The GARzette

The Official Newsletter of the Gwinnett Amateur Radio Society

April 2024 http://www.gars.org/ Volume 51, Issue 4

Inside

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TechFest
Gwinnett Amateur Radio Society

GARS January Exhibition of the Technical aspects of Amateur Radio Held at the Gwinnett County Fairgrounds

GARS Meeting: STEM Ideas and Follow-up – Tom Crowley KT4XN
Tuesday April 9, 2024 at 7:00 PM

President's Message

From the President…

And just like that, a quarter of 2024 is already over. It feels like we are ramping up for another great and busy year at GARS and hope to see several of you out at upcoming events with the warmer weather and longer days. I know I'm looking forward to getting back out activating some parks for POTA though it will take a little bit to get used to the new park numbers.

Many thanks go out to Ralph Pickwick (KJ4CNC) and John Davis (WB4QDX) on the recent Technician HamCram with continue high pass rate and excellent instruction. Also, big shoutout to our VE team, led by Dave Bruse(W4DTR), for their help with administering the exams. Hope to hear some of our new hams on the repeaters and see them at the next meeting.

We also just wrapped up our annual dog show and would like to thank all of those volunteers you gave their time to help make it a successful event. We had some great weather and fellowship (and the morning coffee and doughnut run didn't hurt either).

Coming up:

In a few weeks, it will be time for **Georgia QSO Party**. This two-day event is a great chance to get on the air – GARS will be hosting an event at **Little Mulberry Park** on Saturday, April 13th. We will be running a two-station setup using the club callsign. Please take a look at the website, sign up, and come out to help us rack up the points and hang out with your hams.

Also, remember to save the dates for the 31st Dacula Memorial Day parade. We will need volunteers again to help line up all the participants and get them out on their way on time.

Kevin W4KIB
Club President

GARS Repeaters and Other Communications

2 Meter Repeaters	6 Meter Repeater	
147.075(+) MHz Tone 82.5 147.255(+) MHz Tone 107.2	53.110 (-1 MHz) No Tone (Offline for Maintenance)	6M Currently down 147.075 Operational in Snellville 147.255 Operational in Snellville 224.580 Operational in Grayson 442.100 Operational at Goshen Springs 442.325 Operational in Buford 444.525 Operational in Snellville
1.25 Meter Repeater	**Other Resources:**	
224.580(-) MHz Tone 100.0, 1.6 MHz Offset	APRS	Link remote receivers being added
70 Cm Repeaters	144.390 -- 1200 Baud W4GR	
444.525(+) MHz Tone 82.5 442.100(+) MHz Tone 100 442.325(+) MHz Tone 100	D-STAR (WD4STR)	
	145.060 + (1.4 MHz) 440.550 + (5 MHz)	

Notable Web Links

Ham Radio Glossary: https://noji.com/hamradio/glossary.php a very comprehensive listing provided by Noji Ratzlaff KNØJI. On his site there is also a lot of information about getting started in ham radio.

Need Help – Let GARS Elmers answer your questions

Send an email to elmers@gars.org with the subject listing the area (like Antennas, Repeaters, Digital, DMR etc.) of your query to get to GARS Elmer volunteers.

About the GARzette

The *GARzette* is the official monthly newsletter of the Gwinnett Amateur Radio Society, serving its members and other persons interested in the advancement of the Amateur Radio art.

Original articles, art, and photos are invited and encouraged. Previously copyrighted submissions cannot be accepted for reprinting unless permission from the appropriate publisher is provided in writing along with the information being submitted. If reprints are from publications allowing their unrestricted use, please include a copy of the printed permission contained in the publication.

If possible, bring your articles to the monthly meeting in Microsoft Word or rich text (.rtf) or text or HTML format or by e-mail to editor@gars.org. Artwork can be accepted in most any graphics format and can be submitted via e-mail to the same address. Alternate means of submittal can be arranged when necessary.

In keeping with the Amateur Radio spirit, permission is hereby granted for the reproduction of The *GARzette* articles by other Amateur Radio club newsletters provided that proper credit is given to the individual author and *The GARzette*.

The GARzette is published each month with the assistance of Karen KI4HPP and Kyle W4KDA who print copies for distribution at meetings, etc. and Dave Bruse, W4DTR, who distributes the newsletter electronically.

