

# SOUND WAVES

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## VRPS Fall 2023



From the President

As I pen this letter, summer has already seen its last 2023 day, at least as far as the calendar is concerned. The temps are still hanging in there...mainly in the 90's, but soon they will move to more fall-like days... I surely look forward to seeing 70 again...in the middle of the day! As we approach the fall of the year, we also inch closer to our 49th annual convention. I look forward to

that event for a number of reasons. Maybe the most important reason is I get to see so

many of you who don't live in the metroplex, and this convention, along with the love of radio, is the magnet that draws us together. Another reason I am excited about this convention is the opportunity to see what you have been collecting and restoring over the last year. There are so many facets to our hobby I learn at this time, or I see something new every year. I also look forward to seeing those who have been away from us for awhile due to illness. One more thing before closing — the directors made a decision early this year to digitize every known issue of our VRPS publications...even some long lost copies of the organizational letters sent to prospective members in 1974. All of these documents have been scanned into .pdf files and placed on a custom labeled thumb drive. The good news is there is plenty of room on the drive for you to put future issues in a convenient folder on this drive. So many of you have never been able to read the early issues of the Reproducer and SoundWaves, so I hope you will want to take advantage of this offer. The thumb drives can be purchased for \$20 each at the convention.

Looking forward to seeing you in November.

--Jim



## July 15, 2023 VRPS Meeting Notes

Our annual July repair session, a perennial favorite, had several attendees waiting to enter as Larry Lindsey unlocked the Irving Garden & Arts Center's door. Seven work stations were quickly setup and then staffed by Roland Gooch, Jim Sargent, Bill McKeown, Billy Smith and Mike McCarty for radios, with Eric Kirst and Richard Shanks checking out crank phonographs. There was music in the air, along with some static and a bit of silence.

Among the many patients brought in were: Fred Doyen with his Silvertone 4463 that was only receiving the strongest stations at home. Mike McCarty found oscillation in R.F. circuitry, distorted reproduction, loud cracking when the converter tube was rocked in it's socket and a split in the speaker cone. He then cleaned and tightened the converter socket pins. Mike suggested that Fred recone the speaker and possibly replace the spider. This Silvertone went home noise free and working with good sensitivity.

Jaime Miller brought in a Firestone 4-A-42 that was working on FM but not AM. Bill McKeown applied both a signal generator and a signal tracer to isolate



a dead IF stage. Test results indicated a bad (open) capacitor inside the IF can - or another problem with the transformer coils inside the can. Bill advised Jaime to remove and open the IF can to check the capacitor and coil connections. Bill also speculated that there may be other problems, but this was the first step in the repair process. This case represents a good example that it's good to have both of the test instruments that were used.

Dutch Uselton's Philco 52-944 radio has weak FM reception at his house. After being checked out separately by both Billy Smith and Bill McKeown, the same diagnosis was reached. A better antenna is needed.

Greg Littleton came in with a GE L-641 for examination. It was working intermittently with and without sound. Jim Sargent resoldered several terminals and cleaned tube connections, then a alignment was initiated by Roland Gooch. Unfortunately time didn't allow for further investigation into the continuing intermittent problem.

Bret Menassa carried in two Columbia mechanical phonographs. One has a external horn and the other a internal horn and neither were working. Eric and Richard lubricated and adjusted both units with the external model ending up working well. The newer internal model was pronounced due for a complete motor rebuild.



Roland Gooch explained the work performed on Keith McManus's lifeless Radiola Grand that he rolled in. "Before anything was done, we pulled the 4 WD11 tubes for safety, since they are over \$100 each. After acquiring it, Keith wisely decided not to turn it on until it could be properly checked out. I ohmed out the transformers and reproducer to eliminate them as show-stoppers. Nothing amiss was noted in the radio proper. Then we proceeded to the AES-kit power supply, which is supposed to provide 45 and 90 volts B+, and the filament supply. The filament supply was putting out 3.8

volts, which would have fried the 1.1 volt WD11's. The 45 volt source was fine, but the 90 volt supply was about 160 volts. This was traced to several shorted zeners in the zener divider chain. The filament supply is an adjustable regulator, but it is doubtful that it could be adjusted as low as 1.1 volt." Jim Sargent proposed that the radio was likely operated with UV99's with socket adapters since about 3 volts would be correct for them. Another tech is going to work on the power supply at a later date to bring the voltage down. In principle, with the right voltages applied, Roland suspects the radio will work.

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Walt Zaleski brought his 1949 Crosley 9-121 and Elenco SG-9000 signal generator. He went to Roland's table for training on alignment as his radio had already been recapped and aligned by ear. His outcome was good as he learned how to use his Elenco to align his radios and his Crosley was working better.

Once again this annual event was an enjoyable and informative experience. The active members that keep giving back continue the long VRPS legacy.

--Mark Walden



**August 19, 2023 Meeting Notes-** It was a warm summer day and by 1pm at least half of the 29 total attendees were already present helping set up and discussing current radio related subjects. Steve Nance was busy running the popcorn machine providing the snack that helped set the mood for the days activity. At 2pm Jim Sargent started his normal process of welcoming everyone and then we did our individual introductions. Both the November convention and September's tail gate trade day events were briefly discussed with a reminder that the details for both are on the club website. It's not too early to register for the convention or make room reservations at the special club rates.

