

# SOUND WAVES

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# VRPS Summer 2024



From the President

Another hot summer brings around another suggestion that you might seek cooler temperatures in an area that just happens to have an antique radio/electronics swap meet going on. Again this year, B and I are headed north to the Chicago area (actually Addison) for the annual Radiofest, sponsored by the Antique Radio Club of Illinois. This well attended meet is a shadow of itself when Elgin was the host city throughout the 80's and 90's. However, I can

assure you that the spirit of the hobby is alive and well and on display at Radiofest. See you

August 2nd and 3rd in Illinois.

After leaving Radiofest, we plan to visit Jack Savlan and wife LaRee north of Chicago. Jack is a long time VRPS member who has taken ill. Though never a Dallas resident, he and LaRee were frequent attendees at our annual VRPS convention in the late 90's and early 2000's. It will be good to visit them.



Speaking of our VRPS annual convention, I probably do not need to remind you that this November we will be celebrating 50 years of preserving radio and phonograph history. I hope you are making plans to attend this milestone celebration. We will again be at the Double Tree Hotel in Richardson. Watch for more details.

[see p 8 for booking link]

We continue to have well planned and informative monthly meetings in Irving. Approximately 25 to 30 members take advantage of this each month to stay in touch with each other and the hobby. The July meeting will be our annual "Repair" session. This is one of the highlight events of the year. To paraphrase the wording on the Statue of Liberty..." bring us your tired and sick radios".

Welcome new member Erik Connolly.

Good hunting

---Jim



TEXAS  
BROADCAST  
MUSEUM



April 20<sup>th</sup> Photos from the  
Kilgore Museum Visit



May 18<sup>th</sup>  
Swap Meet



VRPS meeting 6/15/24

Assembling at the Irving Garden & Arts Building on a sunny June day was a welcome change from the seemingly constant rain we've been having. Jim Sargent mentioned that those who made it to the Kilgore museum event had a great time. Most attendees rode on the chartered bus, several arrived in their own transportation and a couple of us sat on I-20 for 3 hours trapped behind a wreck in the heavy rain.

The ever popular July repair meeting was mentioned with a reminder that it is a morning session. Foreign radio sets will not be worked on due to parts but knowledgeable help for phonographs or North American radios will be available for those with that need.

The 2025 VRPS convention will be changing venue due to rising costs. At this time, Waxahachie is a front runner but the search committee is hard at work canvassing the area. So far, all of the researched possibilities in DFW have escalated beyond our budget. Queried by Dave Seymour, a show of hands revealed most in attendance were good with Waxahachie should that be feasible. To confirm, the 2024 convention will still be in Richardson.

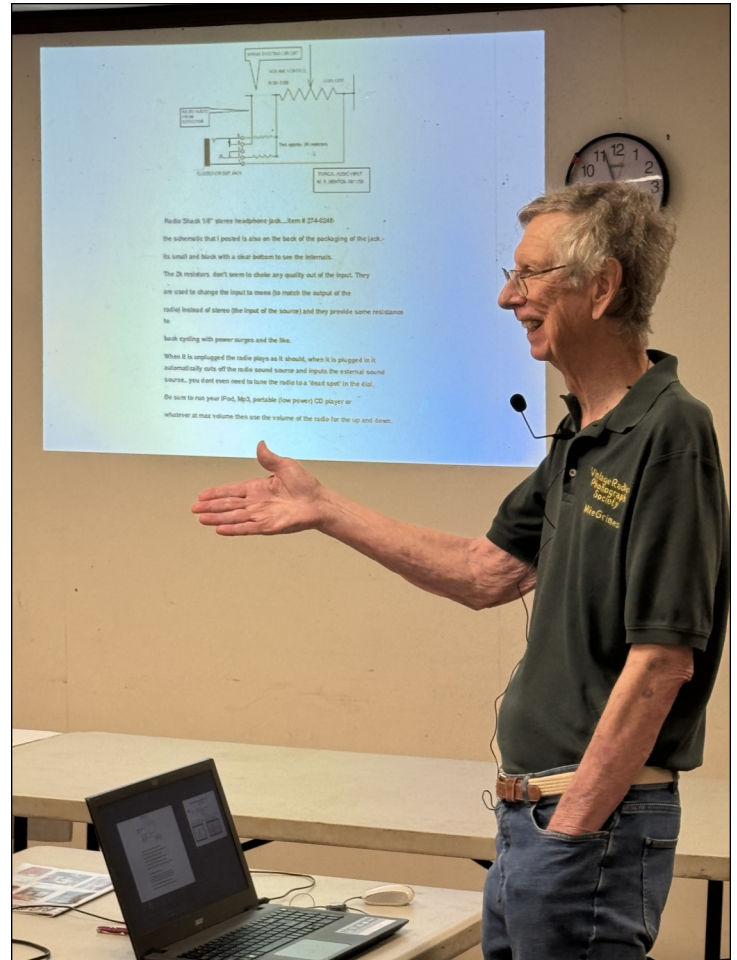
Larry Lindsey's SGITR question, that today stands for, Smartest "Gal" In The Room, Margaret Bryant, was:

Q - Who is Tim Berners-Lee?

A - The inventor of the world wide web.

He is generally acknowledged as the creator of HTML, URL & HTTP.

Mike Grimes then started his talk, AM Noise, part II. This excellent offering was conducted along with his PowerPoint presentation and was audibly enhanced by the \$8 wireless microphone that Jim picked up at a thrift store. Mike suggested, what is often mentioned as the main problem with all of our beloved AM radios as far as currently listening to them? Noise and content. This not only affects our enjoyment of these marvels but it can impede



others in joining our hobby or having one of their own sets. Mike highlighted several ways to change that.

The starting point, the AM radio band airwaves are currently full of interference that has grown since it's inception. Many of our currently made electronics produce noise on the AM band. Digital AM and hybrid Digital/Analog technologies are available but that does little for the vintage sets but may help with content. It's a hot debate topic for opinions about which way the FCC should go.

Content, there are thousands of AM stations still on the air. Many serve unique sets of people and whose ownership is less expensive than other forms of mass media. This appears to be one of the main reasons delaying the FCC decision to lay AM to rest. Sites such as Radio-Locator.com can provide what stations are currently available in your area.

Perhaps providing the content another way is your best

answer. Utilize your own material that is on your cell phone, computer, cd player, FM tuner, etc. . Among the how to answers are:

a low power AM radio transmitter of your own. There are several models available on the market that work by tuning your radio and the transmitter to a dead spot on your dial and broadcast your own content by bluetooth or direct wire to the transmitter.

Add a low cost bluetooth receiver to your set. This is becoming very popular.

Add a input jack to the set.

Mike then mentioned a few ways to prevent or reduce the set noise both internally and externally. Some of which are, have the radio in good working condition, recap and replace resistors out of spec, align to factory specs, use ground terminal if available, use power ground or polarized plug and give it the best signal possible. Also locate local noise, use a battery powered hand held radio and walk around to locate noise, power devices off/on during process, disconnect unused appliances and try using an isolation transformer or line filter.

For much more detail and information, Mike's PowerPoint presentation is available on the club website VRPS.org by clicking on the Technical tab.

--Mark Walden



Convention --Nov 14-17 at Doubletree in Richardson  
Room Rate \$109 includes Breakfast  
See webpage for updates  
[www.vrps.org](http://www.vrps.org)

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## *The Case of the Baffling Buzz by Mike McCarty*

Recently, a woman brought in a Zenith 712, which she said had been worked on before, and electronically "fully restored", though it had an annoying hum, with the additional unusual feature that the hum "went away" when the radio was tuned to a station. Normally, when a set is brought in for work, the first step is to verify the symptoms, then pull the service literature and study the schematic for a bit. In this case, since the radio had already been worked on in the same shop (though not by me), I skipped ahead to attempted diagnosis.

A moment's thought indicated a likely cause: a heater to cathode short in one of the radio frequency tubes. This is a superheterodyne radio, which has automatic volume control (AVC). The AVC circuit controls the gain of the RF amplifier, Converter (or Mixer), and IF amplifier tubes. When the radio is tuned between stations, or to a

very weak station, these tubes are biased so that they have maximum gain or amplification. When one tunes the radio to a stronger station, the gain of these tubes is reduced.

