

The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

April 2013

Volume 19 Issue 4



**MEETING/
ACTIVITY
NOTES**

Reported by
Marv Beeferman

The ON-LINE Broadcaster

The New Jersey Broadcaster is now on-line. To date, 130 of your fellow NJARC members have subscribed, saving the club and your editor a significant amount of money and work. Interested? Send your e-mail address to mbeeferman@verizon.net. Be sure to include your full name.

Although I could not attend last month's meeting, I had a front row seat courtesy of member Dave Sica's live broadcast of the event via our club's web site. Quite honestly, I was very impressed by the quality of the "webcast," especially since it was carried over a phone connection and a ten year old computer. Unfortunately, the streaming program that Dave utilizes (at no cost) requires the viewer to deal with a few commercials, but they are only a minor nuisance. So, if you're unable to get to one of our meetings, I can attest to the fact that the very best next thing is to take advantage of this underutilized resource. Just go to our website (www.njarc.org) and click on the link to the monthly meeting broadcast.

Technical Coordinator Al Klase demonstrated his radio map project which was mentioned in the March *Broadcaster*. For those who couldn't make the meeting, I asked Al to provide a short summary which is included in this month's issue.

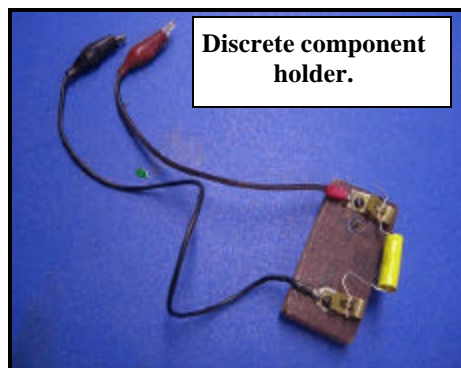
A nice sampling of hints and kinks (simple but not so obvious tricks and shortcuts that make radio restoration and troubleshooting a lot easier) was demonstrated by our members. Sal Brisindi suggested using an oven mitt to pull hot tubes without having to wait for them to cool down. Walt Heskes demonstrated a few



MEETING NOTICE

The next NJARC meeting will take place on Friday, April 12th at 7:30 PM at Princeton's Bowen Hall (70 Prospect Ave.). Directions may be found at the club's website (<http://www.njarc.org>). At this month's meeting, we'll take on the subject of FM alignment. This topic, the cause of some concern and even intimidation, will be demonstrated by our Technical Coordinator Al Klase. Al will walk us through the procedure covering the required test equipment and its connection and operation and how to "sweep" an IF and adjust for the proper response. If you've ever wondered about FM alignment, don't miss the April meeting!

of "W2MQ's Home Brew Bench Tips and Techniques" found in a very nice handout that he distributed to the membership. They included using a transistor radio to confirm the health of a local oscillator, building a pocket-sized capacitor checker, a discrete component holder for in-circuit testing, selecting brushes for cleaning, adding an S-meter to an AA5 and building a customized extension cable for servicing a Zenith TransOceanic 3000.



Discrete component holder.

John Ruccolo talked about the use of variable power supplies as substitutes in troubleshooting AC radios. Nevell Greenough reviewed possible sources of unwanted oscillations (motor boating) in some of the radios he worked on during the last repair clinic. One point that Nevell stressed, for high-end radios, is to insure to return grounds to their original connection points (not necessarily the chassis) and mount parts in their original locations. He also described a "fiddle stick" than can be constructed from an

insulated rod with a ferrite end and a brass end. Each material will change the resonant frequency of a circuit (lower or increase it) and help make tuning a little easier. Finally, Professor Mike Gottfried suggested a good supply of rubber bands as a "third hand" and demonstrated how a hand drill can be used to easily make twisted pairs, a must in higher frequency applications to prevent induced noise.

