

SOUND WAVES

VRPS Summer 2014



From the President

As I type these arrangements of thoughts, it is pouring rain in Granbury...in fact, according to my wife's iPhone, it is raining all over north Texas...Awh!!!! the fresh smell of rain. This year has gotten off to a fast and busy start. A good crowd gathered for our June monthly meeting yesterday. Mike McCarty has done an wonderful job of developing and delivering a series of lessons on the type of components found in radio circuits and why they exist. This is a basic series designed to lead us to a better understanding of what needs to be done to get that old radio going again. A side-note...have you ever wondered why we say a non-working radio "does not

play", yet a non-working television is said to "not work"? I don't know the answer, just have the question. Well, I digress. The subject of Mike's presentation yesterday was "capacitors", the bane of so many radios. There are so many different styles and so many "standards" established by manufacturers, it is good to be reminded of them from time to time as Mike did so skillfully yesterday. If you missed the series, you can find his exploded notes on our website. They would be good item to print off and keep handy as informative reading material. Thanks Mike.

One more topic I want to address. I have committed this year, our 40th, to get the word out about our fine organization. I have offered myself as a speaker to any organization wanting me to present topics of interest to their memberships. The topics I offer can be technical or not-so, depending upon the audience. I recently did two presentations on Spark-era amateur radio at the well-attended HamCom in Plano, Texas. The two sessions were standing room only and offered me the opportunity to mention the VRPS and it's purpose of educating the public on the history of radio. I have also been asked, thanks to Larry Whitlock, to speak at a meeting of the Plano Kiwanis club in July. The audience dictates that this topic be a lot less technical, so I will speak on the changing face of radios as they were developed in the 4 decades leading up to WWII. This should be fun. I encourage each of you to look around for opportunities for telling others about our fantastic hobby and the VRPS. If you do not feel up to making such a presentation, I will welcome the opportunity. Let's talk.

I have a radio auction planned for September 13 in Garland, so save that date on your calendar (my daughter taught me that phrase). Lots of really neat stuff has already been consigned, including an estate from Sulphur Springs.

Until next time, keep your focus on the upcoming convention in November and monthly meetings between now and then. Good hunting!

-Jim

Notes from the April 19, 2014 meeting

We had our usual swap meet activities in the parking lot. But we lacked access to the building where we usually meet, so we opted to go ahead with an outdoor venue for our meeting program. We met under a very large shade tree on a very pleasant April day.



Mike McCarty presented a program about the components to be found in antique radios and how to go about choosing replacements. His aim was to help newer collectors recognize these early components for what they are and how to rate them – especially in light of their nearly total difference in appearance from modern parts. He passed around a piece of cardboard with several “mystery” parts attached for us to see and guess their function. Even for the old timers, there were some surprises, illustrating how difficult it can be to identify some of the old components. Mike used the old analogy of water flow and pressure to electrical current flow and voltage – to establish meaning for the units applied to component ratings. He used the club’s large presentation easel pad to make notes and illustrations – with members rescuing it several times from the Texas gusty winds.

Mike pointed out that old standards used the letter “M” as a suffix for 1,000 – later changed to “K”. The older schematics usually used “MEG” as a suffix meaning 1,000,000, or Megohm - spelled out. If you look on your schematic at the value for the volume control resistance, it usually offers a good clue as the meaning of “M”. The mystery items turned out to be a couple of resistors that look like over-braided wire with terminations at each end, a “dog-bone” style resistor, and a wire-wound resistor that looks like a mica capacitor. These are often used as a fuse/resistor in series-string-filament sets and make up voltage drops needed for the series string. (The value needed for a replacement can be computed from the data for the tubes in the set, using Ohm’s Law.) For resistors, the power ratings are just as important as the resistance. The older ones, such as the “dog-bone” types are generally much larger than their modern equivalents, as far as power dissipation capabil-

Continued on Page 4

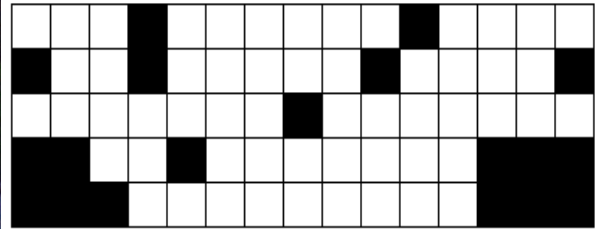
May Swap Meet



Early Bird

Challenge:

Are you ready for the
Swap Meet Puzzle?

