SoundWaves

VRPS Fall 2014

From the President

We are an active and vibrant organization. I say that with pride and with an eye to the future, because I have a good view of the past. I got up this morning at 5am to get to the summer/fall swap meet in Irving. The parking lot was full by 8am. New faces kept showing up. I mean NEW faces! Several folks came because of our website, some came because friends told them about us or brought them to the meet. I personally met several of the new folks, but probably not all. That is why I am confident of our future. I encourage you to see the future with me - invite a friend, look for ways to promote our fine 40 year old organization.

Now to other matters, namely the upcoming 40th anniversary convention. The convention packet is enclosed with this edition of the SoundWaves. I encourage you to complete the pre-registration form and return as soon as possible; a reminder - reservations at the hotel need to be in by October 23. We have a full agenda, and you will want to be part of it. As in the past, a major focus of the convention will be our auctions...all four of them. Over the years, I have asked members to relay suggestions to me or the other directors. One suggestion that has come up over the years was to change the percentage we charge to sellers at our auctions. As many of you know, we made the decision to go to a 15% sales charge to sellers. Renting the hotel, any hotel, is not cheap. We have been able to keep our expenses down, but that does not eliminate our expenses. We are a financially stable organization, and the 15% charge has been our way of keeping us stable. We still need the 15%. However, how we get that is up for discussion...and change at this year's convention. We will trial using a 10% sellers fee and a 5% buyers fee, combining the two to get our 15%.

If you are not a regular at the our convention, consider it a must this year. We have a special gift for all registered attendees. Come celebrate all weekend with us - the auctions, the contest room with your beautiful entries (bring something to enter!), the banquet, and socializing with other collectors, as we usher in another 40 years. See you there. Good hunting.

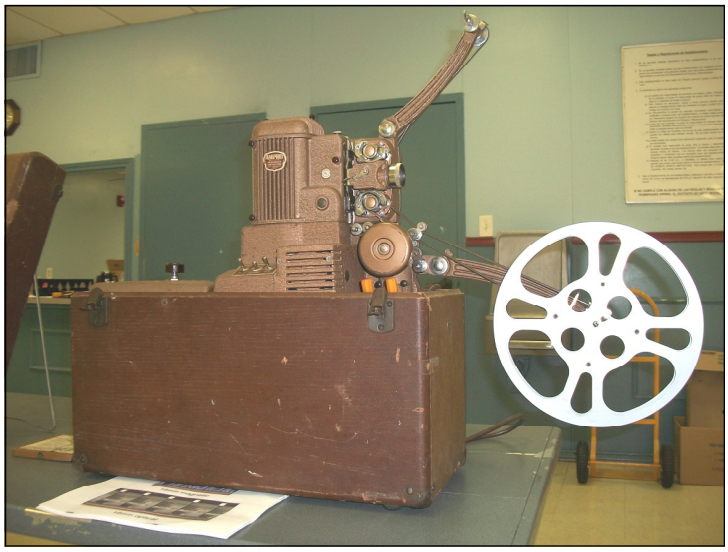
Jim

Notes from the July 19, 2014 Repair Session

- **Philco Model 116—Tony Quinn—Tony said after replacing 10 Bakelite blocks that he could see why Philco went out of business.**
- **Cleo Cherryholmes was helping Bill Gustafson with a transoceanic. The B plus was disappearing somewhere—they finally decided the bumble bees had to go.**
- **Mike McCarty was helping with a multi-band set destined to become the star of a future Radio Detective Mystery.**
- **Dave L. brought in a 5-tube Bakelite set. The set played well, but only on the top portion of the broadcast band. Problem was quickly diagnosed as plates on the tuning capacitor bent ever so slightly so as to short out, thus killing the radio. Problem solved.**
- **A small Zenith tabletop set was brought in. Set was basically not functioning. Besides a few new capacitors this set was sent home with instructions to get a signal generator and perform an alignment of the circuit. Heard back later that after the alignment, the set plays just fine.**

—Comments contributed by several members.

Notes from the August 16, 2014 Meeting



Our club president Jim Sargent conducted our meeting – held a t the Senter East building in Irving, TX. There was a good turnout. Jim reminded us to get our reservations made for our annual Convention – to be held once again at the Hampton Inn in Mesquite, TX. It's our 40 th year, so it's time to celebrate our continued interest in a fascinating hobby. Our program organizer Mike Grimes opened the meeting topic, and introduced its presenter, Kurt Ehrlich. Kurt discussed the early efforts to add sound to motion pictures creating what would later be called "movies".