Technical Coordinator Al Klase congratulated the following attendees who were winners in our annual BCB DX contest:



Ed Suhaka



Nevell Greenough

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 \$20 per year and meetings are held the second Friday of each month. The Editor or NJARC is not liable for any other use of the contents of this publication.

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Dave Snellman

On March 16th, InfoAge (closed since late December because of electrical problems caused by Hurricane Sandy) reopened. Director Fred Carl said the reopening is the result of the Wall Township Committee's recent decision to loan the center a heavy-duty generator to provide electrical power for the three buildings in which the interactive museums open to the public are located. In announcing the reopening, Fred noted that dozens of volunteers continued to work tirelessly to maintain the InfoAge campus during the past few months. The club will resume meetings at the site as soon as possible.



Take note of two major events in April. On Saturday, April 20th, we'll hold our Spring swapmeet at the Parsippany PAL building. Then, a week later, on April 27th, we'll hold our annual InfoAge radio/electronics auction. Details of both events are included in this month's *Broadcaster*.

Finally, there are quite a few members who have not renewed their membership for 2013. For those receiving the *Broadcaster* by mail, a "LAST ISSUE" label will be the final notification. If you receive your *Broadcaster* by email, you will be notified with your last issue. You can send your \$25 check made out to the NJARC to Marsha Simkin, 33 Lakeland Drive, Barnegat, NJ 08005. A PayPal payment can also be made via the club's website.

Upcoming Events

April 20th: NJARC Spring Swapmeet at Parsippany PAL (see page 8 for flyer)
April 27th: InfoAge Radio/Electronics auction (see page 7 for details)
May 3rd: Monthly meeting at InfoAge (if power is restored); Homebrew contest and Basket Case Radio Restoration contest judging
May 10/11: Kutztown PA radio swapmeet
June 14th: Monthly meeting at Princeton; Show & Tell and Estate Planning talk
June 22nd: Repair Clinic at InfoAge
July 12th: Monthly meeting at Princeton
July 27th: Tailgate Swapmeet at InfoAge

RADIO MAP PROJECT

By
Al Klase

A lot of local radio history is associated with specific geographic locations, starting with Marconi's 1899 operations from the Highlands Lighthouse. My original intention was to create an automobile rally, or tour, that would lead participants to the best of these sights, starting with the 1912 German radio station at Tuckerton in South Jersey, and working our way north.

The rally proved to be impractical for a number of reasons, especially distance and time, but now we have Google Earth, a computer application, that allows us to virtually visit any desired location from the comfort of our computer chairs.

The system consists of two parts: First, Google Earth, a free program that runs on your PC, and accesses a large database via your internet connection to create the images you see. Second, a Google Earth Places file that overlays our specific Radio Map data on the Google Earth images.