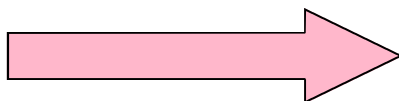


 L L P W
E O H I T A S R G
I O K L P G A Y I Z A E S
W H N R T A D I R U N E L R S
T O R S I N E I E I C Z R E E



What are they looking at?

They were looking at this box of tubes.... A lot
of good tubes in here, hope you looked!



Continued from Page 2

ity. Since resistors are heat generators, their surface area determines how much their temperature will rise for a given amount of power. Modern resistors can tolerate higher temperatures without damage, but they can also become uncomfortably hot to the touch.

The standard color code used on components is as follows:

0	Black	5	Green
1	Brown	6	Blue
2	Red	7	Violet
3	Orange	8	Gray
4	Yellow	9	White

These codes display the first digit, second digit and then the number of zeros. For example, a 27000 ohm resistor would display red, violet and orange bands in sequence, starting from the banded end of the resistor. A tolerance band or dot may follow. Silver and gold bands (or dots) are used to designate a tolerance in the resistance value of 5% for gold and 10% for silver. 20% is understood, for parts with no band to designate precision. After you have used them for awhile, those colored bands on parts seem like numbers – only easier to read. For the old dog-bone types, the body is painted one color; one end is painted another (or the same) color, and a dot is applied near the middle of the body. These colors are read in the “BED” sequence, i.e. Body, End and Dot. As an example, a 4700 ohm resistor would have a yellow body, a violet end, and an orange dot.

Mike made some recommendations relative to repair parts to use for restorations. He recommends against the use of new old stock resistors. In any case, all resistors should be checked for value in ac-

cordance with the schematic diagram and/or parts list for the radio, if possible – remembering that the previous repairman may have substituted something different (but maybe close enough, depending on the tolerance). Sometimes there has been a factory change from the value shown in your available data. If performance is bad, you may want to put in the same part value per its color code.

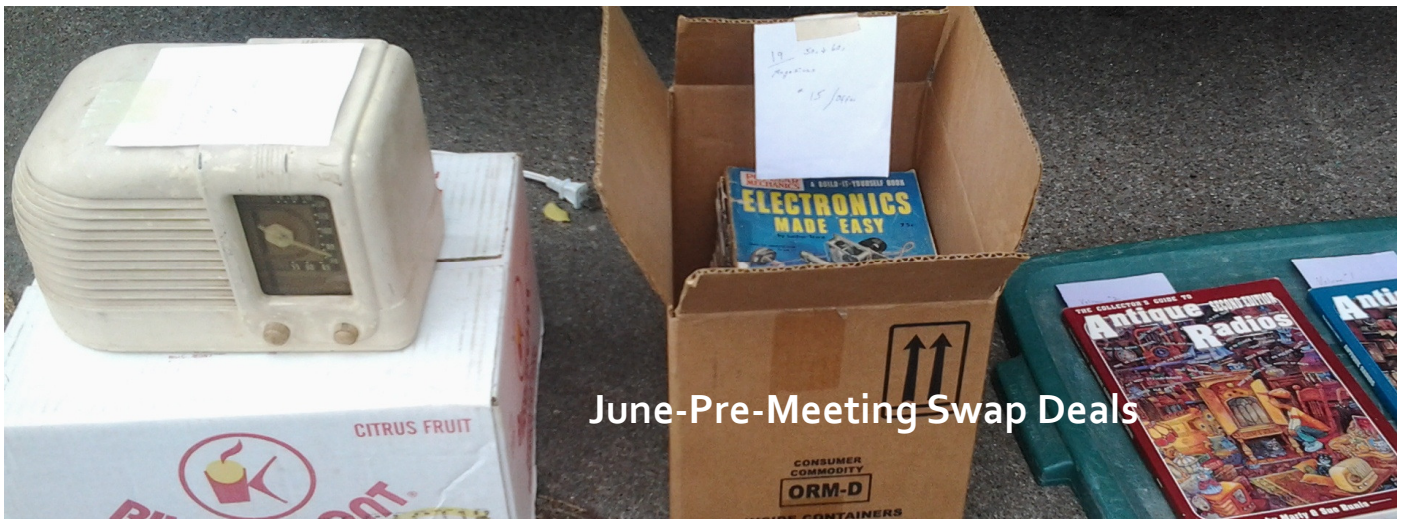
If a part fails repeatedly (overheats), the factory may have made a design error, and a larger wattage part could solve the problem. Never use a wire-wound resistor to replace a carbon composition one because it has some built-in inductance that might cause oscillations – resulting in squealing and chirping (referred to as “birds”). Generally it’s OK to use somewhat higher ratings. To check the actual power (watts) being dissipated by a resistor, you can measure the operating voltage across it, square the value (multiply times itself), then divide by the resistance. The calculated power value should be less than the wattage rating of the resistor.

