



The Grid Leak

July/August /September 2018

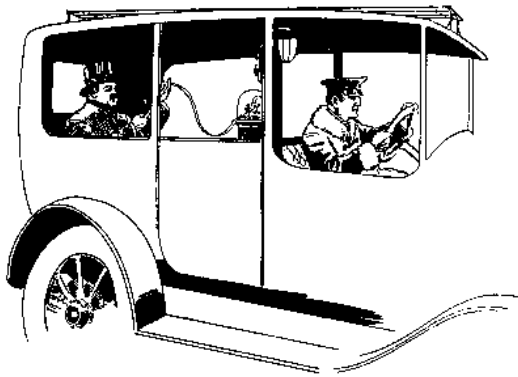
100 Years Ago: The World is on the Brink of Modern Radio Broadcasting, 1918



1918: US Army Portable Signaling Unit in France



Broadcasting 30 miles from Chicago to troops at Ft. Sheridan, 1918



Behold the "Radioautoticker". No longer Does Mr. Banker Have to Stick Around the Office for Tape News. In the Auto, at His Home, on a Train—In Fact, Anywhere He Can Keep In Touch with the World's Authority.

Marconi's proposed Radioautoticker from 1918—helping the stock brokers!



1918: Armstrong Patents the Superhetrodyne Radio. Shown: RCA Radiola AR812, the first commercial radio using the superhetrodyne circuit

From The President

Bill Werzner,
HVRA President

At the bench



It doesn't seem possible that 2018 will be half over in a matter of days. I've said it before and I'll say it again, the older I get, the faster time seems to pass by – along with our lives. I remember back in the early 1950's when my grandmother Kate turned seventy-five, and how I thought, "man she is really old". In two more months I will also turn seventy-five! Thanks to a couple of great cardiologists, family doctor, and including Memorial Hermann Southwest Hospital; I should be around for more birthdays as I pass the three score and ten (plus five). The worst thing that I had to endure during my eight days in the hospital was missing our fortieth anniversary celebration and convention in February. The treatment I received at Hermann was excellent in all respects, the only aggravating thing was having to lug around the IV stand with a heart monitor attached and not step on tubing or pull a wire loose on my treks to the bathroom. During the Saturday auction, one of my two Chinese cardiologists came in to see how I doing and was fascinated watching the auction from the laptop my older son Erik had set up next to my bed. Now with those wayward electrons zapped with an rf probe, my left atrium is back to normal along with the rest of my body as best I can tell. So as the late Paul Harvey used to say, "Stand by for news"!

Some of you may not be aware that HVRA are being swamped, for better description, with estate electronics. Our 10 by 20 unit on S. Gessner is packed and three more estates wait to be inspected. We plan to sell perhaps 200+ lots from our unit during the Texas City mega on July 7, so watch our auction manifest on HVRA's web site. We may have to convene a late summer / early fall auction somewhere to lighten the load as more come in – please stand by as plans are tentative at this time. The annual Tideland's Amateur Radio Club HAM Fest in Texas City is one you won't want to miss and regardless of your electronic interests, whether you're a HAM or not, I guarantee you will find both the morning swap fest and our afternoon auction fascinating. Looking further into the hot lazy days of summer, we will be calling for volunteers as we process the new estates that await us. Regular club meetings are scheduled for five months and sometime during that time frame, we will most likely schedule another Saturday auction somewhere. Due to Thanksgiving and Christmas holidays, the Bayland Park facility will close when we have Saturday meetings. However, we may be able to schedule midweek meetings there possibly on a Tuesday or Wednesday evening if our members agree and an on-site vacancy is available. In September we will hold our annual election of officers during the regular meeting so please plan to attend this meeting as we will need some loyal members to volunteer for nomination to fill at least one vacancy for At Large Position II and perhaps one more. See the article inside the Grid Leak about the upcoming Vintage Houston gathering at the Hobby Airport Museum facility in November. So, try to keep cool, keep hydrated, and pray hurricanes stay away. Bill Werzner, Pres. HVRA

Bill Werzner, President, HVRA

HVRA Officers

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HVRA Event Schedule: April through July 2018

Check with our web site www.hvra.org often for unexpected schedule changes, or special announcements. Remember, the Board of Directors' meetings are open to all members. This is where you can share ideas, suggestions, or express concerns with our officers.

July 7 (Saturday) 2018 HVRA Texas City Annual Summer Mega Auction and Ham Radio Swap

Meet Doyle Convention Center, 2010 5th Ave. N., Texas City, TX. HVRA Auction setup area opens at 8:00 am. A \$2.00 registration fee is required for all who attend the HVRA auction but are not HVRA members. The Tidelands Amateur Radio Society charges \$5.00 to enter the Ham swap meet area. Food and drink are available on site. Look at www.hvra.org for updates on the auction manifest. The Auction starts at Noon and likely will conclude around 4:00 pm.

July 10 (Tuesday) 2018 [Monthly Board of Directors Meeting](#) @ 6:30 pm - 8:30 pm Bayland Community Center, 6400 Bissonnet St Houston, TX As always, all members are welcome to attend. Pizza Served!

July 28 (Saturday) 2018 [Monthly Members Meeting](#) Set-up starts at 8:00 am and the meeting starts at 8:30 sharp. Bayland Community Center, 6400 Bissonnet St Houston, TX Program: Home Brew projects—bring your projects for show and tell.

August 14 (Tuesday) 2018 [Monthly Board of Directors Meeting](#) @ 6:30 pm - 8:30 pm Bayland Community Center, 6400 Bissonnet St Houston, TX As always, all members are welcome to attend. Pizza Served!

August 25 (Saturday) 2018 [Monthly Members Meeting](#) Set-up starts at 8:00 am and the meeting starts at 8:30 sharp. Bayland Community Center, 6400 Bissonnet St Houston, TX Program: Bill Werzner will give a presentation on Voltage Dividers, Doublers and Triplers.

September 11 (Tuesday) 2018 [Monthly Board of Directors Meeting](#) @ 6:30 pm - 8:30 pm Bayland Community Center, 6400 Bissonnet St Houston, TX Pizza Served!