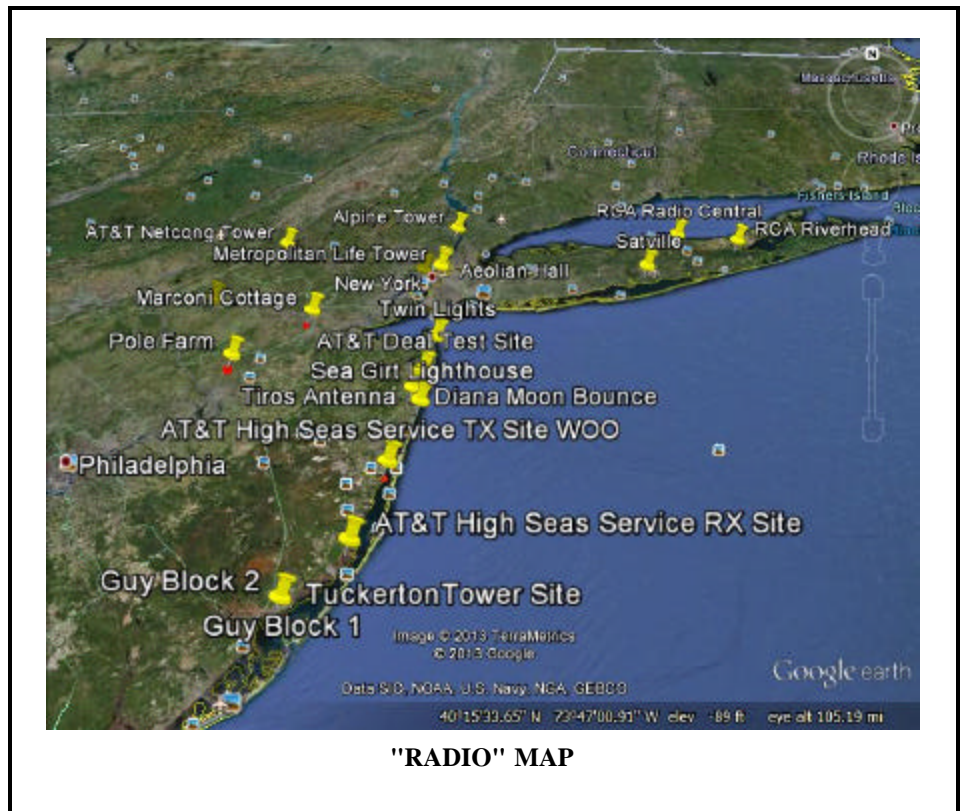
Once you've installed Google Earth, fly around and zoom in on a few places, like your own house, to get a feel for the program. Note that Google earth is a "resource hog" and may not be happy running on older computers. Then, download and execute the latest Radio Map.KMZ file. Push pins will appear on your

Google Earth image identifying the historic radio locations. Clicking on a push pin will open a window with pictures of the site and links to websites with additional information.

This is much easier to experience than to imagine. Go to this website and get started: http://www.ar88.net/radio_map/

The Radio Map is a work in progress. Feel free to make suggestions and nominate additional sites. Google Earth will allow you to create "places" of your own. Click the "Push Pin" in the Tool Bar and right-click the item created in your "Places" panel. Then, email the resulting ".KMZ" file to me for inclusion in the master file.

Have fun!



"RADIO" MAP

INFOAGE RADIO/ELECTRONICS AUCTION

By
Ray Chase

On April 27th, sandwiched between our Parsippany radio swap meet on the 20th and the Kutztown meet on the weekend of May 10/11, NJARC and InfoAge will conduct an annual radio/electronics auction. Although this is usually an annual event, we did not have one last year because we did not accumulate enough items to make one worthwhile. However, donations continued to arrive throughout the year so now it is time to clear out those pieces that do not fit our display needs or are simply excess to our requirements. This will be our fourth auction since our first one held in 2009. Included are two clean-out consignments, but the majority of the material consists of donations that continue to appear on our doorstep.

We will need our usual cast of volunteers to be runners, clerks and general help the day of the auction. If you can spare some time a few days prior to the auction (and would like to get a hands-on preview of the offerings), we will need help to move and set up the goods in building 9032A. This auction historically has brought in about \$1,000 for the club so your support will be greatly appreciated.

The auctioneer will be Richard Estes,

again donating his services. A food concession will be operated by the local Country Kitchen restaurant. There will be 300 plus lots and a full catalog list will be available shortly. Watch the club web site and reflector for posting of some photos of items. A full flyer is included on page 7 of this month's *Broadcaster*. Contact me at 908-757-9741 or raydio862@verizon.net if you would like to volunteer or need further information.