Deadline for submissions is the 28th of each month for inclusion in the following month's issue.
For additional information view our Website at: http://www.gars.org [PS— Articles to publish in the GARzette, either written by GARS members or published elsewhere, are always welcome. —Ed.]
Newsletter Email: editor@gars.org Editor: Bob Hoffmann, K4CQO

GARS Meetings & Workshops

GARS Meetings and Workshops are held in-person at the EAA 690 Hangar, 690 Airport Rd, Lawrenceville, GA 30046.

Meetings and Workshops are OPEN to all, feel free to share your invite with others.

GARS Meetings Schedule (second Tuesday @ 7:00 PM): (these are the presentations)

- April 9 - STEM Ideas and Follow-up - Tom Crowley KT4XN
- May 14- SOTA (Summits on the Air) - Kevin Igarashi-Ball W4KIB
- June 11 - Preps for Field Day, Installing and configuring N3FJP logging software

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Workshop Schedule (third Tuesday @ 7:00 PM): (these are the Hands-on Workshops)

- April 16 - STEM Ideas and Follow-up - Tom Crowley KT4XN
- May 21- SOTA (Summits on the Air) - Kevin Igarashi-Ball W4KIB
- June 18 - Preps for Field Day, Installing and configuring N3FJP logging software

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GARS Meeting – April 9, 2024
STEM Ideas and Follow-up

Tom Crowley KT4XN will be presenting the importance of STEM in today's schools, along with the STEM projects he is involved in. This is an area where Ham radio operators can work getting today's youth interested in STEM. Tom will discuss GATech's STEM programs, Society of Amateur Radio Astronomy Grant Program and 2 projects being done by high school students at Paul Duke STEM school.

GARS Workshop – April 16, 2024

The workshop will be a follow-up to the presentation done the previous week.

Feel free to bring any ham related questions you have including equipment setup and usage. We typically have 5 or more Elmers at each Workshop.

GARS would like to thank Lee Johnson N4WYE, for his presentation and help with antenna modeling.

GARS Special Election for Secretary

Per the bylaws:

> ***"Special elections may be held at any regular meeting to fill vacancies which occur between regular elections. If a special election is to be held, a notice to this effect shall be published in the meeting announcement immediately preceding such election."***

Candidate:

- Drew White, KQ4NUQ

GARS Happenings

20 Years ago in the April 2004 GARzette:

- The GARS newsletter (GARzette) is not available for April 2004. However, all available GARzettes from 1994 can be found and browsed for your enjoyment from the GARS website.

You can always browse the GARzette archive at http://www.gars.org/newsletters. 73, Bob, K4CQO, GARzette Editor

GARS GARzette

Health and Wellbeing – Sandy Jackson, KJ4DRO

Look for this resource on Email (https://gars.org/contact/) and use it as a means to convey information about a GARS family member or Silent Key notification.

Net Managers Corner

Monday Night 2 Meter "Want, Swap, Sell, and Information Net"

GARS NEEDS MEMBERS TO SERVE AS NET CONTROL STATIONS!

GARS is a great Amateur Radio service club with the membership and awards to prove it. Our club is very busy and active, and we use the Monday night net to get timely information out to our members. Weekly participation is needed to make our net function well. There is only a small group of very dedicated people who make the net happen each week, and we need more members to volunteer to serve as Net Control Stations (NCS) on a rotating basis.

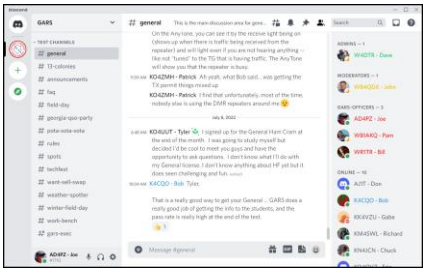
Out of almost 300 members, there are only five operators who serve as the NCS for the GARS net every Monday night. In no particular order, they are:

Ray – N4GYN David – KA4KKF Kevin – W4KIB Bill - WD4AMC Chuck – KK4TKJ

As GARS Net Manager (Chuck KK4TKJ), I would like to have more volunteers to fill NCS positions. I do plan and post the schedule months in advance. Any conditions will be accommodated that you as a rotating NCS need to place on the scheduling of your duties. If your plans change, I can make adjustments for the schedule to work, and I will make those changes happen as soon as I am notified of a problem. As Net Manager, I also send out reminders each week to let the NCS scheduled know he or she is NCS for the next Monday night net. In short, serving as a rotating NCS is a small duty but a great contribution to the club. The "Want, Swap, Sell Information Net" begins promptly at 19:30 every Monday night and runs about 30 minutes. As a scheduled NCS, you will request the assistance of a volunteer alternate NCS each time you have Net Control. Your simple duties will be to tune in to the GARS repeater, read the script, take a few notes and forward the information to me for record keeping.