Larry Lindsey handed out last months SGITR certificate to Mike Grimes and then offered up this months query that was answered by Keith McManus.

Q -Who nailed Edison's chair to the floor in 1929 where it remains today? (Although it, the floor and dirt under it have been moved)

A - Henry Ford

Larry announced the days program facilitator Dave Seymour. Dave told of the need of the club to find a program to fill this meeting and he had come across an informative movie, "Castles In The Sky". It's on the history of radar and while it isn't a documentary the events are fact based. To further peak the anticipation, Dave's sneak preview let us know that the British were actually wanting to develop a death ray to kill the German pilots. Before hitting the play button Dave thanked Larry and Mike Grimes for helping him set up, Jim for bringing the popcorn machine and Ed Janssen for picking up the drinks. He also suggested watching for vintage radios in the scene's background.

"Set in the 1930s with Germany rapidly making with aircraft and weapons. The British War Ministry assumes war is coming they are looking for new inventions of their own. This film charts the work of Robert Watson-Watt, the pioneer of Radar, and his hand-picked team of eccentric yet brilliant

meteorologists as they abandon their initial direction of a death ray and struggle to turn the concept of Radar into a workable reality. Hamstrung by a small budget, challenging technical problems and even a spy, Watson Watt also has to deal with marital problems. By 1939, Watson Watt and his team have developed the world's first Radar system along England's south east coast - a system that, in 1940, will be critical in winning the Battle of Britain." Wikipedia, Castles in the Sky.

It appeared everyone enjoyed the film. With the movie over and all the popcorn gone a quick clean up and exit was needed as there was another group coming in right behind us.

-- Mark Walden



September 16, 2023 Tailgate Swap Meet Photos





## RADIO DETECTIVE MYSTERY :THE CASE OF THE TERMINATED TUBE

By Mike McCarty

On 10/25/1945, RCA introduced the 50B5 tube as part of a five tube kit of tubes preferred for the design of ac/dc receivers. It was intended for use as the audio power amplifier to drive the speaker. Electrically, it was similar to the 50L6GT, but was packaged in the newer seven pin miniature format, which was smaller compared to the 50L6GT, packaged in an octal format.

On 2/16/1948, RCA introduced the 50C5 as the preferred tube to supersede the 50B5, which was deprecated for new designs. The 50C5 was electrically identical to the 50B5, the only difference being a mechanical re assignment of the pins connected to the internal elements of the tube.

Why was the type 50B5 tube deprecated for use only two years and four months after its introduction, and moreover superseded by an identical tube?

In the back of the RCA tube manual RC-15, issued in March, 1948, in the "Recently Added RCA Tube Types" section, we find a clue in the entry for the 50C5, which reads (in part)

The basing arrangement of the 50C5 simplifies the problem of meeting Underwriter's Laboratories requirements in the design of ac/dc receivers. Refer to type 50B5 for installation and application considerations and curves.

In the RCA COMMERCIAL STATUS SUMMARY for the 50C5 dated Feb 2, 1948 we see this

### FEATURES

Miniature equivalent of 50L6-GT, and identical to 50B5, except for revised basing to aid Underwriters' approval of AC-DC receivers.

So we see, the UL had a complaint against the ac/dc tube kit introduced by RCA. However, the tube manual does not discuss what that complaint was, nor how re assigning the pins of the 50B5 to create the 50C5 satisfied the UL. In order to answer these questions, we must consider the tubes which composed the kit, the typical circuitry they were intended to be used in, and why the UL would complain.

The tube kit introduced by RCA comprised the types 12BE6, 12BA6, 12AT6, 50B5, and 35W4. They were intended to be used in inexpensive ac/dc radio receivers. The 12BE6 was a pentagrid converter tube, the 12BA6 was a remote cut off RF/IF amplifier, the 12AT6 had detector and high gain AF amplifier sections, and the 35W4 was the rectifier. The 50B5 as mentioned above was the AF power amplifier. The schematic for a typical receiver using this tube complement is shown in the diagram. Some receivers omitted the resistor in the 12BA6 cathode circuit, connecting the cathode directly to B minus ground.

RCA had a temporary internal name for the new tube, the type A4548, later assigned the JEDEC number 50C5. In the RCA document "Notes on Program Chart - Type A4548" received July 31, 1947, we read the following.

The A4548 is a miniature power output amplifier for AC-DC service, identical to the 50B5 except for basing.

The A4548 is required to correct an Underwriter problem in the existing miniature AC-DC kit. If the 50B5 is inserted in the 12BA6 socket, the line voltage may be connected to the signal grid lug of the 12BA6 socket by the double grid 1 connection in the 50B5. Line voltage is then fed through the AVC

line to the stator of the tuning condenser and possibly the loop antenna depending upon the circuit used. The A4548 avoids this by connecting grid 1 to pins 2 and 5.