NJARC IN SCOTCH PLAINS

By
Ray Chase

Member Vince Lobosco, who is a Vice President of the Scotch Plains/Fanwood Historical Society, invited NJARC to present the latest version of the History of Radio to the March meeting at the Scotch Hills Country Club on Tuesday, the 26th at 8:00 PM. Harry Klancer and I brought six radios over that evening including the RCA 128 that I won at our Holiday Party last year. We set up a screen, transmitter and projector and essentially repeated the show that we put on at the East Brunswick Library last

month. A week prior, I received a call from the woman in Scotch Plains who was coordinating local advertising for the event and she indicated that if we could supply some pictures of radios, the Star Ledger newspaper would run a feature story about us on Sunday. This would be another great advertisement for the club so I scrambled to get about 6 or 8 related images and e-mailed them to the Star Ledger writer. Alas, their editorial board killed the plan as not being strictly germane enough to Union County, NJ. The writer liked the pictures and story potential and was quite disappointed when it was killed, but the paper did have a short blurb in their Sunday and Tuesday editions, so we did get some ink from it.

There were about 25 people in attendance including president Richard Lee who came and introduced himself. Several locals who were not part of the historical group, but who saw the notices and were interested in radio, also showed up.



The Scotch Plains mayor came and thanked us for a great show. Harry had brought a solid state Zenith TransOceanic along with other vacuum tube radios and don't you know, this one failed to function while all the other "oldies" performed admirably. The audience was most appreciative and really liked the show.

If you have not seen Harry's lasted power point multi-media presentation, you should get out to one of our events or view our East Brunswick presentation on the club's website; it is really great and is always well received.

In October, we will be at the Mercer County Library in Lawrenceville, NJ essentially repeating what we did at East Brunswick. We have also been invited back to the Cranford Library, but that is not scheduled yet.

Great job Ray and Harry; thanks for your continued work as the club's "radio history ambassadors"...Ed

ARMSTRONG PLAQUE APPROVED

By
**Richard Lee &
Mary Beferman**

The name Edwin Howard Armstrong is immediately recognized and highly respected among both radio engineers and radio collectors. One of his major contributions to the radio art is FM broadcast technology. Yet, surprisingly, there is no memorial to him in the location where he did so much of his pioneering work in this field, Yonkers, N.Y. For some time, an area resident, Steve Klose, has been working to change that.

Steve, after working with local city government, received approval to raise the necessary funding to have a bronze plaque placed at an overlook at a nearby train station that has a prime view of Armstrong's original FM broadcast tower across the Hudson River, in Alpine N.J. Armstrong's boyhood home in Yonkers no longer exists so the Greystone train station, serendipitously located across the street from where the house stood, was suggested by Armstrong's nephew.