September 22 (Saturday) 2018 [Monthly Members Meeting](#) Set-up starts at 8:00 am and the meeting starts at 8:30 sharp. Bayland Community Center, 6400 Bissonnet St Houston, TX. Election of officers followed by program and auction. Program: Steve Scheel will give a presentation on Phonograph Tonearms and Cartridges.

October 9 (Tuesday) 2018 [Monthly Board of Directors Meeting](#) @ 6:30 pm - 8:30 pm Bayland Community Center, 6400 Bissonnet St Houston, TX Pizza Served!

October 27 (Saturday) 2018 [Monthly Members Meeting](#) Set-up starts at 8:00 am and the meeting starts at 8:30 sharp. Bayland Community Center, 6400 Bissonnet St Houston, TX 77074. Program: An “Extraordinary” Amplifier contest. Bring your amplifier (any type) and the members will vote a winner.

November 9 and 10 (Friday and Saturday) 2018 Houston Vintage Annual Show This extravaganza is held at the Houston Hobby Airport Museum. Come and help HVRA man a booth promoting vintage radio to many attendees interested in vintage items. You will enjoy yourself and your fellow members.

November 16, 17 and 18 Vintage Radio and Phonograph Society (VPRS) Annual Convention and Auction. Comfort Inn and Suites, Plano TX (same location as last year for the Dallas based club). Visit www.vprs.org for more information.

HVRA News and Happenings

NOTICE ON PAYING HVRA MEMBERSHIP DUES AND GRID LEAK INFORMATION

The HVRA Board needed to make a change in how we do our membership payments to avoid the excessive time and resources it takes to keep track of when memberships are due throughout the year and sending notices to remind members. We don't want to lose any members in the process, but we need to take steps to streamline the process.

The change is that we now require renewals to be paid in February of each calendar year. This is a change from having dues required at various time during the year based on when you paid them the previous year.

Anyone who paid their dues prior to, or at the recent annual convention do not to renew their membership until February 2019. For everyone else who owes their membership prior to June 30, 2018, you can still send in your \$20 registration. Our mailing address HVRA Treasurer, PO Box 31276, Houston, TX 77231-1276. **DO NOT PAY ATTENTION TO THE “EXPIRATION DATE” THAT MAY APPEAR ON YOUR MAILING LABEL AS THEY ARE NO LONGER ACCURATE AND WE ARE WORKING TO REVISE THAT LABEL.** Note that we will no longer mail Grid Leaks to persons without current membership status.

Saturday July 7: HVRA Summer Mega Auction



HVRA will hold its 2018 Mega Auction on Saturday, July 7th, at the Doyle Convention Center in Texas City. This annual event is presented in conjunction with the Tideland's Amateur Radio Society's Hamfest. The Hamfest begins at 8AM and admission is \$5.00. All Mega Auction attendees not paying \$5.00 for the Hamfest must enter the Mega Auction exhibit room through the side hallway door, not through the Hamfest area. Set up of the HVRA Mega Auction will also begin near 8AM in an exhibit room adjacent to the Hamfest and sellers may begin staging their items at 9AM. Please bring your items through the side hallway door, not through the Hamfest

area. The Mega Auction will begin at 12 Noon. Selling and bidding at the Mega Auction is free to all current HVRA members. Non HVRA members will need to pay \$2.00 for a one-day membership in order to sell and bid (we also encourage non-members to join HVRA). Everyone anticipating selling or bidding must register and receive a bid card with a bidder (seller's) number. All items presented for auction must be labeled with an HVRA seller's form and contain the seller's number, lot number and a brief description. No items (bought, sold or passed) will be allowed to be picked up until the conclusion of the auction, approximately at 4PM, when the check-out process begins. At check-out, all sellers will pay HVRA a 15% commission on each successful sale. Payments can be made by cash, check or credit card.

Folks, this should be a great auction. Last year, we had approximately 350 lots cross the auction table including a variety of vintage radios, tubes, books, new and vintage test equipment, amateur radios equipment, stereo and HiFi items, photography equipment, parts, resistors, capacitors and much more. This year, we will be presenting items from 2 or 3 estates as well as the many things that member will bring for sale. There will be something for everyone. Some of the items that will be auctioned include the following: *Geiger counters; Sharp tape deck; Leed-Northrup variable inductor box; signal tracers; Weston tube checker; Supreme Oscilloscope; Precision tube tester; Heathkit HR 100; Heathkit power supplies; Drake linear amplifier; Drake matching network model MN-2000; Superior instruments volt ohm meter; HP audio oscilloscope; AC-DC voltage regulator; Jennings radio tubes; 12 volt power supplies; Ameco code practice oscillator; MFJ antenna bridge; and so much more.*

Please see the complete manifest of estate items HVRA plans to bring to auction at www.hvra.org If you have any questions, please contact the following Board Members: Bill Werzner (713-820-1778) or Jerry Sirkin (281-844-4124).

Battleship USS Texas – Our Donations at Work

First of all she's still afloat and the pumps are handling the below deck leaks. Taylor Marine, I was told, are approaching the finish line on phase two of their structural repairs and will probably complete them possibly by early fall. From what I have seen, Taylor Marine have done a fantastic job in their restoration work in preserving our one hundred and six year old battleship. These repairs to the structural supports were necessary in order to prepare the ship for future dry docking so that the 35 thousand ton, 573 foot ship can support herself on keel blocks in a future dry dock at San Jacinto. Dry docking is essential in order to preserve this historic ship that is the only one of its kind left on earth that served in both world wars, including the Atlantic and Pacific during WW II. The third deck is still closed along with portions of both decks one and two, but as the below deck work progresses, these areas will again be opened for touring. The pending Marconi antenna project will have to wait until the construction equipment is removed from the aft area of the main deck. The transmitter room and main radio are on the closed third deck, so work in those areas for us remains on hold. There is still a lot of work to be done replacing deteriorated deck wood, painting, cleaning etc. after the contractors leave. Perhaps some weekend this fall our members could spend a Saturday or two during cooler weather lending a hand? If you would like to volunteer, please sign up during our summer meetings and possibly this fall we can have a work day on the ship as a group. Bill Werzner, First Texas Volunteers

Annual Museum Ships Weekend Abord Battleship USS Texas

Submitted by Mike Brannan, KA5OXA: During the first weekend of June, the USS Texas participated in the Annual Museum Ships Weekend. This is a ham radio event when event stations are operated at many battleships and other retired US Navy vessels throughout the US. The following amateurs participated on the battleship Texas:

Gerald Doucet N5KT, Mike Smith N5TGL, Mike Monsour AC0TX, Mike Brannan KA5OXA.