Please lend a hand and contact (Chuck) via Email (https://gars.org/contact/) to help support the effort that makes GARS the great club that it is. See you on the Nets!

Don't forget about our Discord utility for GARS announcements, news, activity spotting and more. See http://www.gars.org top of the home page. This is a sample of Discord. →



Upcoming NE GA Scout Show

The Scouts are having Amateur Radio tables as part of the Scout Show day at the Gwinnett Fair Grounds. Contact Ed (KK4NUY), for more information.

Upcoming Georgia QSO April 13th

GARS - GA QSO Party - Saturday - April 13th

1 - 7 PM at Little Mulberry Park, (Fence Rd Entrance) Auburn, GA

GARS has reserved the pavilion at Little Mulberry Park (off of Fence Road) from 1-7 PM. If nobody rents the pavilion from 7-9 we have it until sunset when the park closes. The plan is to be ready and on the air at 2:00 when the QSO Party begins. Anybody who wants to do the GA QSO Party on Sunday can do so on their own and give credit for their contacts to GARS. See the QSO Rules on how to do this.

Since the GA QSO Party Rules limit us to 2 transmitters, we will operate Mulit-Operator Two Transmitters, M2X.

Setup should be quick and easy as we only need 1-2 antennas and already have station captions with radios and logging computers. We will use commercial power provided at the pavilion. The pavilion is just over 1000' from one of the highest elevations in Gwinnett County.

Amenities at the park:

- Pavilion (like the one at Harbins)
- Playground
- Lake
- Meadow
- Restrooms
- Overlook area at one of the highest elevations in Gwinnett
- Grill (I can already smell the hamburgers and hotdogs)

Google Map Link:

- Little Mulberry, Fence Rd entrance If you zoom in on the map you can see the pavilion just NE of the oval parking lot, just past the restrooms.

Contest Exchange:

- Georgia stations should call "CQ GQP" on CW or "CQ Georgia QSO Party" on SSB.
- GA Stations send: Report + County (GWIN)
- Non-GA send: Report + State/Province/D
- We will be using the GARS Club Call, W4GR.
- We will have a placard at each station so this is clear.

What to expect:

- The plan is to make this a fun event for the whole family. Bring your lounge chairs. Sit, talk, and get to know other GARS members.
- Of course, a few will want to get on the air and make contacts, but don't let that distract you from joining us and having fun.
- The pavilion comes with a grill, we could use a Grill Master to step up and toss burgers, hotdogs, or sausages on the grill.
- Want to experiment or show off your POTA/SOTA gear? Feel free to display it on a table and tell folks about it. We could even shut down one of the QSO stations so you could go live and make a few GA QSO contacts for the log. Just coordinate this with the station captain of the other rig. Besides the Station Captains, we need Elmers to help get others on the air. Coach them on how to make and log contacts. Let's use this opportunity to train folks on how to make contacts at Field Day.

What's needed:

- Someone to coordinate what to feed everybody.
- Will we just do sandwiches and snacks or put the grill to use?
- If we are going to use the grill find a Grill Master.
- Someone to coordinate; Water, Sodas, and Ice.

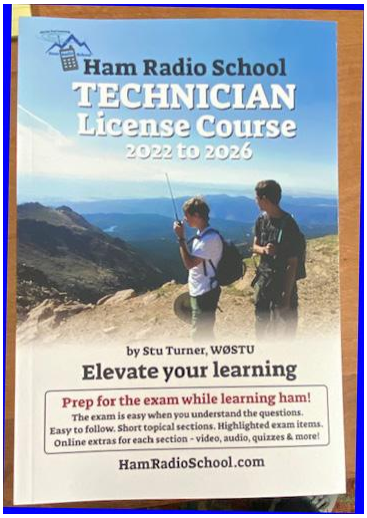
Sign-up sheet:

- Setup; Antennas, Rigs, Etc.
- Food
- Operators
- Tear down and clean up

Link to the GARS - 2024 - GA QSO Party sign-up sheet

73 Dallas N4DDM

March Technician HamCram Results



On March 23 & 24, GARS held a Technician HamCram taught by Ralph Pickwick (KJ4CNC) and John Davis (WB4QDX). GARS wishes to thank them for providing the teaching and introduction to amateur radio and including the exam session as the class completed.