On October 10, 2012, the plaque and

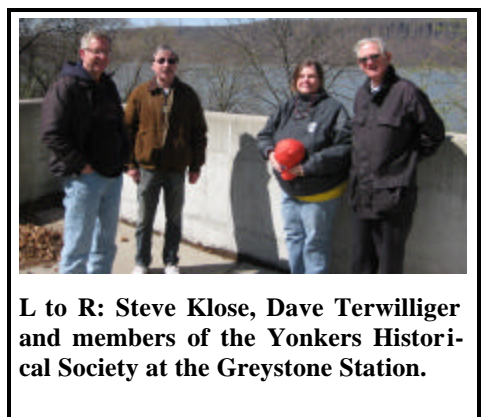
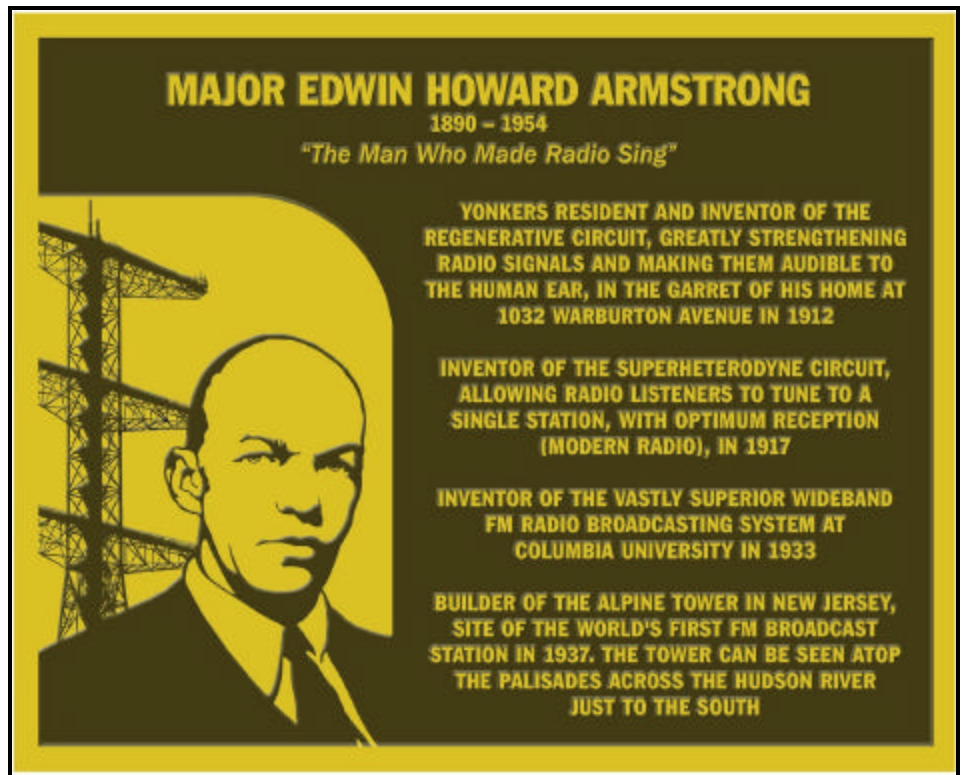
installation site were approved during a special meeting with Yonkers appointed representatives and Armstrong supporters. By the end of February, 2013, all funds for the casting and installation of the plaque (provided by Minozzi & Sons of Yonkers) were raised, including generous donations by the Hudson Valley Antique Radio and Phonograph Society and the New Jersey Antique Radio Club.

On March 12, 2013, NJARC members Dave Terwilliger and Richard Lee and other contributors to the Armstrong plaque spoke before the Yonkers City Council and expressed the importance of the "Major" as being one of Yonker's most esteemed citizens. Richard Lee noted that:

"Our speakers were given more than the allotted 3 minutes to state their case.

City council president Chuck Lesnick kindly moved us from 7th to first on the evening's agenda, ahead of the usual special permit hearings, dog leash laws, etc. Our presentations were well-received by the council, to the point where I was asked to speak more of Major Armstrong's radio contributions to the large group of middle school students present for athletic awards."

On the same evening, the city council passed a resolution accepting the plaque and "expressing gratitude to the Edwin H. Armstrong Commemorative Plaque Committee for this generous gift." Steve Klose was thrilled with the council's decision and contacted the foundry the following day; it is now in production. An official unveiling will take place in May and we'll continue with the story at that time.





Kick-off meeting in February, 2012 at the Alpine Tower for the Armstrong plaque. Attending were Steve Klose (head of table), Dave Amundsen (chief engineer of Alpine tower), Dave Terwilliger, donors Steve Hemphill and Ray Bachan and Richard Lee.



Yonkers city council passes resolution to accept Armstrong plaque. "Steve Klose was thrilled with the council's decision and contacted the foundry the following day; it is now in production."

RE-USING SALVAGED TRANSFORMERS (PART I)

**Edited by
Marv Beeferman**

Transformers, especially power transformers, are one of the most expensive components found in vintage radios and audio equipment. In the 1930s, a replacement power transformer cost around \$3 or \$4, quite a hefty sum in the depression era. Today, they may range from \$30 to well over \$100, with even audio and filament transformers demanding high prices. Therefore, salvaging transformers from old equipment and using them for restorations, fabricating DC power supplies for battery-operated radios or building various other electronic projects makes a lot of sense. In addition, it may not be worth fixing up a low-end old radio with a brand new \$75 transformer which may look out of place in a vintage chassis.