The first systems were based on the use of phonograph recordings played along with the projection of the film. Western Electric/Bell Labs created the "Vitaphone" system, using a record turntable mechanically geared directly to the movie projector. Warner Brothers produced "talkies" using that system, which did produce very good sound. The length of the sound movies was limited by the a mount of sound that could be held on the phonograph discs and the ability of operators to keep the sound and picture synchronized, especially if a piece of film had been spliced out (It was possible to patch in a piece of blank black film of just the right length, but that was a lot of trouble). It was all too common having the sound and picture go "out of sync". The excitement caused by the first sound movies stirred the public demand. This inspired many efforts to eliminate the synchronization problem. Lee DeForest invented and patented an optical scheme for recording the sound on the movie film itself.

He pursued his idea, calling it "Phonofilm". It relied entirely for its success on an improved light detector invented and developed by Theodore Willard Case at his Case Research Lab. DeForest gave no credit to Case, and so they had a falling-out. Consequently, DeForest was unable to pursue his invention any further. This also freed others from concern over patent infringement, so successful systems were developed by both RCA and Western Electric and adopted by the film industries. The y used a sound "track" along one edge of the film. The track varies the amount of light that can pass through to a photocell detector, in accordance with the original recorded sound. Of course, the film is advanced one frame at a time and is stopped as the projection lamp shines light through it to project the picture. Because of this intermittent motion, the sound (at the edge of the film) has to be displaced relative to the picture so the motion can be smoothed out. The number of frames was established to be 20, a standard that is maintained to this day. Generally, a flywheel is used to steady the film just before it passes over the optical sensor.

Kurt had brought an interesting documentary DVD about the film industry, titled "How the Movies Learned to Talk", and he showed a good portion of it to the membership. Afterwards, members talked about some the movie-related items they had brought to the meeting. Jim Sargent showed his RCA Model 400 16mm sound projector, which he has not yet checked out. The author brought his AMPRO ca 1948 "COMPACT" 16mm sound movie projector and showed its features related to the sound system. This machine has a highly-visible heavy flywheel to make sure the film moves very smoothly over the optical pickup head. George Potter showed an artifact with a "DeForest" label, which appeared to be a cover from a sound movie camera. Author's Notes: It's interesting that Americans have come to use the term "the movie theater" (or just "theater") instead of "the cinema", as all Europeans do.

Sound became available for 8mm home movies for a short time, including some schemes using a magnetic strip along an edge of the film. I had no trouble getting a new original drive belt for my Ampro projector. There is a lot of support available for 16mm sound projectors, including the very special "exciter" lamps needed for the sound system.

Bill McKeown

September Swap Meet

Answer to May Swap Meet Challenge: The ladies were in their cars working puzzles or playing solitaire.

The Case of the Mysterious Motorboater
Episode 2—Conclusion
By Mike McCarty

In Episode 1 we encountered motorboating in a freshly repaired radio. As we saw, the usual cause of motorboating is failing filter capacitors resulting in ultrasonic oscillations which get rectified by a tube grid. This set had brand new filter capacitors.

Another cause for motorboating sometimes encountered is an open grid leak resistor, or one whose value has soared into the ozone, or a bad solder joint to a grid. However, all out of tolerance resistors had been replaced, and I always inspect my solder joints.

So what gives?

My first try was simply to fiddle. I turned the set off, waited a few moments (don't turn an AC/DC set with a tube rectifier off and immediately back on, it can blow the rectifier) and turned it back on. The set played normally. I tuned between stations and turned up the volume. Normal atmospheric hiss. I turned the volume control back down, and tuned a station. Normal reception. I turned up the volume. Motorboating! I tuned off the station, and the set continued to oscillate. I turned down the volume control and the set went back to normal reception. Tuned in the station, and normal reception. Motorboating doesn't come and go like that!

Since the feedback is through the power supply, to the plates of the audio tubes, which normally come after the volume control in the signal processing, the volume control normally has little or no effect on motorboating, though the tone controls may have some minor effect. Also, once started, motorboating just keeps on going. It's notoriously difficult to stop without replacing components. So, this was something odd...

In this case, my only viable suspect was the power supply. In fact, some people DEFINE motorboating as oscillation caused by feedback through the power supply. I got out my oscilloscope, started the set motorboating, and looked at B+. To my amazement, it was clean. I had good, clean, signal-free DC voltage on the B+ line. Well, as clean as the B+ in an AC/DC set ever is. There was a just noticeable dip in B+ at the frequency of the motorboating, but certainly feedback through the power supply was not the cause of this problem.