The GARS VE Team had provided the exam session following the Technician Ham Cram on 24 March and resulted in 12 New Technicians:

- David Bearden - KQ4QIL
- Avtalyon Beck - KQ4QIJ
- Matthew Boyd - KQ4QHJ
- Theresa Caldwell - KQ4QHK
- Sarah Galvin - KQ4QHL
- Jeremy Johnson - KQ4QJF
- Kelley Johnson - KQ4QHM
- Katherine Leaycraft - KQ4QHN
- Brandon Locklear - KQ4QHO
- Michael Pringle - KQ4QHP
- Edyl Roman - KQ4QIN
- James Swart - not yet issued

Special thanks to the Volunteer Examiners who made this exam session possible:

- KM4FMW - Donna McCord
- AF4FG - Earl Whatley
- KM4SWL - Richard Kitz
- K4CQO - Bob Hoffmann
- W4SHT - Lynn Hatker
- NV4Q - Bill Carmichael

Thanks & 73, Chuck McCord, KK4TKJ (Co-CVE)

Re-Awakening a Vintage Radio

Vintage Amateur Radio

de Bill Shadid, W9MXQ

We talk a lot in this column about old radios and using them in modern times. While some mention has been made of a process to bring a long-stored piece of vintage electronic equipment back to life, there has never been any detailed information on this process published by this author.

I am going to say up front that this seemingly simple process can be unique in many ways to the radio involved. There really is no universal process for completion. The complexity of the process is directly proportionate to your experience so the less experience you have, the more complex. Be advised as we start that there is a high probability of destroying major components if not extremely careful. I have close friends with radios rendered useless because of not really knowing what to do.

Are you sufficiently terrorized? If so, we shall progress!!!

All radios must be first made safe in terms of their power supply. This discussion is for AC powered electronic equipment – powered by any of the popular input voltages (100/200 volts AC in Japan, 120/240 volts AC in the United States and Canada, and 240 volts AC in Europe). Most other countries use one of these three standards. But you must be sure of what is used where you reside and alter these instructions with your specific voltage specifications.

Radio equipment and accessories using AC power almost always have power supplies that convert the AC power to lower voltage AC, for tube filaments, low voltage DC supplies for solid state components, high voltage DC plate voltage for power amplifiers, lower DC high voltage for receiving and lower-level transmitter circuits, and DC voltages for screen and bias requirements.

Most voltage conversions are handled by a power transformer with primary windings matching the incoming AC supply voltage. The secondary for our discussion generally consists of several windings for the uses shown in the previous paragraph.

The DC voltages developed begin as AC voltages on one of the secondaries, are rectified (converted from AC to DC) by solid state or vacuum tube rectifiers and are smoothed by a setup of electrolytic (or in some cases oil filled) capacitors and perhaps in some cases also a choke (sometimes called a reactor). Herein lies the problem area in old, especially long unused power supplies.

Note: You need to take some time here if you are not familiar with the use and technology of transformers, solid-state and vacuum tube rectifiers, electrolytic and oil filled capacitors, or chokes (reactors) to make yourself familiar with these devices – what they look like, how they are rated, and how they might fail. This part of your radio is ***extremely dangerous*** *– this part of your radio can kill you. You have been warned!! Keep this picture in mind especially when working on vacuum tube radios – it means just what is implied . . .*

Get the message?

!!!

This is not mean spirited – I like that you read my articles and I want you to see the next one!

As collectors and restorers, we all think we know how to follow such a process. Radios in near perfect or perfect condition are no more exempt from such precautionary procedures than the similarly aged rusted and mishandled equipment – age is still age – pretty face or not. The critical items here are the electrolytic capacitors and sometimes early solid-state rectifiers (diodes).

