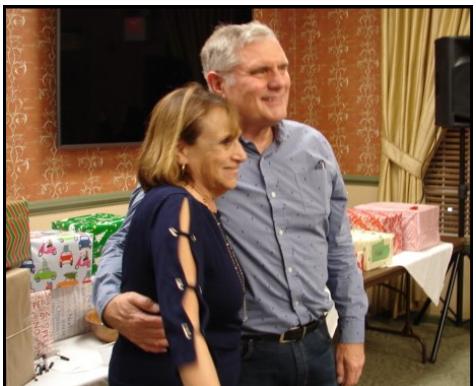


## NJARC HOLIDAY PARTY DECEMBER 2019



Follow a live version of gifting and stealing at Bob Bennett's "RadioWild!"

<https://www.youtube.com/watch?v=lqrCIHjdeYO>



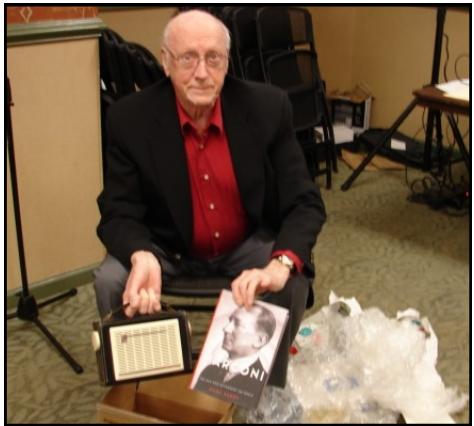
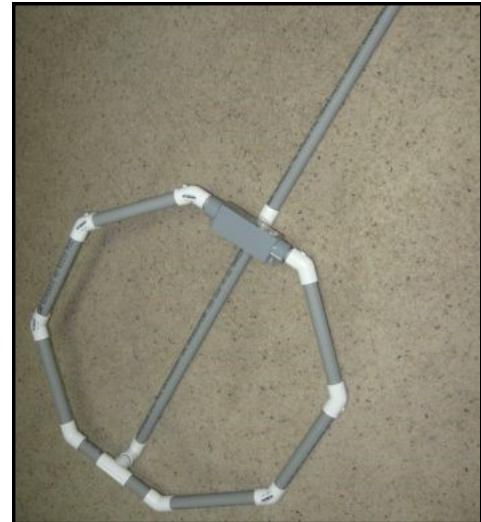


## BUILDING AN AM LOOP EAS ANTENNA

**Edited by  
Marv Beeferman**

*With the upcoming BCB DX Contest, I thought it would be useful to describe the building of a PVC pipe loop antenna for those members who don't have easy access to a long wire. The original project was designed by Ken Beckwith, a field engineer with EMF based in Nebraska and was posted by John Bisset in the September 23rd "Radio World." ...Ed*

During the construction of this project, it would be useful to occasionally refer to the below photo of the completed antenna in order to help you piece together all the angled elbows and tees.



## BROADCAST BAND (BCB) DX CONTEST ANNOUNCED

Technical Coordinator Al Klase has suggested that we "warm up our radios" for our annual Broadcast Band (BCB) DX Contest which will run from January 17th through January 26th. The rules for the contest may be found on page 8 of this month's *Broadcaster*. Additional information may be found at:

<http://www.njarc.ar88.net/contest.html>

Here you will find log sheets, a station list, a list of distances to major stations, a typical station target list from New York and Philadelphia, Al's story of DX'ing with a Zenith 12S232 and additional DX information.

As usual, your editor would appreciate that you take a picture of you and your rig (or just your rig if you're camera shy) and include any additional information about your DX experience. Send them to [mbeeferman@verizon.net](mailto:mbeeferman@verizon.net) or post them on the Communicator.



Note that to improve the strength of the loop, a piece of conduit was added down the middle. A parts list is included at the end of this article. Assemble the parts without glue, first. Once everything is fitted properly, use PVC cement to make a permanent bond.

Construction starts with one tee, to which is attached two, 4-inch pieces to the arms of the tee. A 2-1/4 inch piece attaches to the bottom of the tee. The 90-degree elbow attaches to the other end of the 2-1/4 inch piece, but save this step until later.

Two 45-degree elbows attach to the 4-inch pieces so that they lay flat. This is so the "tail" of the tee is at 90 degrees, as shown on the figure that is on the next page. The 9-1/2 inch pieces of PVC attach to the elbows next. Then, another set of elbows and another set of 9-1/2 inch pieces.