Museum ships contacted:

W5PBR River Patrol Boat in Fredericksburg TX

W5KID USS Kidd in Baton Rouge LA

W5LEX USS Lexington, Corpus Christi TX

K8E Col. James M. Schoonmaker, Toledo OH

In addition there were many visitors at the battleship. A display of a typical receiver and transmitter (Navy RU series) that was installed on the scout plane that the Battleship Texas had on board were also available for visitors to view.



Annual Election of Officers: September 22

Once again we are looking for a few good volunteers who are willing to accept nominations for a two year term as club officers. To qualify, you must be a member in good standing with annual dues paid, willing and able to attend both monthly Board of Directors and general meetings, and fulfill requirements of the office that you may be elected to serve. Positions open for nominations include: President, Treasurer, Historian and At Large position #1. We are always looking forward to having new officers elected from our general membership to bring new ideas and share their expertise as club leaders. Nominations will be taken from the floor when the meeting opens at 8:30 AM. Yes, you can nominate yourself so don't be shy! Any questions about the responsibilities of an officer position? Contact Bill Werzner or Jerry Sirkin (their contact information is included above.)

Saturday Meeting Programs

Do you know that we usually put on a program at our Saturday monthly meetings? Don't miss out on some terrific opportunities provided by fellow HVRA members. Our upcoming programs are listed in the HVRA event schedule shown above and they include a presentation on tone arms and tone arm alignment, amplifiers, and voltage doubler circuits. Would you like to provide a presentation at an upcoming meeting? We would welcome

your contribution. Just tell Bill Werzner, Reid Shipp or any HVRA Board member of your proposed presentation and we will work with you to get it scheduled.

From the Webmaster : Stephen Scheel

Our website is slowly getting populated with articles please visit the articles section and check it out. You will also find a "Wanted / For Sale / Swap" Section. If you have a need and are a member in good standing just send an email to info@hvra.org and I will post your ad. It can stay up as long as your stay in good standing. Also, please confirm you are receiving email communications from HVRA with reminders for important announcements and club events. If you are not receiving them it is because we do not have a valid email address for you and again please send an email to info@hvra.org and request it be updated or the emails may be dumping into your spam fold so check that as well.

Thanks to Mike Payne and Electro Junk

On Saturday, May 12, Mike Payne opened the gates to Electro Junk in Alvin, TX, and his large parking lot was used for tailgating and swapping. This is an informal gathering and we thank Mike and his family for hosting this fun event that we always look forward to. We hope to make a repeat next year. Mike's swap meet helps us to replace our Saturday Bayland Community Center meet as it is closed on Memorial Day Weekend.