Mike plans to present more discussions of this subject.

Bill McKeown

Author’s Notes:

A modern electronic multi-meter having capacitance-measuring capability can help to identify which type of component it really is. Of course a capacitance meter can serve the purpose. I have always used a two-letter designation for color coding wires, as follows: BK, BN, RD, OR, YL, GN, BU, VT, GY and WH. There are no possible ambiguities. (This has saved me a lot of writing over my lengthy career.)



June-Pre-Meeting Swap Deals



Going Fast!

Notes from the June 21, 2014 Meeting

Our club president Jim Sargent conducted our meeting – held at the Garden and Arts building in Irving, TX. There was a good turnout of about 30 attendees. Jim reminded us that the July meeting will be our annual Repair Session at the Senter East building, from 8am to about 1:00pm. You should try to bring a schematic with any radio that you bring – Nostalgia Air (nostalgiaair.org) is a good source for free downloads of schematics. There will be some parts and tubes available.

Our program organizer Mike Grimes opened the meeting topic, and intro-



duced its presenter, Mike McCarty. This was his second session of "INTRODUCTION TO ELECTRONIC RESTORATION". The first session covered basic electrical properties and physical appearance of radio parts - particularly those of resistors. Mike planned to cover capacitors and inductors in this session. His discussion of capacitors started by using the analogy of an inflated balloon - the energy is stored as compressed air in the balloon, the capacitor stores energy in an electric field, the pressure in the balloon is analogous to the voltage, the air molecules are analogous to the electrons, etc. Mike described the many types of capacitors and their applications. He gave recommendations on working with them and replacing them, including maintaining respect for their ability to store energy that can create a shock hazard. He follows the philosophy that all electrolytic and paper capacitors should be replaced while restoring a radio. They are mostly already bad, and will soon become so, if not replaced. He also suggested we play our radios once a year to re-form the electrolytic capacitors, as they will go bad just sitting. The topic of capacitors demanded most of the available meeting time, so his discussion of inductors was a brief introduction. Mike suggested that we go to the VRPS club website (<http://vrps.org> click on "INTRO TO COMPONENTS suggested reading"), where he has posted his extensive notes. Some of the attendees had already accessed the notes prior the meeting. They are definitely suggested reading. They present a wealth of information, and there are many photos to support the discussion.

There was a lot of interest in this program, judging by the many questions from the audience.

Bill McKeown

Author's Note: A friend had a Philco 60 that would hum if you laid it on its back, but it was OK in its normal, upright position. Surprisingly, the original wet electrolytic caps were still working, but the liquid sloshed to one side, reducing the capacitance, when the radio was on its back.

In the interest of encouraging increased participation, the Old Equipment Categories for the upcoming convention are being released in this issue:

2014 VRPS Convention Contest Categories

1. Crystal Radios **Pre 1940**
2. Battery Receivers **Pre 1928**
3. AC Table Receivers **Pre WWII**
4. AC/DC Tube Radios **Pre 1960 Any Style of Cabinet**
5. Foreign **Tube Type** Radios
6. Transistor Radios **Pre 1965**
7. **Tube Type** Audio Equipment
8. Phonographs and Related Accessories **Pre 1928**
9. Speakers and Microphones **Pre 1960**
10. **Tube Type** Ham Radio and Military Equipment
11. Novelty Radios Tube or Transistor
12. Test Equipment **Pre 1950**
13. Radio Related Ads, Ephemera, and Accessories
14. Televisions **Pre 1970**
15. Restoration Category - **Must Include Documentation (Photos, etc.)**
16. Open Category- **Radio Related Items Not Belonging in Other Categories**

It's not too early to make your reservations for the convention hotel—the link to the Hampton Inn is: <http://hamptoninn.hilton.com/en/hp/groups/personalized/D/DALHSHX-VRP-20141113/index.jhtml>



The Case of the Mysterious Motorboater Episode 1 By Mike McCarty

I was working on a Detrola 579 house branded as a Van Camp one day, and encountered some puzzling behavior. I had replaced all the paper caps, and the electrolytic filters, along with a few out of tolerance resistors, and put on a new polarized power cord. Since this is a floating ground set, I had also moved the power switch from the ground side of the circuitry to the plate of the rectifier, and permanently connected B- ground to neutral. I hooked up the set to my dim bulb through an isolation transformer, and turned it on.