Being a bit redundant, we know the power supply consists of a power transformer, rectifiers (solid-state and/or vacuum tube), and electrolytic (or oil filled) filter capacitors, and a choke (reactor. Some supplies are not designed with chokes – so do not be concerned if you cannot locate them in your radio. To bring the capacitors back to life and to check the integrity of the power transformer or any chokes present, there several items necessary:

1. An Autotransformer (VARIAC™). I use a 0-140 Volts AC, 2,000-watt unit or a 0-140 Volts AC, 1,000-watt unit for 120 Volt AC devices[1]. I always temporarily re-jumper 220 VAC units for 120 VAC operation and use a 0-140 Volts AC autotransformer for these tests.
2. A Wattmeter / Ammeter useable for 120 Volt AC lines. I use a P3 P4400 Kill-a-Watt™ Electricity Usage Monitor2. This device reads voltage, amperage, and wattage. (It even tracks power usage.)
3. You need Standby power (wattage) information for the radio you are testing. This will be in the specifications of the product as shown in the product instruction manual.

It is critical that you know the power consumption specifications of the equipment you are working with. This data is in the Specifications section of the Operations Manual for the equipment. If you do not have the manual, virtually all vintage radio manuals are available from various reprint services or via downloads from the internet[3].

Here is the setup for a typical radio transceiver – here showing a vintage Kenwood TS-830S HF Transceiver. (If you are using any radio that has an audio system, be sure that you have a speaker connected – for reasons that will become clear.)

(W9MXQ Shack Photo)

Left to right in the above picture:

1. Main Power AC Strip (AC Strip 1) with Kill-a-Watt the only item connected.
2. 2000 VA Autotransformer – getting power via the Kill-a-Watt Device
3. AC Strip (AC Strip 2) drawing power from the Autortransformer. Note Digital AC Voltatge meter plugged into this strip.
4. The Kenwood TS-830S HF Transceiver under test – plugged into the AC Strip in item 3, above..

The startup from zero incoming AC volts to full 115-120 VAC operation should never exceed the AC power (wattage) specification of the radio. For instance, the manual for the TS-830S (shown in the test setup, above) indicates 32 watts with the final amplifier and driver tube filaments switched off. So, since we want all items on for this test, let us look at what else is involved:

- Final Amplifier Tubes
  - Two 6146B Amplifier Tubes running 6.3 Volts @ 1.125 Amperes each.
- Driver Tube
  - One 12BY7A Driver Tube running 12.6 Volts @ 0.3 Amperes.
- Total vacuum tube filament power requirements:
  - (6.3 volts x 1.125 amperes) = 7.1 watts. 2 tubes = 14.2 watts
  - (12.6 volts x 0.3 amperes) = 3.8 watts for the single tube.
  - (14.2 watts + 3.8 watts) = 18 watts for filament power required
- Total Standby Power Required
  - 32 watts for receiver and low-level receiver power (per manual)
  - 18 watts for transmitter tube filaments (per above calculations)
  - (32 watts + 18 watts) = 50 watts total power.

Suffice it to say that those are DC calculations we are using for AC circuits – but it is close enough for our purposes. Just note above that all factors of the power drawn in standby must be included. The Kenwood TS-830S Operating Manual only shows on part of power consumption for our purposes – the balance had to be calculated using data we can find. In this case, a vacuum tube specification manual[4].

The 50 watts is a figure that can be read on the P3 P4400 Kill-a-Watt Electricity Usage Monitor. mentioned above. Alternatively, that can be converted to amperage (using the P=VI formula as a basis). For the TS-830S the known points are 50 watts and 120 volts so the formula would be modified to show the current as I = P/V or (50 / 120) = 0.42 amperes. I use wattage on this instance because it does not change as the voltage changes as a total consumption of power.

Some considerations before starting the process:

1. The digital voltmeter in the autotransformer works from zero to 130 volts AC as delivered from the secondary of the device. However, it is not quite linear. For our purposes it is accurate enough.
2. The digital voltmeter plugged into the AC Strip between the autotransformer and the radio under test shows a second digital voltmeter. This one does not begin to register until about 60 volts AC but is much more accurate than the one in the autotransformer. So, both meters have their purpose.
3. Some radios – such as the Kenwood TS-830S shown here – do not have a grounded AC plug (the TS-830S is self-contained and includes its AC power supply. In such an instance I connect the chassis of the radio to the chassis of the autotransformer and then that is made further secure by connecting the chassis of the radio to the station ground.
4. Keep in mind that the Kill-a-Watt monitors do not work at voltages below about 80 volts AC so they must stay in the primary circuit feeding the autotransformer. Since we only want the Kill-a-Watt to read total power its placement is of no consequence. But remember that its voltage readout mode is not of value in this analysis – except perhaps to know the actual primary voltage being fed to the autotransformer.