Continue with a third set of elbows and the 9-1/2 inch pieces. Attach the 2-1/8 inch pieces to the last elbows. The "tee box" is connected to the 2-1/8 inch pieces so that the bottom of the tee sticks up parallel with the tee at the top of the antenna.

Attach the 23-1/4 inch piece to the 90 degree elbow mentioned above and then attach the other end of the elbow to the 2-1/4 inch piece on the top tee. Position it so that the bottom end will connect to the remaining tee at the tee box.

Attach the 2-inch piece to the tail of the remaining tee, then connect it to the 23-1/4 inch piece so that the 2-inch piece fits down into the bottom of the tee on the tee box per the below photo.



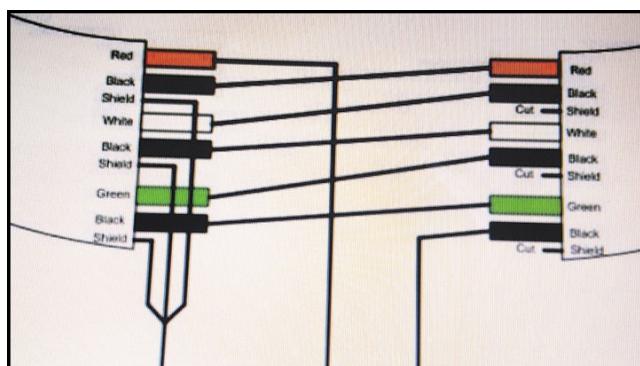
Attach the remaining piece of conduit to the other end of the tee, and attach the end cap to the end of that piece. Construction is now complete and parts may now be glued together.

After the glue is dry, fish a "pull string" through the conduit loop. A vacuum cleaner will make the job easier. Tie the Belden cable to the end of the pull string and secure it with electrical tape. Pull the cable through the pipe.

Strip the jacket off both ends of the cable and unwrap the shielding foil from each of the three pairs and from both ends. Cut the shield wires off only one end of the cable. Join the ground wires at the other end together. Take the red wire next to the shields and lay it with the shields - it will be connected later. Take the other end of the red wire and connect it to the opposite end of the black wire paired with it. Solder these connections and cover

them with a short piece of heat shrink or electrical tape. You will now be making a six-turn coil using the multi-pair wires.

Now take the other end of the black wire described above and connect it to the white wire on the opposite side. The second end of the white wire connects to the black wire of the same pair at the first end. That black wire then connects to the green wire on the opposite side. The second end of the green wire then connects to the opposite end of the black wire it is paired with. The second end of the black wire connects to ground along with all of the shields.



(Note: You might question the grounding of the conductor shield. In this antenna design, the shield is the primary of a "transformer" that actually receives the AM signal. The wire conductors form the secondary of the transformer and provide the signal to the RF connector going to the receiver. If the shield was not grounded, there would be no voltage generated to the loop.)

Once the connections are made, connect the shields and the black wire from the opposite side to ground using a 3/8-inch ring connector. This is held in place using the nut securing the F connector barrel to the tee-box housing.



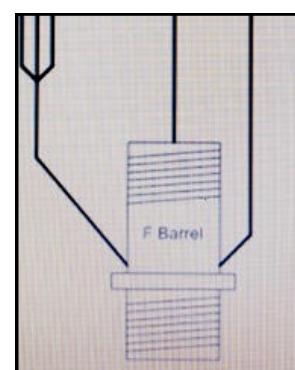
The completed antenna.

### Using the Antenna

This antenna has a broad coverage angle with a deep null when the antenna end or edge is pointing to the signal source. The antenna can be mounted on a mast with U-bolts, hose clamps or whatever else works. If you build this loop, please contact me and tell me how you made out.

### Parts List

Ten-foot length of 3/4-inch diameter, schedule 40 PVC conduit cut into the following lengths:



2 - 4-inch  
1 - 2-inch  
1 - 2-1/4 inch  
2 - 2-1/8 inch  
6 - 9-1/2 inch  
1 - 23-1/4 inch

Whatever is left over may be discarded, but before making your cuts, cut the flared end off so that all cuts are even.