At this time, it was starting to become common for people to remove the tubes from misbehaving radios and to take them to a local pharmacy to use the free tube tester service. The UL was concerned that the owner might reinsert the tubes into the wrong sockets, possibly resulting in the danger of a shock. If we consider the typical schematic carefully, we can see what the objection was. Note carefully the pin numbers marked on the schematic for the 50B5 and 12BA6 tubes. If you follow the red lines, you'll see the problem.

In the 50B5, pins 1 and 7 are internally connected. If the 50B5 were inserted into the 12BA6 socket, then the corresponding lugs on the socket would be connected. This would connect B minus ground (pin 7) to the control grid (pin 1) and thence to the AVC line through the first IF transformer's secondary. The AVC line is also connected to the stator of the tuning condenser and the loop antenna, usually mounted on the back. The rotor of the tuning capacitor, connected to the tuning shaft, connects to the other end of the loop antenna, so it would be hot as well.

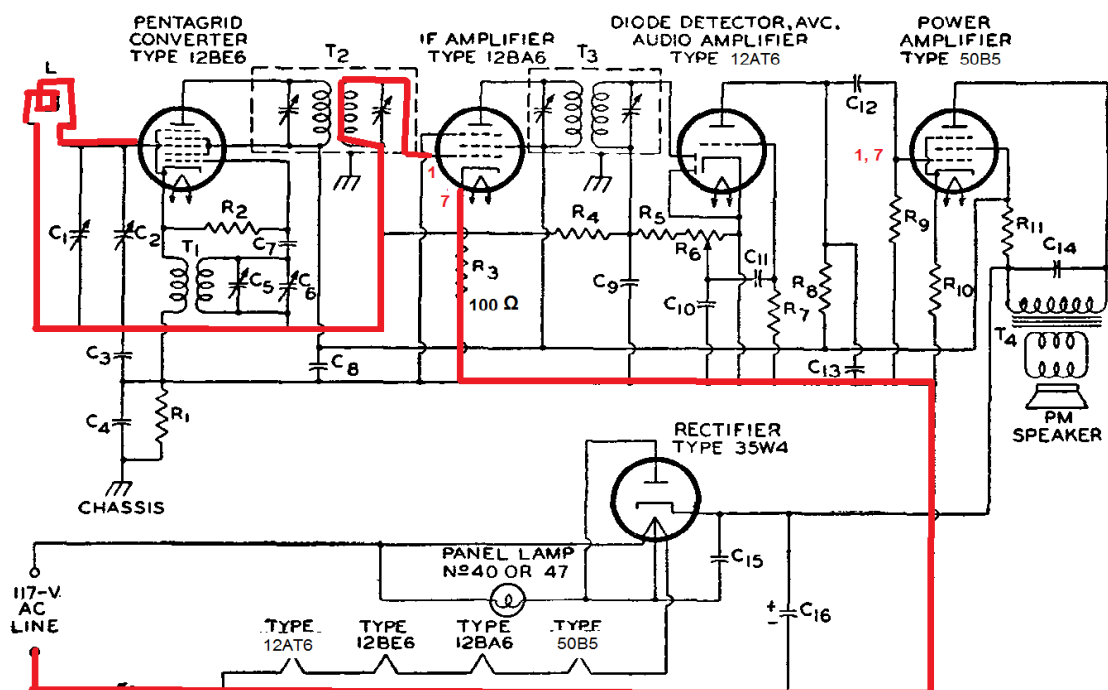
Some sets might also expose the AVC line to an uninsulated brad on the loop antenna mounted on the back of the set, with no protection at all. Polarizing the plug would not help, for even if B minus ground were connected to the neutral side of the plug when the set was on, then when the set was turned off the hot side of the AC line would still be connected through the heater circuitry, which is only 120 ohms when cold.

Radio manufacturers using the 50B5 and 12BA6 would need to incorporate additional insulation in order to get UL approval, surrounding the tuning capacitor with a shell or something, and another around the loop antenna. The wire used in winding the loop antennas is not insulated to withstand AC line voltage. Also, if the tuning shaft of the tuning capacitor stuck out of the case, then the only insulation between the user and the power line would be the tuning capacitor knob. The 50C5 prevents this by moving the grid connections to pins 2 and 5 in the new basing.

There was an identical problem with the 35B5, intended for use in six tube ac/dc receivers employing an additional 12BA6 as an RF amplifier between the antenna and the 12BE6 converter tube. If the 35B5 were inserted into either of the 12BA6 sockets, the user of the radio might be exposed to the risk of a shock. The 35C5 was introduced as a re-based 35B5 to alleviate this problem.

Case Solved

## AC/DC SUPERHETERODYNE RECEIVER



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## **MONTHLY MEETING PROGRAMS 2023**

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, [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..**

- **OCTOBER 21<sup>ST</sup> - GARDEN ARTS -- 2PM - 5PM -- PHONOGRAPHS BY ERIC KIRST & RICHARD SHANKS**
- **NOVEMBER 17<sup>TH</sup> --19<sup>TH</sup> DOUBLETREE HOTEL IN RICORDSON -- VRPS CONVENTION**
- **DECEMBER**