Now that connections have been made, be sure that the autotransformer is set to zero output volts – as shown on the digital meter on the autotransformer itself. Also, the power switch (or switches) on the

radio under test much be set to “ON.” And the AF Gain on the transceiver needs to be set so when the radio becomes operational its sounds can be heard. (Also allows for hearing other tell-tale sounds to be discussed below.)

Ready to Start

Autotransformer powered on and voltage set at Zero Volts

Radio shows both power switches “ON” and AF Gain at about 30% level

So, again, the voltage feed in the left AC Strip (AC Strip 1 – see setup picture, above) is receiving AC power, the Kill-a-Watt and the autotransformer are plugged into AC Strip 1. The autotransformer is set to zero. The AC Strip 2, between the autotransformer and the test radio, is connected to the output of the autotransformer. The test radio is connected to AC Strip 2. Be sure, as noted in the picture, that the AF Gain is set to about 30% of range – and the RF Gain should be at maximum. You may find at some point you need to adjust the AF Gain, up or down. Set the Kill-a-Watt so it is reading Watts. (Done by pressing the button with the legend, “WATT” (this position also indicates “VA” which means Volt Amps – meaning a calculation if V * A).

Generally, I do not have the antenna connected during this test – because since I am in the shack anyway, I connect a dummy load to the radio being tested and get on the air with my regular station. But it does no harm to have the antenna connected and there are some benefits as will be explained later.

We are ready to start – during the process, do not leave the setup unattended for more than a few minutes. I never let the setup run even while having a meal or if I leave the house – I do not even leave the room where the test is taking place for more than a few minutes at a time. I arrange my schedule, making this process my top priority. If necessary, I eat lunch and/or dinner where the radio is being tested. Laugh or otherwise comment – but the radio is in a potentially critical situation at this point – any component failure can destroy the power supply and more. For this first, 20-volt, setting, I generally leave the setting for two or three hours. All the while, keep regularly monitoring the wattage on the Kill-a-Watt. While problems can occur at 20 volts – the low power being consumed will limit damage.

Keep confirming under 50 watts on the Kill-a-Watt device. With the TS-830S used for this article, setting

the autotransformer to 20 Volts AC output to the radio netted 13 watts on the Kill-a-Watt readout. If you do not see some power at this point, then you need to check your connections to be sure AC voltage is being fed to the power supply in the radio. Be aware that the power switch in the test subject may be open (defective) or the power transformer could have an open winding. Or there could be a blown primary fuse. (Blown or incorrect specification fuses are often an issue in older radios.) If you still see no power indication on the Kill-a-Watt, then the process ends here – something else is wrong and there is a need for troubleshooting of the radio without power applied.

All along this process, listen for any pops, buzzing, screeching, or any odd noises coming from the speaker. These indicate internal problems – likely with the electrolytic capacitors. If you hear such noise, then the process stops - something else is wrong and there is a need for troubleshooting of the radio without power applied.

If none of the symptoms mentioned above occur, then after two or three hours (the more the better) you can turn the voltage up by another 15 volts – to 35 volts. Watch the Kill-a-Watt for any large excursions upward. The Kill-a-Watt does not move quickly. Watch if for a few minutes to see how much more power you are consuming. At 35 volts you still should be relatively low – well below the calculated 50 watts. Keep watching that wattmeter and listen for any of the noises mentioned above – even advance the AF Gain to see if you can then hear anything. Most all vacuum tube circuits will not begin to conduct until much higher primary voltage, but the pops and buzzing may occur if there is a significant problem. A hiss from the speaker is generally okay but probably not going to occur at 35 volts.

Note: Depending on how I feel about the radio, I might decide to monitor voltages as the test is being run. This is particularly true of vacuum tube circuits. Those radio's power transformers and their multiple secondary windings can be problematic. A shorted winding may be less likely to show when simply monitoring incoming power. In such a situation I would have the radio chassis open and perhaps several meters attached to critical voltage points. This is dangerous – and can burn you, or much worse. DO NOT do this if you are not experienced in working with high voltage circuits. DO NOT even approach the radio without one hand in your back pocket. DO NOT provide a path for electricity to pass through your body – such as having one hand on the chassis and the other hand on the HV lead. Laughable?? I do not think so!!