HVRA Technical and Restoration Articles

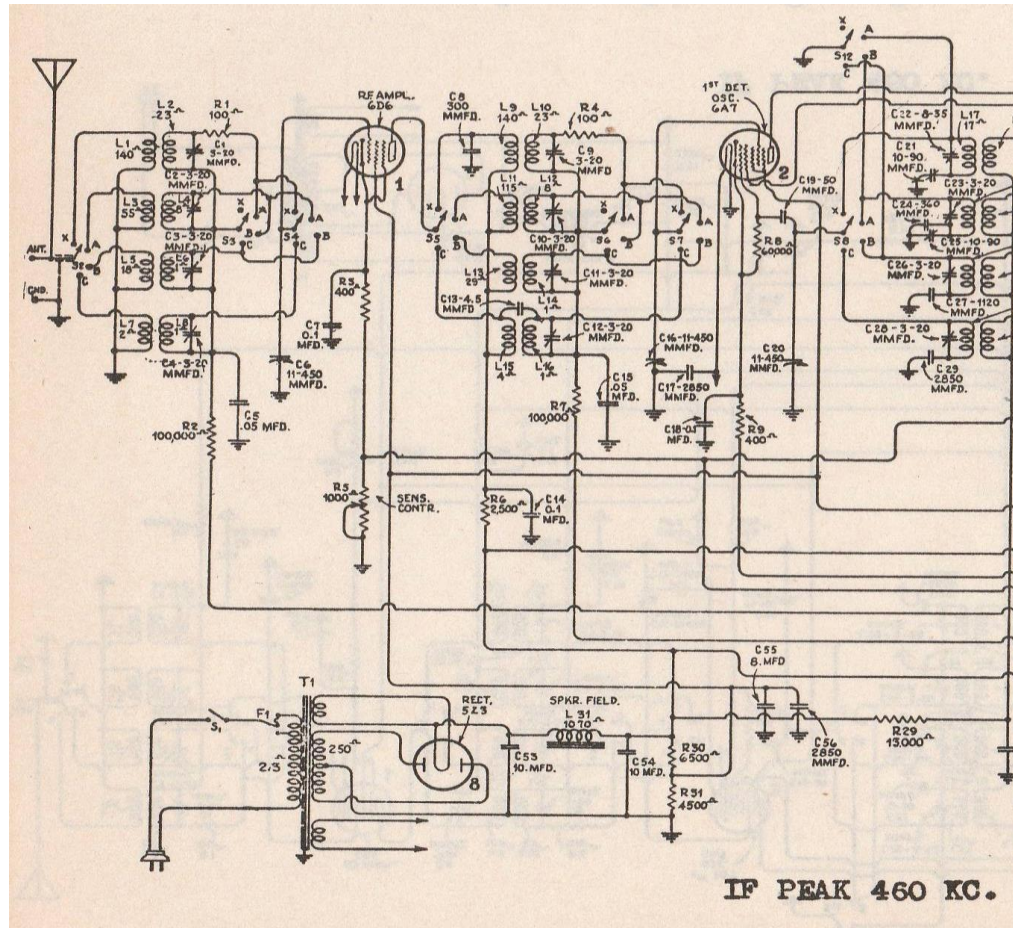
The Trouble Shooter by Bill Werzner

Voltage Divider Replacement in Vintage Radios

In my lifetime I have repaired and restored hundreds of vintage radios. A common problem that I encountered was open voltage divider resistors. Last week I restored a 1933 RCA Model 143 table top radio for a customer. This was a difficult restoration due to the deteriorated wiring, capacitors without any markings as to size, and voltage ratings. Therefore, for every component replacement I had to chase down that particular item on the radio's schematic. If you pull up that schematic from Riders Vol. V, you will see why an expanded view is necessary in order to find your way around. (A partial copy of that schematic is shown at right.) This is where my computer and printer saved the day in producing expanded views, where this soon to be 75 year old eyes, had trouble following all the lines, symbols, and millimeter size letters.

Early on, I determined that wire wound voltage divider resistor R 50 (6500 Ohms was open), but R51 (4500 Ohms to ground was good). Another suggestion, before I continue, is to use colored pencils or high lighters to trace over certain wires and components that require your attention in trouble shooting. This can really make life much easier in situations like this one and can save one's sanity. In the diagram below, R50 & 51 are located to the right of the speaker field diagram. Both are enclosed inside a metal strip riveted to the rear chassis for heat dissipation.

So, what do we know and not know about this divider? [1] We know the resistance of R50 & 51 (6,500 and 4,500 Ohms) and from the schematic (thank you RCA – some diagrams omit these values!). [2] Next, following the



wire from R50 to the screens of the push pull #42 output tubes where the voltage is listed at 295 Volts (for simplicity let's forget about the screen supply to the front end tubes between R50 & 51), we use Ohm's Law to determine amps, $I = E / R$, $I = 295 / 11,000$, so $I = 0.027$ Amps. Now we use the Wattage formula where $W = E \times I$, $= 295 \times 0.027 = 7.9$ Watts total. What we don't know is how many watts we are dealing with in each of the two resistors. Kirchhoff's Law states that in a series resistance circuit, current remains constant, but voltage will vary depending upon the value of the resistors in the circuit.

R50 is 6500 Ohms, so back to Ohm's Law, $E = I \times R$, $E = 0.027 \times 6500$, so $E = 175.5$ Volts, now for the wattage for R50, $W = E \times I$, and $W = 4.74$ Watts. Using simple subtraction we solve for R51, 7.9 total watts $- 4.74$ for R50 = 3.16 Watts for R51. See how algebra can be fun when you're past middle school! So, now we have determined that to replace burned out R50, we will need a 6500 Ohm resistor that can dissipate about 5 Watts of heat. Based on the rule of thumb of times 3, replace R50 with a 15 watt resistor is desired.

Now a problem has developed! It's Saturday night, the restoration is complete except for the R50 replacement. The customer is coming by at 8 AM Sunday morning to pick it up for his dad's birthday present. You do not have a 6500 Ohm resistor in stock, you had to give up trying a series substitution due to lack of chassis space, so it's parallel or else. You find the closest you have is a 7200 Ohm, 10 watt resistor that will fit, I'm too sleepy to figure

out the $1/x + 1/x$, or the $R1 \times R2 / R1 + R2$ math for a parallel substitution. So, here is a quick and easy solution. On your bench, parallel a 100,000 Ohm potentiometer with the 7200 Ohm resistor and connect your Ohmmeter across the pair



[This photo shows the hookup of the fixed (green) 10 K Ohm, 10 watt resistor in parallel with a 20K potentiometer. The purpose is to determine what size resistor will be needed to parallel with the 10 K resistor in order to bring the pair to a required 6,000 Ohms. In the upper left is a Simpson VOM. The potentiometer was adjusted to a reading of 6 K, the potentiometer was disconnected, and its resistance measured about 15,500 Ohms from the meter scale. From the article, calculate the wattage of the resistor to be used.]

Connect the center lug of the potentiometer to one side of the resistor and another lug to the other side of the resistor. Adjust the potentiometer until you read 6500 Ohms as close as you can get. Remove the potentiometer and measure the resistance across the lugs you used and try to find a resistor close to that value. From your Ohmmeter scale you estimate the potentiometer's reading came in around 60,000 Ohms. You check your resistor drawer and find a good used 62,000 Ohm, two watt resistor and solder it in parallel. You measure the resistance and BINGO, you find it reads somewhere around 6,400 Ohms! This put you at about 98% of the desired value (close enough for government work as we used to say back in the U.S. Army laboratory).

You wake up early next morning to reassemble the radio for you customer who called at 6:30 saying he was starting the fifty mile drive to pick up his radio. Suddenly you wonder – will that two watt resistor be of large enough wattage? Now for a quick breakfast table calculation: Let's see, we have about 175 volts across the parallel resistors, so current through the 62,000 Ohm resistor will be $I = E / R$, and I will = $175 / 62,000$, so I = about 0.003 Amps. Therefore the resistor will have to handle $W = E \times I$, 175×0.003 , or about 0.53 Watts. Subtract that value from the 4.74, and that reduces the Wattage for the 7,200 Ohm resistor to around 4.2 so we are within a range that a 10 Watt resistor can safely handle that amount of power. And my reputation is preserved as both a restorer and meeting my customer's requests on time!

The Radio From Hell: A Story About 50 Bucks by Ron Soyland

Repairing radios can be fun, arduous, difficult, frustrating, easy, satisfying, possibly matching many other descriptive terms. But sometimes you get a radio that is so horrible that it seems to be an evil entity that is actively working against you. The most frustrating thing about these radios is they always are customer radios, (can't just junk it!) and you have already done a lot of work on it before you come to the conclusion it is truly a tough dog set that should be used for parts only.