The "phantom", the previous "repairer" of radios who did who knows what for who knows why to make sets different from the way the manufacturer intended had not been in this set. It looked clean and undisturbed when I opened it up. So, I knew there had to be a real problem not caused by some weird unintended connections between different stages of the set.

So, again, this was something odd, not normal motorboating.

Since logic seemed not to be working, I turned to my T-T-T-T (pronounced like a Bronx cheer) method of problem diagnosis. That's Tug, Turn, Twiddle, and Tap. I started tugging on all connections to ensure they were good, I turned all controls, I twiddled all switches (band, tone, etc.) and tapped on the chassis, tubes, IF cans, everything.

While I was tapping around with my finger, suddenly the set stopped motorboating. What had I done? I started it going again, and only after a prolonged tapping session (a few minutes) it stopped again. I still didn't know what I'd done! I started up again, and when it stopped, I realized it was BETWEEN taps that it had gone back to normal behavior (if one can call motorboating stopping "normal").

Once more, and carefully noting what I did, I found that I had inadvertently brushed against the shell of the IF amplifier, a 12SK7GT/G. I tried again. I could start the motorboating by turning up the volume, turn down the volume, and then reliably stop it by simply touching the shell of the IF amp!

This tube has a small octal base with a metallic "half shield" on the bottom, and an internal shield as well, so no external shield is needed. Obviously, something odd was going on with this tube! I turned off the set, removed the tube, and inspected it carefully. I immediately noticed that pin 1 of the tube had never been soldered. This pin is connected to the outer shell of the tube, and also to the internal shield. It must be connected to RF signal ground (though not B- in this set) for the tube to perform properly. I soldered the wire inside the pin properly to the pin, replaced the tube, and the set behaved itself!

That tube was defective in manufacture, and this radio may have had those symptoms since the day it was made, before WWII.

As a guess, enough residual IF signal made it through the first audio amplifier and back to the IF amplifier tube via capacitive coupling for the IF amplifier and first audio tube to form an oscillator, the resulting negative bias on the first audio tube forcing it to cut off and block, but likely the exact cause will never be known. It is certain that the IF amplifier tube and volume control were in the overall feedback path.

Another technique which would probably have found the problem sooner in this case would simply have been to swap tubes with some known to be good, one at a time. Usually, tubes are not the problem in these old sets, so I don't often resort to that technique, but in this case, it probably would have been more efficient. Swapping tubes around is also a well-known technique with TV sets, where a tube might perform adequately in some less demanding portions of the circuitry, but fail in others, though being considered "good" by tube testers.

Case Closed.

Practical Hint:
Inexpensive Lightweight B+ Power Supply
by Mike McCarty

In the years just after WWII, those who used small "Lunch Box" portable receivers faced high prices and lack of longevity for the "B" battery. Today, the situation is not any better. The "B" batteries are less available, and cost about $1 per volt. Since I happen to be a fan of these cute little radios, I have sought a solution to this problem. The best solution I have found to date is seven 9V rechargeable NiMH batteries in series. These are a little hard to come by, are expensive, and the chargers are harder to find and more expensive.

I may have found a solution at Radio Shack. Some months ago I hit upon the possible use of an Electroluminescent Rope power supply as a source of B+ for these little radios. E.L. Panels were something of a rage in the late 50s and early 60s, used as night lights. They glow yellow, yellowish green, or bluish green, and must be operated from an AC source of 90-200 VAC.

These days, there is a fad amongst teenagers of using E.L. "ropes" for personal illumination. Some months back, I began watching for power supplies for them on the Internet, but saw negative reviews, claiming excessive audible noise. However, when I saw one on sale from Radio Shack for $8, I had to try it. They claim it puts out 160VAC at "less than one watt". It runs off of