1 - 3/4-inch 90 degree elbow  
2 - 3/4-inch tee  
8 - 3/4-inch 45 degree elbows  
1 - 3/4-inch cap  
1 - 3/4-inch tee box, plastic, with weather-proof gasket  
1 - 7-foot piece of Belden 8777 or other three-pair shielded cable (3 7-foot single pair shielded cables can substitute for Belden 8777)  
PVC primer and cement  
Wire nuts or other connectors  
1 - 3/8-inch ring terminal  
"F" connector barrel with nut

### SHOP TALK

By  
**Mary Beeferman**

Our vintage radio repair shop at InfoAge receives a lot of donations. Among these are a few items in the category of "quite cool" or "never seen one before" that arouse the curiosity of members who show up on Wednesday work days. Perhaps this is another reason to show up on these days - you get to add your two cents of speculation to some heated but courteous discussions.

Bruce Ingraham, who is doing a fantastic job organizing our tube inventory, recently came up with an oddball 5Z4. Manufactured by RCA/Cunningham, on the surface, it looks like a ballast tube surrounded by a metal shell perforated with holes. Not much could be viewed regarding its internal construction when examined with a flashlight.



The 5Z4 is described as being designed for service as a full-wave power rectifier in AC operated receivers. Unfortunately, the only information I could find at first covered the same tube with a solid metal envelope. It took a posting on the Antique radio forum to get the rest of the story.

RCA introduced a set of metal vacuum tubes in 1935. These are called the "original nine" by tube collectors. The 5Z4 was one of those "nine" tubes. Internally, it has two separate, long metal tubular plates with each plate evacuated and having a filament within. The metal tube plates have a glass seal on each end with the connection wire from the filament extruding through the glass seals. The plates are the anodes and are "hot," both physically and electrically, so they were enclosed in a metal shell perforated with holes for protection and cooling.

It was immediately recognized as a bad idea to have electrically "hot" plates where a little piece of wire, hardware, etc. could fall through the holes in the outside shell and short the plate elements. Shortly after it was introduced, RCA remanufactured the 5Z4 to have a tall, non-perforated metal shell like that of a 6V6, 6F6, 6D5, etc. One commentator recalls that RCA had a replacement program where anybody dissatisfied with a perforated 5Z4 could return it to an RCA dealer and exchange it for a solid shell one.

An additional problem with the original 5Z4 was that, in humid weather, there

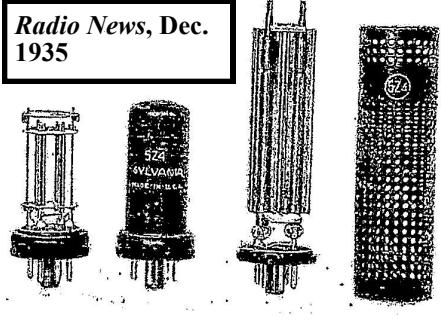
would be a tendency for it to ionize the air around it and produce corona, along with ozone. The corona was more of a nuisance as it would cause noise or static on the radio.

The perforated 5Z4 has the same characteristics as the later production models and can be tested in a tube tester as a 5Z4. However, it has been discovered that some of the metal-glass seals were less than perfect and the tubes are often gassy. The tube itself is uncommon but not considered "rare."

### New Small-Size Metal Tube Rectifier

A new type 5Z4 metal tube, interchangeable with the original cage type 5Z4 metal rectifier was recently introduced by Hygrade Sylvania Company. The outstanding feature of the new tube is its reduced size, which the manufacturer points out was accomplished without loss of any of the electrical characteristics. The height of the tube is  $3\frac{1}{4}$  inches and the diameter is  $5\frac{1}{16}$  inches. The filament current drain is 1.5 amperes as compared to the 2.0 amperes drain of the original 5Z4. The decreased filament wattage results in lower operating temperatures. The new tube will also replace type 5Y3, the glass rectifier tube incorporating the octal type base.

*Radio News, Dec. 1935*



Beginning around the early 50's, a host of gadgets were being offered to provide easy fixes for TV's without going through the expense of changing out a CRT or paying for extensive circuit repairs. I'm sure many of you are familiar with the picture tube brightener that increased the voltage and current on the tube's filament. In the December 2019 issue of the *Tube Collector*, honorary NJARC Ludwell Sibley posted an article describing something called a "Short Fixer."

"It's a white plastic molding with slide switches on the front. On the rear is a 12-pin (duodecal) socket with holes for the usual six pins. A two-wire cord goes to an octal plug wired to pick up high voltage from the TV set's rectifier socket.

Pressing one of the switches slings 600 volts or so, at maybe an amp, into a leakage in the tube. This device differs from picture-tube emission rejuvenators, which discharged a capacitor with 400 volts or so DC between the grid and cathode, usually through a current-limiting resistor."