This one was a Zenith shutter dial with the motorized tuning dial. The customer was a long way away so he only brought the chassis and speaker to the shop.

First look showed an original radio (no obvious under chassis work on it) that was sort of dusty and dirty but certainly not the worst ever seen. A quick ohmmeter check showed the audio transformer was shot, but the speaker field was intact. (whew!) The speaker was in perfect condition, cone beautiful with no holes. I gave the customer a \$50 price to get it working. I figured it would be a quick capacitor job and that would be that. HA!

The chassis was cleaned with contact cleaner and a brush leaving the set looking reasonably nice. The tubes were removed, cleaned, and tested. All good.

A complete recap job was done on the set as a matter of good practice. The line cord was replaced and a fuse installed. The bad audio output transformer was replaced. So far so good. Time to fire it up and align it! Quick profit in the pocket! HA!

The shutter mechanism was jammed solid. A close look showed that someone had gotten in and bent the activating tabs around, apparently in an attempt to make it work. The whole shutter mechanism was removed and rebuilt. It was gummed up and the leaves horribly bent. All this damage was time consuming to repair but went without problem. The leaves were sprayed with clear lacquer making the numbers show up beautifully.



Great! The mechanism was re-installed and the dial pointer aligned. It all seemed to work great! Time to fire it up and align it! HA!

The dial would only rotate about a quarter turn and then hang up. Reaching up and trying to turn the gear with a finger resulted in the condenser continuing to rotate. Something was stopping the condenser but it wasn't jammed. A new drive belt was already installed so that was not the problem.

Off came the shutter mechanism again. The tuning condenser was warped on some plates where someone had apparently tried to pry the condenser around. This was painstakingly corrected and the gears lubed. It turned freely so the shutter mechanism was put back on and the dial pointer aligned. Time to fire it up and align it! HA!



Even with the new dial belt the motor would not fully rotate the condenser, but using the knob by hand did fine. Closer inspection showed the motor being all gummed up and full of oily dust. It was cleaned and gotten to work. Ah, time to align it now? HA!

Power was applied and the bench wattmeter indicated the correct power usage. But no sound at all from the speaker. Not even a bit of hum. Touching the volume control contacts with the finger (produce a 60 cycle hum) didn't do anything at all. The audio section was dead. Looking at the top of the set the 6F6 audio output tube was not lit up. But it was just tested good! Testing again, it lit up and was good! Examining the tube socket in the set showed a blackened area around pins 7 and 8. The bakelite of the socket was charred and the filament connection socket was ripped out and was floating under the socket. DRAT! Rather than go through the involved task of replacing the socket the connection was put back with a glop of JB weld. The tube now lit up properly. Now to align the set and get rid of it! HA!

The audio gave a strong buzz when the volume control terminal was touched so that was working, but zero signals. Totally dead. Not even any static when the antenna terminal was touched with a screwdriver.

A signal generator was connected and the 455khz I.F. was aligned, no problem. Good I.F. sensitivity so all seemed to be working from the converter on.

A scope was used to look at the oscillator signal. Nada! Dead oscillator! But on the short wave bands there was oscillator! And stations! Looking through the oscillator circuit there was the B.C. band oscillator coil and it looked like someone had stuck a screwdriver into the side of it! The wire was all gotched and broken in one of the coils. A check of the junk box didn't turn up any Zenith oscillator coils. So the dud was carefully stripped counting the turns very closely. It was then re-wound being certain to wind in the same direction and number of turns as the original. The winding was scrambled rather than the nice pie of the original but there was no alternative. It was wired back in and power applied. A station immediately came in! Now to align the set and get rid of it! Ha!

The B. C. band was aligned. Well, say attempted to align! When the top of the band was in alignment the bottom was way off. And if the bottom was aligned, the top was way off. Not just a little that the customer would not fuss over, this was a third of the dial off! After some checking it was found that the dial pointer had slipped and was rotated on the shaft way out of position. It was put back and checked carefully to see that it wasn't dragging on the dial face anywhere to cause it to slip. No problem there.

The alignment was tried again. The exact same problem! No matter how carefully the trimmer and padder condensers were adjusted the dial wouldn't match, even remotely close!

Then it was noticed the dial pointer was again off, by about a third of the rotation! Checking carefully again there was absolutely zero contact of the pointer and dial face! How was the darn thing getting off? It was put back in position and the dial moved from one end to the other. The dial pointer AGAIN was off by about a third of the scale! How in the... It was then adjusted to proper position and the dial rotated very slowly while watching the tuning condenser and dial pointer. At a certain point the dial pointer kept moving but the condenser was not! Ah ha! The screw holding the gear to the shaft on the condenser had to be loose! Shutter mechanism again removed. (4th time?) The screw was seemingly tight but it was adjusted and tightened again, just to make sure. All of it put back together. Testing the dial pointer rotation gave the same result.

Off came the shutter mechanism again! Closely watching the dial pointer move now with it in clear air revealed that at a certain place the dial moved but the condenser shaft stopped! Looking at the gear, two teeth were stripped off at that point! Someone had forced the dial and literally stripped the gear!

Fortunately, the gear only rotates $\frac{1}{2}$ of a full turn so the stripped place was adjusted to be out of the used range. All of it put back together. The dial pointer now remained in position. (whew!) The set aligned relatively well and that was that! The two short wave bands amazingly only took a small tweak of the trimmers to get into satisfactory alignment. So the set was done! HA!

The eye tube was not working! Even on a strong station the shadow barely moved. Looking at the AGC line, the voltage change was only a few volts. It should be fifteen to twenty volts on that set, on Houston stations. Reading the AGC line OHMS to ground gave less than a half megohm. Way low! It should be 2 megs or more. Careful snipping and tracing found one more bypass condenser that was packed down under the wiring of the set.

Replacing this got the eye to move somewhat but still not really well. The eye tube was replaced with a 6E5 instead of the called for 6U5. The 6E5 is twice as sensitive as the other so it gave full closing on strong stations and good movement on weaker.