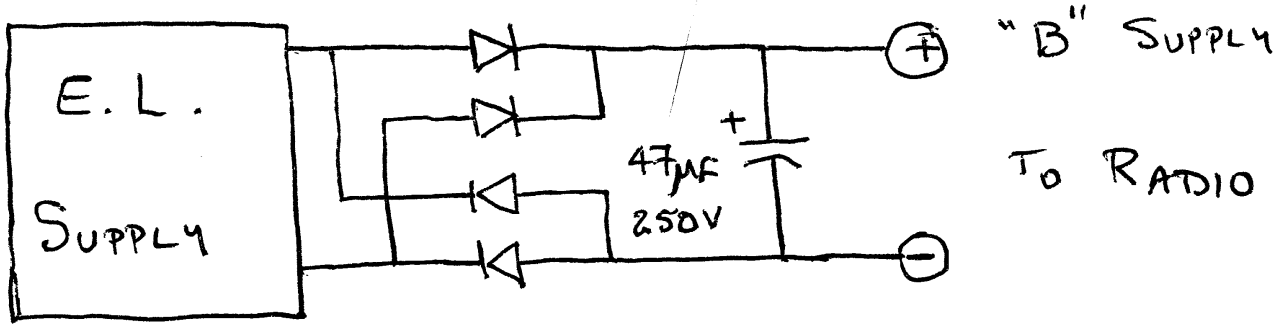
two AA size pen cells. The entire device is only 1 ¼ x 3 ½ x 1 inch, and weighs 2.6 oz. With the cells in it.

I wired it up "haywire" fashion with some 1N4007 diodes I have lying around for a bridge rectifier and a 47uF 250V electrolytic capacitor for a filter. I tried it with some resistors for loads, and saw immediately that I wouldn't get even ½ watt. However, I estimated 40VDC for B+ with the radio I intended to power, an Emerson which wants 67 ½ V B+. I believed it would work acceptably. When I tried it, I got 42V B+ and adequate volume for room listening. Although there were some heterodynes with my haywire lashup, I am sure that with short leads it will be acceptable.

One drawback is that the device is intended for use with lights and has OFF, ON, SLOW FLASH, and FAST FLASH as operating modes, selected by repeated pushing of a single button. One needs to turn on the radio for a few seconds to warm up the filaments, then press the button on the device once to turn it ON. When one is finished listening, one has to press the button thrice more to turn it back off, wait a few seconds for B+ to dissipate, then turn off the radio. This prevents damage to the delicate filaments with the (no load) 250 V B+ applied to the plates, and prevents nasty shocks. I like to remove one cell from the E.L. supply to avoid running down the cells.

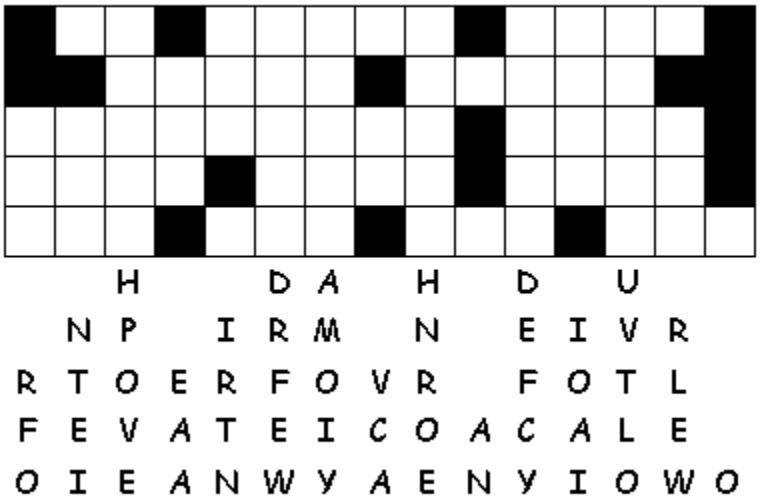
Safety Note: Be careful with this supply. The capacitor stores a potentially lethal amount of energy. Always turn off the supply and allow the capacitor to discharge before turning off the radio. Adding a 100K to 1 Meg resistor across the capacitor would help.

I recommend those of you who need a battery operated source of B+ for your lunch box style portable radios to give the Radio Shack E.L. Supply a try. The item number is 276-0338 and the price is $8 on sale, $10 regular price.



DIODES: 1N4007
CAPACITOR: 47μF 250V ELECTROLYTIC
E.L. SUPPLY: RADIO SHACK 276-0338

Fall Swap Meet Challenge



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.

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.

NOVEMBER 14-16, 2014 MESQUITE HAMPTON INN

Annual VRPS Convention.

DECEMBER 6, 2014 SENTER EAST BUILDING 6-11 PM

Annual Christmas Party

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.

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@VERIZON.NET

VRPS WEBSITE WWW.VRPS.ORG.

BOARD OF DIRECTORS

MARY ANN CARUTH
CLEO CHERRYHOLMES
RONALD DANIEL
BLAKE DIETZE
MIKE GRIMES
RANDY JAMES
ED JANSSEN
BILL JEWELL
MIKE MCCARTY
BILL MCKEOWN
GEORGE POTTER
JIM SARGENT