But how do you know that a salvaged transformer is still viable or will meet your replacement needs? If you're lucky, you might be able to relate a stamped manufacturer/model number to an old catalog or specification sheet. If unmarked, how do you determine voltage, current, power or impedance ratings? With some sophisticated test equipment, these questions may be easily answered. In my "working" days, I remember using a piece of equipment that could measure transformer turns ratio. Most hobbyists

don't have access to such equipment, but there are more modest means to determine transformer viability and specifications with reasonable reliability and accuracy.



Sometimes you get lucky - a NOS low voltage power transformer with leads and values clearly marked.

Color Codes - A Good Start

The first problem you'll encounter with a salvaged transformer is determining what leads go to what windings. The simplest method is to decipher the transformer's color code. (For a new old stock transformer or one manufactured in the last 60 years or so, lead connections may be printed on the box, on a label on the transformer or on a separate sheet.)

Most radio handbooks show a standard color code for transformer leads that was generally followed by most transformer manufacturers (see Figure 1). However, lead color usually fades over the years, especially if the cover insulation is cotton. In this case, try nicking the insulation with a razor blade; this might expose a bit of telltale color.

Unfortunately, you may come across

many original equipment transformers that use a non-standard lead color code. Adding to the confusion are those transformers that use numbered solder lugs instead of flying leads. The next step, therefore, is to use a procedure to determine the leads (or lugs) for the primary and other windings without depending on color codes or numbering systems.

Decoding With An Ohmmeter

When a salvaged transformer cannot be identified via lead color codes (or you feel the coding is non-standard), tackle the problem by first finding continuity between as many lead combinations as possible with an analog ohmmeter. Wherever two or more leads show continuity, twist them together (but don't let the bare ends touch). Then, draw a diagram of the windings and their measured resistance.

Winding resistances normally fall into three groups: low resistance for filaments, mid-range for 117 volt primary and high resistance for high voltage (B+) secondaries. The high voltage secondary may read from 25 to several hundred ohms. Filament windings normally read less than one ohm. For the range of transformers generally found in 4 to 12-tube radios, the primary resistance should fall between 1 and 15 ohms.

Besides the primary winding, most radio power transformers have a center-tapped high-voltage winding, a 5-volt rectifier filament winding (sometimes with a center tap), and a 2.5 or 6.3 filament winding for the other tubes (and perhaps a center tap). Sometimes there are other windings whose function will have to be determined after further research.

Many power transformers have an electrostatic shield between the primary and the secondary windings. Usually, the shield is grounded internally to the transformer case, but sometimes it is brought out on a lead or lug that doesn't show continuity to any other lead or lug. That "odd" lead or lug can be confusing and cause one to believe that a winding is open. If you find only one "odd" lead (or an un-insulated lead), it is probably the electrostatic shield.

Power-Up

The key to positively identifying transformer leads is to first find the primary and then power it up. Once powered up,

voltage readings can be taken and the various secondary windings identified as to voltage output.

With the primary winding identified using resistance measurements, you'll need a lamp cord, a light socket, a 40 watt bulb and an AC outlet. Connect these items so that anything plugged into the AC outlet has the 40 watt bulb in series with the AC line. You can use another line cord terminated with insulated clips to make connections to the transformer. The 40 watt bulb limits the maximum current to 333 mA and provides a visual indication of current draw.

The series-bulb setup is better than a *Variac* for testing transformers because the bulb acts as a current limiting device. The "cold" resistance of the bulb is around 25 ohms, and the "hot" resistance is 360 ohms. If the transformer under test draws too much current, the lamp will glow and the resistance will increase to help limit current.