Ah, done! OH! Check the push button tuning! Of course all the contacts were filthy and had to be laboriously cleaned. Amazingly the buttons were working and adjusted to stations. Done! Ha!

The other set of push-pull buttons for the tone control were breaking off! The bakelite was so brittle it pulverized with the slightest touch! The assembly was dismantled and new switch wafers machined from G10 fiberglass circuit board material. The contact rivets were not salvageable from the old wafers so new ones had to be machined. All back together after a half-day of machine work. FINALLY the whole set worked!

For all this work I got fifty bucks. Two and a half days all day long. Radio repair really pays well! The customer was thrilled with the set! I did learn how to pull the shutter mechanism off a Zenith in two minutes flat! Ha!

Missing Tube Identity by Tom Taylor

On rare occasion you get a radio that lacks documentation and you need to verify tubes are either in the right place or to determine what tube belongs in an unmarked or empty socket. Although requiring a little effort, there exists a method of determining what tube *might* belong in such a socket even before you can access the bottom side wiring. The following process is offered to arm you with an understanding facilitating your travels and tube selection. Of course it assumes some generalities about all radio circuitry that does not always hold true and it may not lead to the optimal factory tube choice due to internal tube characteristics such as gain, frequency response, current handling etc. For simplicity, this process applies to only circuits with a power transformer because those with series filaments require a different approach we might undertake later.

While the power is off use your meter of choice to find the socket pins with resistance to chassis ground of less than say 2000 ohms. Keep in mind you are counting pins in a counter clockwise manner when looking at the top side of a tube socket. IF you find one with resistance in that range but above say 50 ohms you can label it the cathode. If, however, you find any with a *short* to ground, make a note that it is probably the suppressor grid (if one exists), one or both of the filament pins or the cathode if it was not identified earlier. Still, while the power is off switch the meter to high ohms and find the pin with resistance to ground of between say 120K ohms and 1.5 meg ohms. Take a note that this is the control grid and you are measuring the grid leak resistor. Look at other tubes in the chassis to be sure all or most have the same starting number such as a 6 or a 12 which are indicative of the filament voltage in use as well as the first digits of the tube you will be looking for. While the prior steps will significantly narrow the field of base diagram options, it does not determine with certainty the filament pins. Because of the many tubes in parallel expect to measure resistance of around 1 to 5 ohms between two filament pins and for 7 pin miniature tubes you can limit your search to two pin pairs, 1 & 7 or 3 & 4. Filaments of octal based tubes on the other hand are almost exclusively limited to one of three pin pair options, 1 & 8, 2 & 7, and 7 & 8. You can also use the meter to examine these options with the power on to see the actual voltage. The voltage found will be the starting numeric digits of your tube choice.

Next, turn on the radio, preferably with reduced voltage ~60 -75%, and find which pins have the high DC voltage. One of course is the plate while another if it exists will be the screen and without a tube to load the circuit both are likely to have the same voltage. IF, however, one has a lower voltage, take a note that it is the screen and the higher voltage pin is the plate (no tube in socket). To differentiate the plate from the screen grid when voltages are the same, set the radio volume control about mid way and the band switch on broadcast before you insert a signal one at a time from your generator to those two pins. The one providing sound or signal to the speaker is the plate if all following circuitry is functional. When using the generator try first an intermediate frequency IF (searching in the range of 110 to 470KHz), then an audio frequency AF signal at that point when you are unsure what stage you are working with. The position of a tube such as between the IF cans, close to the antenna terminal, tuning capacitor and coil set or the output transformer should tell you a lot about what generator selection, IF or AF, to start with. {Note: an IF signal frequency can be heard when provided to RF

stages of the radio} Armed with your notes you now go to a tube manual to select any three digit tube base diagrams that fit your notations. With those three digit base diagram candidates you go to the Table portion of that manual to find tube numbers whose base diagrams match the filament voltage determined earlier. Don't be surprised that you get sound with your tube selection despite the fact that the tube is later found to be close to but not the factory chosen tube.

This process can be sped up quite a bit if you can access the bottom side where you trace wiring to build your list of pin assignments with more certainty but this too requires time and you have to reinstall the chassis once removed.

Recently I faced a similar task as described here but I misunderstood the strongest clues. The 7 pin miniature socket I was looking at did not have a metal pin at all in two socket locations, pin 3 and pin 6. It also had pin 7 grounded. Do you know what tube may have worked??

Answer >> Base diagram 5B0 for the 0A2 and 0B2 voltage regulators

Note: While either tube would have enabled the circuit to work, the selection of the wrong tube would have caused unintended heating of either the resistor biasing for that tube OR to a lesser degree the heating of parts in a circuit like an oscillator that is dependent on regulated power. The best selection without the schematic is the 0A2 regulator with a 40% higher strike voltage so as not to over current the tube itself.

Solder Bits (short articles and repair notes—contributions welcome!)

Submitted by Tom Taylor: When you can find yourself without a #80 full wave rectifier and you need to continue testing the radio while you wait for the correct tube*, you can use a 5Z3 for a short while. This tube has the ratings of a much more capable 5U4 yet has the base diagram of the #80.

*Why a short while you ask? The filament current on the 5Z3 is 50% higher, 3 amp vs. the 2 amp of the #80. Now if the radio has in use a large transformer serving a lot of tubes that per cent increase may be accommodated a bit easier and perhaps for an indefinite period. IF in doubt at all, watch transformer temperature rise over an hour or so and assess your ability to find and replace such a transformer. I watch for this difference and have had to replace at least 2 transformers recently that started out working just fine for greater than an hour.

HVRA 2019 Annual Convention **By Jerry Sirkin HVRA Vice President**

As Bill noted in his introduction, the first 6 months of 2018 are already behind us and my schedule for planning the next HVRA Convention is about to get moving at a fast pace.