The purpose is to prevent "blasting" the listener when retuning, and to reduce the effects of "fading" when listening to remote stations, in which the received signal strength changes with time even when listening to a single station. If the hum were being introduced by one of the tubes in the gain controlled stages, then it would be reduced when the gain of that tube was reduced by the AVC circuit.

This should be an easy one. I'll just find the defective tube in the front end, and replace it.

Or so I thought.

I removed all the tubes from the radio, and tested them on a Hickok tube tester, which indicated no shorts, and adequate gain (Gm) for all but the rectifier. The rectifier showed good emission for both plates. In short, all the tubes looked good to the tester. Testers have their limitations, but not finding heater to cathode shorts isn't one of them.

Hmm.

I decided that I needed more information. The first rule in repairing radios with unusual symptoms is to get as much information as possible before attempting any repairs. This starts with thorough questioning of the owner about the symptoms being complained of. I didn't do the intake on this set, so that was no longer an option. However, I could ask the radio itself.

I connected the radio up to an AC line with a variac and a dim bulb, and turned it on. After a few moments of warm up, it began to hum fairly loudly. I tuned around, and got several stations, which masked the hum, but careful listening showed that the hum remained unabated when the set was tuned to a station. Furthermore, when the set was tuned between stations, the volume control did not affect the loudness of the hum. That let out all the stages before the detector. In other words, it proved that all the tubes I previously suspected could not be the cause.

I had just tested the detector/avc/first audio amp, and the power amplifier, and knew they were "good". So, where is the hum coming from? The hum is 60 Hz, and the power supply is a full wave type, so residual "hum" in the B+ supply should be 120 Hz, and that lets out the B+ power supply. Or should. I powered down, and bridged the 10  $\mu$ F capacitors in the B+ filter with 47  $\mu$ F capacitors, and indeed there was no change.

Was the signal getting in some other way? I put one of the 47  $\mu$ F capacitors from the grid of the output tube tube to ground, which should have effectively shorted out any signal present on the grid. The hum continued unabated. Just to make sure, I 'scoped the signal on the grid, and verified there was no signal, but lots of 60 Hz AC on the plate. How was the signal getting in?



*Photo from Radio Attic Archives*

The output tube is a type 49, which is filamentary and uses a five pin socket. Checking the pins, it appears that the filament is powered by AC, and has one side grounded to the chassis. This is unusual, and not what I expected. The type 49 tube is indeed intended to have the filament powered by AC, but not to have one side grounded. That's the usual connection for a tube with a separate heater.

Normally, a filamentary type tube has DC heater power. The reason is that the filament of a tube is also its cathode, and connecting the cathode to a source of AC would inject an AC signal into the tube, which it would amplify like any other signal, indeed, as appeared to be happening in this radio. However, the type 49 actually is intended to be powered by an AC winding on the power transformer, which has a center tap. The center tap is intended to be connected to ground, and from thence to the B- return through a cathode bias resistor, to provide proper grid bias for the tube.

The way this works is that as one side of the filament is becoming more negative, the relative bias of the grid on that side is correspondingly

less, and that half of the filament emits more electrons to the plate. However, the other side of the filament connection is becoming more positive, giving more relative negative bias, and so correspondingly fewer electrons from that half of the filament reach the plate. The net is that, although the filament is heated by AC power, the effects on the two halves of the filament are complementary and little or no hum gets introduced.

However, this set has a winding with the proper 2.5 VAC, but is not center tapped. One side is grounded. My thoughts at this time were that at some time in the past the power transformer had been replaced with another which lacked the center tap. In any case, I had this set, and replacing the power transformer was not an option. How was I to kill the hum?