Never apply 120 Vac directly to an unknown transformer. The inadvertent application of full line voltage to a filament winding will result in a spectacular fireworks display. The turns-ratio between the high-voltage winding and a filament winding is 100 to 1 or more. Applying 120 Vac to a filament winding will generate an astronomical voltage in the high-voltage and primary windings of the transformer and may cause internal arcing and destroy the windings. The current flow through the filament winding will be sufficient to trip a 15 or 20 amp circuit breaker.

The no-load current draw of small transformers in the 40 to 60 watt range will produce little or no glow in the bulb when the primary is energized. Larger transformers have a larger no-load current due to the larger volume of iron in the core and will produce a modest glow in the bulb. Transformers with shorted turns will produce a bright glow.

(As most radio hobbyists know, this simple lamp bulb arrangement is an amazingly sensitive shorted-turns detector. The setup can be used for testing a power transformer in a radio without removing the chassis from the cabinet. Just remove all the tubes and dial light and power up the set using the 40 watt series lamp. No or low glow is good news; a bright glow is bad news.)

There is another test setup that allows you to apply safer voltages (and also perform impedance measurements that will be described later). You'll need a 6.3 volt filament transformer with a 5,000 ohm wirewound potentiometer wired in series with one of the transformer leads.

The potentiometer and the other 6.3 volt lead are connected to the power transformer primary. With the filament transformer plugged in, adjust the pot so you read 1 VAC at the power transformer primary. Then, shift the meter to the transformer secondary and measure the voltage. The reading quickly provides secondary voltage with an easy mental calculation: move the decimal two places to the right. For example, 2.4 VAC measured at the secondary means an actual value of about 240 VAC.

Of course, this setup does not work for precise measurements of filament voltages since one volt on the primary barely produces a reading at the filament secondary. But you can use the method to isolate and temporarily tape up dangerous high-voltage secondaries. Then, it's safe to plug the primary into 120 VAC and check ac-

tual filament voltages.

One complication that sometimes arises is that the primary winding has taps for various line voltages. For these type of transformers, you will find a winding that has the proper primary resistance between a "common" end and taps that are closely spaced on the other end. Powering up the transformer with the series lamp and then measuring the voltages between the "common" and the various taps will establish the sequence of the taps and the operating voltage that corresponds to each one.

Measuring Secondary Voltages

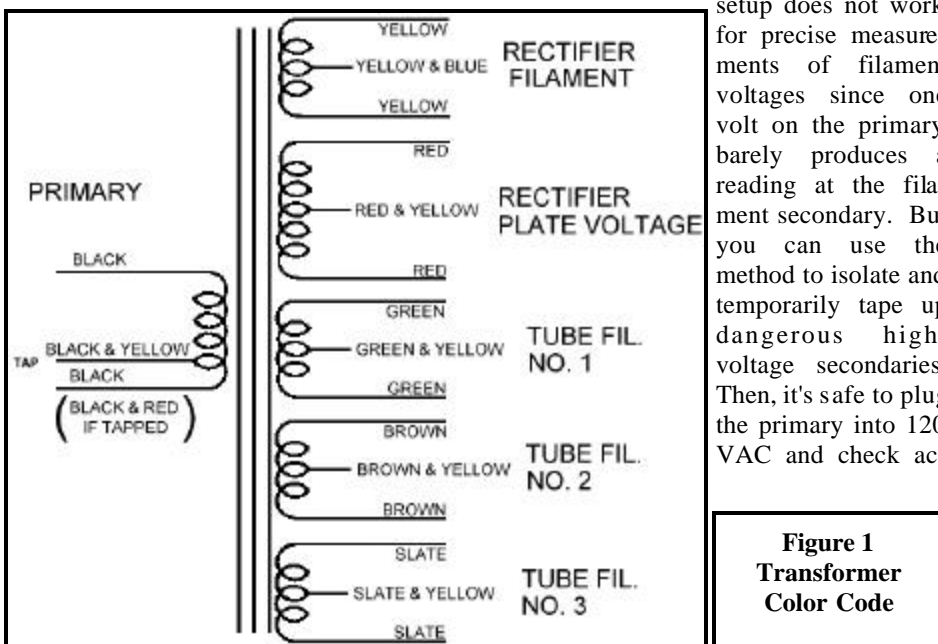
With the primary identified and energized, its time to measure the voltage output of the secondary windings:

- Use clip-leads to connect your voltmeter to the transformer before powering it up. This allows a complete hands-off measurement of the transformer voltages.
- Make initial measurements using the series lamp in the circuit, then apply full line voltage for the final measurement. It is easy to distinguish between the 5 volt and 6.3 volt windings by making voltage measurements, but the unloaded voltages will be a bit higher.
- Measure the high-voltage winding from the center tap to each end rather from end-to-end. This cuts the measured voltage in half, thereby reducing exposure of the voltmeter and the user to high voltage.
- Write down the voltages you measure on the diagram of the transformer that you drew for your initial continuity measurements.

That's about it for Part I. Next month, we'll talk about transformer long-term viability, current (power) ratings, impedance and replacement strategies.

References:

1. Peter J. Bertini, "Testing and Rating Salvaged Power Transformers," *Popular Communications*, October 2002
2. Eugene Richardson, "How to Make Power Transformer Substitutions," *Popular Electronics*, April 1959
3. Len Buckwalter, K10DH, "A Handy Guide to Unmarked Transformers," *Electronics Illustrated*, July 1968



**Figure 1
Transformer
Color Code**



Above is a sample of 1920s original comic artwork courtesy of Ray Chase; its use and artist are unknown.

ANNUAL INFOAGE RADIO ELECTRONICS AUCTION

Saturday April 27, 2013

Huge Radio/Electronics Auction Conducted By The
 New Jersey Antique Radio Club and The Radio Technology Museum
 at the

InfoAge Science History Learning Center and Museum
2201 Marconi Road, Wall, New Jersey 07719

All day sale of vintage radios, electronic test equipment, ham gear, audio equipment, marine radios, military electronics and 1000's of vacuum tubes along with related parts & documentation. Large variety of tubes in box lots, groups or singles; many interesting types. Better tubes are pre tested. 300 + lots, including many large box lots. Something here for every radio/electronics collector. Stock up for the Kutztown Radio Meet.

Auction Begins at 10:00 AM on Saturday
Viewing is from 8:00 AM to 10:00 AM Day of Sale

Sale of artifacts and donations excess to the centers needs. Proceeds to benefit InfoAge, Radio Technology Museum and National Broadcasters Hall of Fame. Auction is indoors with ample seating. Noted radio auctioneer Richard Estes is wielding the auction gavel. Complete auction catalog available two weeks prior to sale. Terms are cash or good check, sorry, we cannot take credit cards. 5% buyers premium is charged.

www.infoage.org for directions

Auction Information: raydio862@verizon.net or 908-757-9741



New Jersey Antique Radio Club's — SPRING SWAP MEET —



Parsippany PAL Building
Smith Field
Route 46 & 33 Baldwin Road
Parsippany, New Jersey 07054



Saturday April 20th, 2013

**Walk around auction
starts at 11:30 am.
Bring in your attic
treasures for free
appraisal!**



**Expert Antique Radio
Repair Available.
Refreshments Available.
Easy ground level access.**

Open to the Public

8 AM to 12 noon

Vendor setup at 7:15 AM

\$5.00 ENTRANCE FEE

CLUB DONATION

**(70) 8 ft. Tables
\$20.00 for members
\$25.00 for non-members**

Reserved Additional Tables \$15.00

At the Door \$20.00

**FOR DIRECTIONS
VISIT OUR WEBSITE: WWW.NJARC.ORG
OR MAPQUEST.**

(33 Baldwin Rd., Parsippany, NJ 07054)

Vendors Make Your Reservations Now!

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