Last December, HVRA and The **Marriott North** signed a 2019 contract for our convention and auctions scheduled for **Friday and Saturday, February 8th and 9th**. The benefit of signing early was to lock in convention costs at the 2017 and 2018 rates. If you attended the 2018 event, you probably noticed that we had increased our auction area from past years and added one more large room that was used for Technical presentations. We also had storage space allotted to us for items that members could not load on Saturday evening and the Marriott consented in providing cash concessions both days (previous years only one day was negotiated). All of our space costs HVRA only \$1500 for those 2 days (before SC and Taxes, of course). Unfortunately, they did increase our guest room rates from \$91 to \$94....I'm working on that.

There is a thought in the back of my ancient brain that has something to do with an area dedicated to pre-auction sales of "lesser than convention quality items...odds and ends" (let's not say "junk"). This idea, be it silent auctions or direct sales, may allow us to move lesser quality items before the Friday auction begins. Yes, this sounds like a swap meet room, but it will be primarily for those items coming to HVRA through estates and not brought to you during the main convention auctions; also, it will expose many of the 100 registrants to items that they would normally need to see only at monthly meetings at Bayland Park. It's just a brainteaser so far....more later.

This is going to be a great convention. In the October newsletter, we plan announcing the theme, contest rules and categories, technical session topics and speakers, and our Banquet guest speaker. We will also have the registration form available in that Grid Leak. Just as soon as these pieces begin to fall into place, I will have our webmaster post them.....even earlier than the October GL mail-out. I am currently waiting for the Marriott to send me the weblink that will allow members to register for a guestroom and receive our discounted costs (including the discounted breakfast buffet as in past years).

So please log onto our HVRA.org website for updates beginning late July or early August. One request I have.....we need volunteers for various activities during this two day event. Last year was fantastic....we had a group of hard working auction handlers and auction recorders who helped make the event run smoothly.....let's do it again. Also, if you have any "***polite***" suggestions or would like to be considered for a Tech talk presenter, please contact me directly at 281-844-4124 (or gsirkin@aol.com).

For those who have ordered their HVRA polo shirts, they are being embroidered the last week of June and I will contact each of you individually to make arrangements for delivery and payments. If you failed to order a shirt, or want another one, I will try to make arrangements to take pre-convention orders later this year. Text or email if you think you might be interested; we need at least 12 to keep the costs in the low 20s.

On The Lighter Side of Radio

Moving a Radio Collection: Attempting the Impossible?

By Jeff Heller, Grid Leak Editor and At Large #2 Board Member

At first, I did not think it would be a big deal. We were going to sell our house in Katy, and build a new house in New Braunfels. We opted to sell our house well before our new house would be ready as we were afraid the real estate market was soft and it would take a long time to sell our house. The good news was that we sold our house very quickly. The bad news was that we would need to live somewhere else while our new house was under construction. (Fortunately we had a condo in Austin to use for that purpose but it was too small to hold a radio collection or even any radios.) As a radio collector, I thought I would simply pack up my radios and move them myself from the old house to the new house where I was building a display area for radios. Now I needed to plan to store my radio collection for a year and effectively move it twice—once to the storage facility and then later to the new home. I thought that was going to be very difficult to carry off.

I hesitated and tackled many other items associated with moving but ignored my radio collection. And besides it was located upstairs in our house and hauling it all down the stairs seemed impossible even though the radios somehow found their way up the stairs in the first place. My wife was frustrated that I was moving too slow so she volunteered to help me pack my collection! She normally does not give two hoots about my radios. I was hesitant to allow my wife near my radios for this purpose. But I also knew that my wife is a very careful packer and she uses a lot of packing paper; I learned that packing paper if crunched up right, can cushion three or four radios in a medium sized box.

In the end, we had a lot of boxes with radios and assorted radio repair items. I did not realize I had *that much stuff*. I moved all of the boxes (with some help from a friend) to a storage unit in Katy. I easily filled a 10x20 unit plus parts of two additional units. That was a heck of a chore but I thought I could not trust a mover and I wanted to know what was where. I also balked at the price of moving a radio collection and so I opted for “manual labor”. When it came time to move to New Braunfels, however, I hired a moving crew to move all of the boxes to the new home along with many other items we had in storage. That was expensive but a smart move in this heat.

To my surprise, there were no broken radio items, a testament to my wife’s patience to do proper packing. At times she would even wrap three foot pieces of coaxial cable with wrapping paper, not knowing that they did not need such careful attention. But I am happy to unwrap these small items when all of the large ones made it through unscathed. The pictures show me unpacking one of my wife’s specially packed boxes as well as partial progress on getting my radios organized on shelves for display. Indeed, the hardest part now seems to be deciding where and how to display radios. I have forgotten about all of those days sweating in the heat as I moved my radio boxes with a friend in our pickup trucks, load after load, back and forth to the storage facility to be stored for a year.

My suggestions for anyone facing a similar task are 1) be generous in using boxes, packing paper, and packing tape as this small investment will pay off; 2) use an indoor storage facility if possible; my “work shop” items were stored in an outside facing storage facility, and they developed a coat of dust and grime after a year while

the indoor items were fine; 3) be patient—this is a big task and your collection is probably larger than you think particularly when packing up all of your junk, radio parts and work shop items; 4) thin the herd if possible—I did not do enough of that and I moved some stuff I should have gotten rid of at an HVRA Saturday auction; 5) finally, come to terms that it will cost some money to move a radio collection. I saved money moving a lot of the collection myself but it was back breaking work and I was happy to have a helper.



My new radio “desk” featuring a Drake R8B, JRC NRD-545, and other Drake, National, Hallicrafters and Collins equipment



An area featuring various “plastic” radios and other similar items.