At first, I was pleased with the results. There were stations all over the dial, partly due to the fact that this little set has a TRF stage preceding the converter. Tone was reasonable, given the size of the speaker. I tuned in my favorite station to get some

vintage music on my new old radio, and turned up the volume. Suddenly, I heard the familiar sound of motorboating.

Motorboating is a behavior in electronic circuits resulting in ultrasonic higher than audible frequency (often 100KC or higher) oscillation which gets rectified in one of the tube grids which is capacitively coupled. This causes a high negative bias to build up on the grid, cutting the tube off and stopping the oscillation. After some time, the high negative bias leaks off through the grid leak, and the oscillation starts up again. This occurs at a sub audible rate, like 3 to 10 cps, producing a putt-putt-putt sound, similar to that which a small motorboat engine makes, hence the name.

The usual cause is feedback in the audio circuitry through the power supply, though other stages may be involved. When the power amplifier draws current to drive the speaker, the filter capacitors in the power supply deliver a little extra current for a moment. That is, normally. If the filter capacitors are dried out with age, then they may not be able to do their job properly, especially at very high frequencies, and the B+ voltage takes a momentary dip. This voltage dip gets passed on to all the other tubes in the set, and this can result in positive feedback and oscillation. In this case, however, I knew that the filter caps were both brand new, freshly reformed, and checked for value and power factor.

So what gives?

Find out in episode two of our thrilling adventure!!

SOUNDWAVES IS PUBLISHED QUARTERLY BY THE VINTAGE RADIO AND PHONOGRAPH SOCIETY, INC.

PRESIDENT—JIM SARGENT (972) 742-8085 BSARGENT@SWBELL.NET

VICE PRESIDENT—RANDY JAMES (817) 292-7435 RANDY-JEANNINE@SBCGLOBAL.NET

NEWSLETTER EDITOR—MARY ANN CARUTH MCARUTH@ATT.NET

WEBMASTER—MIKE GRIMES K5MLG@ATT.NET

VRPS WEBSITE WWW.VRPS.ORG.

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VRPS, INC.
P.O. BOX 165345
IRVING, TX 75016

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MONTHLY MEETING PROGRAMS 2014

NOTE: Programs will be held at various locations in Irving, Texas. Make note of the location as they may change from time to time. Senter East, 228 Chamberlain St.; or Garden and Arts, 906 S Senter Rd. Maps are located on the WEB site, EVENTS page. Programs start at 2pm. unless otherwise noted. Call us on the cell tellie if you get lost: 972-898-7251 or 972-742-8085.

JULY 19, 2014 SENTER EAST BUILDING

ANNUAL Repair Clinic Session. Bring your items for help in repair and restoration. Our "experts" will be on hand to help. 8am to 2pm. No afternoon program.

AUGUST 16, 2014 SENTER EAST BUILDING

"Sound on Film" will be our topic. History of placing sound on film has an interesting history and many radio pioneers worked to perfect the technology. Much of the technology overlapped with both radio and television advancement. Kurt Ehrlich will lead our discussion. Bring any related items to supplement.

SEPTEMBER 20, 2014 SENTER EAST BUILDING

Swap Meet/tailgate sale, parking lot. 8am to Noon.

OCTOBER 18, 2014 SENTER EAST BUILDING

The events of Orson Welles' "War of the Worlds" panic myth will be reviewed as leading up to Halloween. Also bring any "Halloween" related "electronic" item you may have to show or discuss.

Programs are subject to change, contingent on scheduling conflicts. As always, your suggestions for programs/content are welcome. If the programs do not fit your needs and you want something different, let me know. I need volunteers to organize other programs, so consider presenting a program yourself. Call me anytime or send me an email. Mike Grimes 972-898-7251 (cell), or K5MLG@verizon.net.