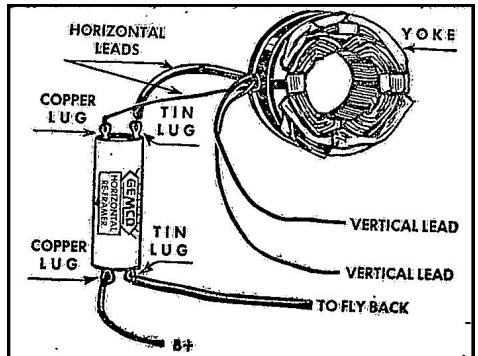
Another item recovered by Bruce Ingraham from a box of tube donations was something called a GEMCO "Horizontal Re-Framer." The box advertises it as "The easy way to get more width - can be installed without removing chassis from cabinet."



The company offered three models with the above Model B being described as follows:

"Anti-saturation design for T.V. sets where centering is accomplished without centering potentiometer. Use of this low cost model will result in terrific gain in horizontal sweep plus an increase in the high voltage. Centering is also made much easier."

The item came with the following instructions for its installation:



This model was designed to add width to sets where centering was accomplished by setting the focus coil. It could be used on any set but would render centering controls inoperative. The unit is polarized - the copper lugs are hooked in series with the B+ return lead of the yoke.

A teleprinter (teletypewriter, Teletype or TTY) is an electromechanical device that can be used to send and receive typed messages through various communications channels, in both point-to-point and point-to-multipoint configurations. Initially, they were used in telegraphy which developed in the late 1830s and 1840s as

the first use of electrical engineering. A couple of the club's radio boys (Al Klase, Jules Bellisio and Bruce Ingraham) have pulled a few examples out of storage and are attempting to come up with a working model. Bruce is of significant value since he worked on these units in his "younger" days.

Knowing nothing about how these things worked, I got a summary seminar from Jules and was amazed how the teletype was the epitome of the synthesis of mechanical and electrical engineering. Jules described it as a "mechanical computer." One of the things that Jules explained was the operation of the "Here is" key.

The "Here is" key transmitted a fixed sequence of 20 or 22 characters over phone lines. The characters were "programmable" by breaking tabs off of a drum. This sequence could also be transmitted automatically upon receipt of an ENQ (control E) signal. This was commonly used to identify a station; the operator could press the key to send the station identifier to the other end, or the remote station could trigger its transmission by sending the ENQ character, essentially asking "who are you?"

The basics of the teletype would make a great presentation topic for a future NJARC meeting. Let's hope we can convince the guys to agree.



## HINTS AND KINKS

**Edited by  
Marv Beeferman**

*The following hints and kinks were suggested by Al Ross and Ernie Beetz (originally found in Electric Radio) as published in the "Horn of Plenty," newsletter of the Puget Sound Antique Radio Association...Ed*

It's a good idea not to leave batteries in radios that you don't regularly use. Nothing is more disturbing than to open a radio's battery compartment and find the batteries to be a leaking mess. Although batteries may begin to leak acid when in a discharged condition over a long period of time, new batteries have also been known to leak. The chemical that leaks from alkaline batteries is potassium hydroxide which is both alkaline and toxic. It eats through metal battery contacts and is a skin irritant.

To repair the effects of battery leakage, you will need the following items: white vinegar, several Q-tips, a few pieces of facial tissue, a small screwdriver and a bottle or can of DeoxIT. Begin by removing the batteries and mopping up any alkaline electrolyte with Q-tips; be careful not to get any on your fingers or

you may opt to wear rubber gloves. Scrape away any loose corrosion with the blade of a screwdriver. Don't blow the dust away - it will fly everywhere and cause more damage. Instead, pick it up with a Q-tip dipped in vinegar.

The vinegar (dilute acetic acid) will neutralize the battery electrolyte. Rub the battery contacts with a Q-tip moistened with vinegar to remove the greenish or brown corrosion - this may take a few applications. Unless the alkaline electrolyte is completely neutralized, it will continue to attack the battery contacts. Finish with a final wipe with a water-moistened Q-tip to remove residual vinegar.

(Editor's Note: In cases where the batteries have leaked over a long period of time, you will probably find that contacts have also rusted. A Dremel tool or emery cloth may be required to get contacts completely clean. If used, be careful not to spread fine particles, especially when restoring transistor radios.)

After the contacts have dried, apply a coat of DeoxIT to restore good conductivity. A bottle with brush instead of a spray can might give you more control in its application.