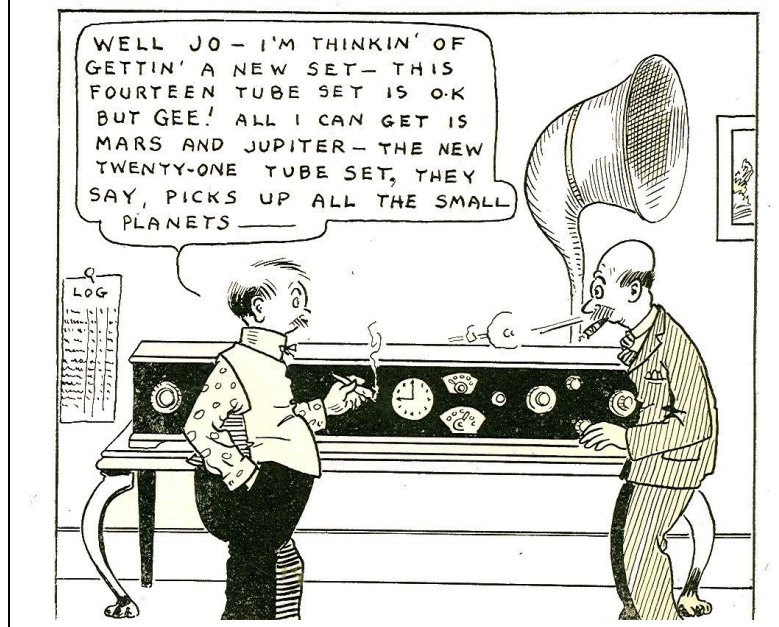


Majestic, Firestone and Emerson radios are featured in this area



Here I am opening a well packed box. I usually had no clue what would be inside so it was like unwrapping Christmas presents.

The Worries of Tomorrow



More Radio Clubs

Oklahoma Vintage Radio Collectors President: Jim Collings, PO Box 50625, Midwest City, OK jcradio@cox.net
\$15 annual dues. Monthly meetings, annual show.

Antique Radio Club of Illinois, www.clubinfo@vintage-radios.org

Collins Radio Association (CRA). David Knepper, PO Box 34, Sidman, PA 15955. No dues. www.collinsra.com

Louisiana & Gulf Coast Antique Radio Club. Phil Boydston, 750 Moore St., Baton Rouge, LA 70806.

Michigan Antique Radio Club (MARC). Don Colbert, MARC, membership@michiganantiqueradio.org. Pub: The Michigan Antique Radio Chronicle, quarterly. Dues: \$20. Annual Extravaganza and other quarterly meets. www.michiganantiqueradio.org.

New Mexico Radio Collectors Club (NMRCC). Monthly newsletter and members meeting (with flea market, auction and theme program). Dues: \$20. For more information contact John Anthes, jpanthes@comcast.net Club website: <http://newmexicoradiocollectorsclub.com>

Texas Antique Radio Club, Ed Engelken, Schertz, TX (830)899-3864, www.EdEngel@gvtc.com
Vintage Radio and Phonograph Society (VRPS), Dallas / Ft. Worth, TX **George Potter**, vrps@sbcglobal.net,
www.vrps.org

Texas Panhandle Vintage Radio Society (TPVRS). Contact: Elroy A. Heras, 4086 Business Park Dr., Amarillo, TX 79110

Local Sources for Radio and Electronic Parts

EPO (Electronic Parts Outlet), 3753 Fondren Rd., Houston 77063 (713) 784-0140 www.epohouston.com

ACE Electronics, 3210 Antoine Dr., Houston 77092 (713) 688-8114 www.ace4parts.com

Vintage Sounds, 10910 Old Katy Rd., 77043. Tubes, parts, records, etc. open Fri. Sat. & Sun.

Allen's Speaker Repair, 919 W. 19th St. Houston (713) 862-2747

WJOE Radio, LLC Radio parts and accessories www.wjoe.com

Buy, Sell, Trade, & Services Offered

Vintage Sounds Radio & Phonograph Sales & Repair including vintage auto radios, battery sets, foreign sets, etc. We also sell and service vintage telephones and telegraph equipment also parts, new & used tubes, transformers, schematics, books, phonograph parts & needles, records, etc. **Vintage Sounds** celebrating our 33rd year in business. Open Friday, Saturday, & Sunday from 10 until 6 PM. Now located in The Market Place Antiques, 10910 Old Katy Road, in Houston (Located about two blocks west of the Athena Gun Club on the westbound I-10 feeder road). 10% member discount on radio items. (713) 468-4911 www.vintagesounds.com

Borden Radio Company website:<http://www.xtalm.com> Antique Radio Schematic Service included in website. Crystal radio kits for sale. (281) 620 – 6692

Sargent Auction Service: www.sargentauction.com, Jims@sargentauction.com Jim Sargent, WA5QBR, Auctioneer, TX license 16135 | 200 Thomas Road, Granbury TX 76049

Allen Speaker Service, Speaker re-coning and repair, 919 W. 19th St. Houston, (713) 862-2747.

Tom Granger Restorations, radio and phono cabinets. (281) 338 - 8277. wwwtomgranger@mac.com

Escutcheons For Sale **Tom Taylor** has an extensive collection of escutcheons for sale. Nearly a dozen each Philco and Zenith PLUS Air King, Airline, Columbia, Courier, Glorytone, Majestic, Pacific, RCA, Silvertone, Stewart Warner, Traveler, Westinghouse etc, several with the glass. Tom Taylor IHCRally@yahoo.com

Other Radio Related Activities

Texas Broadcast Museum: www.txmbc.org This museum is located at 416 E. Main Street in Kilgore, TX, phone 903-984-8115. There are hundreds of pieces of vintage paraphernalia related to radio and TV broadcasting. Admission is \$6.00 (\$5.00 for seniors and military vets).

Edington Family Museum of Atwater-Kent Radios: Jimmy Edington, long-time collector and HVRA member, has re-purposed a beautifully restored hotel to display his outstanding collection of Atwater-Kent radios and related products. It is located in Silsbee, TX, about 80 miles east of Houston. See his website, www.atwaterkentsrus.com If you would like to visit, please contact Jimmy in advance, 337-476-4328 or atwaterkentsrus@gmail.com

The Grid Leak

July/August/September 2018

Website – www.hvra.org

From The President

Upcoming Club events calendar and club news

Member Technical and Troubleshooting Articles

Be sure to check the article inside about the Club's new membership renewal deadlines.

Ignore any expiration date shown on your mailing label!