It occurred to me that I could inject a voltage into the grid circuit which would counteract the hum introduced in the filament circuit by improper grounding. As an experiment, I connected a 500K pot across the filament circuit, and the tap to a 0.1  $\mu\text{F}$  capacitor, which I connected to the grid. As I suspected, there was a "sweet spot" where the hum was nullified. A little more thought led to the idea that there is already a grid leak resistor connected to the grid, and thence to the bias resistor connected to ground, which could substitute for one leg of the voltage divider. I connected the pot as a rheostat, still in series with a 0.1  $\mu\text{F}$  capacitor, and verified that the hum could be killed. I measured the resistance, and got a smaller pot for better resolution. I put a 100 K pot in series with a 10 K fixed resistor and the 0.1  $\mu\text{F}$  capacitor, and found that the null occurred at 70 K ohms total resistance. Substituting a 68 K 5% standard resistor worked great. I soldered in the two extra parts, and gave it a check. The residual hum is very acceptable. A drawback of this simpler fix is that the maximum volume available is somewhat reduced.

However, that transformer looked original, and had a Zenith part number. I felt that I didn't fully understand the history of this set. I pulled the service literature, and found the answer. The radio originally had a type 59 tube in that location. The type 59 has a separate heater and cathode, and that explained the wiring of the heaters. It uses a seven pin socket, which is incompatible with the type 49 tube, so my guess is that some time during World War II, a "war expedient" repair of this radio was done by a repairman who had a type 49 tube with socket to match, but no type 59 tube, and substituted both the socket and the tube. It is possible that had I consulted the service literature at first that I would have noticed the changed tube and perhaps saved a little time, but I'm not so sure. I probably wouldn't check the tube line up on a working set which has been worked on by another competent repairman.

In any case, putting in a resistor and a capacitor is much less work than removing the socket and replacing it, and the tube, to put the set back to "original condition", and it'll continue to play as it is for years to come, I'm sure. END

## 2024 Convention Contest Categories

1. Crystal Radios Pre 1940
2. Non Radio Electrical Equipment Pre 1940
3. AC Table Transformer Radios Pre WWII
4. AC/DC Non Transformer Radios Pre 1960
5. Transistor Radios Pre 1965
6. Electrical Phonographs & Related Accessories Pre 1950
7. Wind Up Acoustical Phonographs & Related Accessories
8. Novelty Radios Tube, Transistor, or Hybrid
9. Radio Related Ads, Ephemera & Accessories
10. Test Equipment Pre 1950
11. Tabletop Art Deco Radios, including Catalin, Chrome Front, & Others
12. Battery Radios Pre 1928
13. Foreign Tube Radios
14. Microphones
15. Loudspeakers & Headphones
16. Open Radio Related Items Not Belonging in Any Other Categories



Booking Link for guest rooms Nov 14-17, 2024 at the Doubletree in Richardson: <https://www.hilton.com/en/book/reservation/deeplink/?ctyhocn=DALRHDT&groupCode=CDTVIN&arrivaldate=2024-11-14&departuredate=2024-11-17&cid=OM,WW,HILTONLINK,EN,DirectLink&fromId=HILTONLINKDIRECT>

## SOUND WAVES

### MONTHLY MEETING PROGRAMS 2024

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, 1000 Senter Road; or Garden and Arts, 906 S Senter Rd. Maps are located on the WEB site, [www.VRPS.org](http://www.VRPS.org) EVENTS page. Programs start at 2pm. unless otherwise noted. Call us if you get lost: 972-898-7251 or 972-742-8085.

Programs are subject to change, contingent on scheduling conflicts. As always, your suggestions for programs/content are welcome. I need volunteers to organize other programs, so consider presenting a program yourself. Call anytime or send an email: **Larry Lindsey email: [pipilindsey@tx.rr.com](mailto:pipilindsey@tx.rr.com) telephone: 817-312-8761..**

- JULY 20<sup>TH</sup> GARDEN-ARTS; IRVING, TX - 8 AM-12 PM ANNUAL REPAIR SESSION --BRING YOUR PROBLEM RESTORATION R ADIOS,PHONOS, ETC FOR EXPERT HELP IN REPAIR.
- AUGUST 17<sup>TH</sup> GARDEN-ARTS; IRVING, TX - 2 PM "THE STORY OF A SMALL CITY THAT WAS A PIONEER IN EARLY AM,FM AND TV" PRESENTED BY MARGARET BRYANT.
- SEPTEMBER 21<sup>ST</sup> TAIL GATE SWAP MEET --8 AM -12 PM