\*\*\*

Miniature brass tubing can be used to make neat, unobtrusive coupling sleeves for in-line splices of wires or component leads. These sleeves allow making clean repairs without damaging adjacent wires, components, tube sockets or terminal strips.

Making the sleeve and using it is straightforward. Small-diameter brass tubing is usually available in hobby or craft stores, or some hardware stores. It can also be ordered online from McMaster Carr or various hobby suppliers.

Cut the tubing with a razor saw. If holding it in a small vise or clamp, push a wire into the tubing to prevent it from being inadvertently crushed. Cut the tubing to a length of about 3/8" and deburr its ends using a small-diameter drill bit. Then crimp the cut sleeve in the middle using a dull diagonal cutter or other means at your disposal.

To use the sleeve, cut the component's lead about 1/2" from the point to which it is connected. Then, slide the sleeve over the remaining lead and insert the lead of the new component into the other end. Squeeze the two halves of the sleeve with a pair of pliers to secure it and then solder the joints.

## The 2020 NJARC BCB DX Contest - 17-26 Jan 2020

In the 1920's and 1930's some radio listeners would compete with each other for the reception of the most distant stations using the same receivers that we now restore and cherish. We can recapture some of the excitement that the early DX'ers experienced in our own contest.

### Official Contest Rules

**THE OBJECT:** To use vintage radios receivers to receive broadcast-band signals from the greatest possible distance. Performance will be judged by the total mileage for your ten best loggings during a 24-hour session. You will be competing against competitors using similar receivers.

**ELIGIBILITY:** The contest is open only to members in good standing of the New Jersey Antique Radio Club.

**CONTEST PERIOD:** The contest period will be from 12:00 Noon, local time at the receiving location, Friday, January 17, 2020 through 12:00 Noon, Sunday, January 26, 2020.

**SESSIONS:** Contestants may submit logs for any two 24-consecutive-hour sessions (noon to noon) during the contest period. You may use only one receiver during a session. That means you may not "bird dog" the simple radio with a more complex radio. You may submit logs for two different receivers. They need not be in the same category.

**FREQUENCIES:** The Broadcast Band, as defined for the contest, will be from 530 to 1600 kilocycles. No stations on the new extended band, 1610 to 1710 kilocycles, will be counted since many early radios did not cover those frequencies.

**RECEIVER CATEGORIES:**

- A - Crystal radios
- B - Primitive tube or transistor receivers (homebrew also) - 1 to 2 tubes or transistors, plus power supply.
- C - 1920's battery sets (homebrew also) - batteries or modern power supply are OK.
- D - Other tube radios sold for home entertainment.
- E - Amateur, commercial, and military tube-type communications receivers.
- F - Any radio of your choosing.
- G - "Light-Weight": Any radio weighing less than one pound (454 grams).

**SPECIAL AWARDS** will be given for the best performances by first-time contestants.

**ANTENNAS:** Anything you like.

**LOGS:** Submit a log for each of your contest sessions (maximum of two). Each log header should include contestant's name, address, e-mail address if applicable, phone number, category, and description of receiver and antenna. Please include your listening address if it is different from your mailing address.

Make a log entry for each station you claim to have heard. Stations must be positively identified. (This is being done on the honor system, and is a somewhat variable concept. If you hear Boston weather on what you know is 1030KC, then go ahead and log WBZ. (However, just because you heard a signal on 1160 KHz doesn't mean you heard KSL in Salt Lake City.) The contest committee reserves the right to disallow what it feels are outrageous claims. Each entry should include time, frequency, call letters, location, and optional comments. Although we're only judging your ten most distant loggings, submit as complete a log as possible. The committee may make special awards for most stations, most interesting log, etc. as it sees fit.

A log sheet has been provided for convenience. You may reproduce it or generate a similar one of your own.

Logs must be postmarked not later than midnight Monday, February 3, 2020.

Logs may be submitted as email attachments.

**SCORING:** Distances to stations will be calculated by the committee, and will be based on great circle distances from Freehold, New Jersey for listening posts within a 100-mile radius of Freehold. We will calculate mileage for other entries based on actual listening location. In all cases, please indicate your ten best loggings to make our job easier.

**Special Rule #1:** A contestant may claim only one of the Cuban time stations, Radio Reloj, regardless of how may are actually heard. All will be scored as 1279 miles (Havana).

Submit logs to: Tom Provost, 19 Ivanhoe Dr., Robbinsville, NJ 08691, tprovost@optonline.net

Questions: Al Klase - 908-892-5465 - ark@ar88.net, Tom Provost - 609-243-2508