If all is well, we can move from 35 volts to 50 volts on the autotransformer. Again, immediately check the Kill-a-Watt for a wattage reading of under 50. At 50 volts it is likely that you will hear some sound from the speaker. Equipment with solid state power supplies and audio systems tend to start showing activity at this point – but not always. Also, at 50 volts the digital voltmeter on AC Strip 2 starts to work. This may be different in your installation. So, you could hear some "hiss" from the speaker. But, here again, if you hear pops or buzzing or screeching the process stops - something else is wrong and there is a need for troubleshooting of the radio without power applied.

Assuming continued smooth progression of the wattage as the voltage increases you may apply more voltage via the autotransformer in steps of 15 to 20 volts after at least an hour at any setting. After about 60 volts you are highly likely to hear activity and even signals if the antenna is connected. Pilot lamps, depending on ambient light in the room, can become visible at much less than 60 volts applied. The digital readout in the TS-830S begins to work, dimly, at about 62 volts.

Assuming all has gone well, you will arrive at full operation in about ten hours – give or take a bit. If the radio does not come to life, then other work is necessary – not in the scope of this article. If it works but is very noisy with hum, or similar noise, then likely you need to replace the power supply electrolytic capacitors. I have never had to replace oil filled capacitors or chokes. Older radios with solid state diodes may need to have them replaced with modern devices. If there are ANY selenium diodes they should be replaced immediately – even before the attempt to bring the radio back to life. While there are sometimes reasons to replace vacuum rectifier tubes with solid-state diodes, they are rare. DO NOT wholesale replace vacuum tube rectifiers. To do so significantly increases the resulting output voltage and likely makes the filter capacitors work close to, or are over, their design operating voltage. That, in turn, stresses other components in the circuit. Also, vacuum tube rectifiers, by their very design,

allow for current limiting at startup which reduces current peaks as the circuit begins operation.

Note: Some users of this kind of method to return a long-stored radio to general use can relate to these three other notes – for your reference:

1. Many of these radios will need the electrolytic capacitors replaced. I do not replace them without reason, however.
2. Some restorers limit the amount of power put into the radio. That can be done in a variety of ways, including wiring an incandescent light bulb in series with the AC Line. I do not do that because I am intense about monitoring the power drawn and listening to the sounds produced by the radio. My procedure works for me but admittedly without my level of attention this may not be suitable in your case. Be aware of that, please.
3. This method of restoring a long dormant radio is NOT SUITABLE for linear amplifiers using large transmitting tubes. While the method herein does apply to the linear amplifiers in your desktop transceiver using sweep tubes or the 6146 family of tubes – like the 6146B's in the subject radio for this article. For high power linear amplifiers, this procedure could damage the filaments in the tubes. Because of that, long dormant high power linear amplifiers should have their filter capacitors (if electrolytic) and silicon diodes replaced for safe operation. Is that perhaps wasteful of good components? Perhaps. But these high power and high voltage devices are worth the extra expense to bring them back safely. The potential cost of damaging these expensive tubes is well worth the price of component replacement.

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, W9MXQ@TWC.com.

A special note of thanks to my proofreader, Bob Bailey, W9DYQ. Bob is a bit more than a proofreader as he often adds commentary that makes it into the article.

Credits and Comments:

[1] You will find suitable autotransformers on Amazon, eBay, or other sources using the description shown in the article. In addition, I also use a 1,000-Watt unit for 120-Volt AC devices. Sometimes it is handy to have two autotransformers.

[2] The Kill-a-Watt™ unit mentioned is available at local hardware stores in many cases or on Amazon and eBay using the description shown. I cannot comment on other brands of such a unit but there are many.

[3] While there are many online retailers and download sites for vintage (and current) radio manuals, these are the ones I most frequently use – keeping in mind that the best manual reprints are not a low-cost item but worth their weight in gold for proper restoration:

http://www.KE9PQ.com. Nationwide radio is a purveyor of reprint and some original manuals for sale. Quality is excellent with reasonable pricing.

http://www.hamradiomanuals.com. This is WB2JKJ who works with inner city kids to teach ham radio, help youngsters get licensed, and even supply them with equipment, through donations, to get them on the air. In addition, the group sells good reprints of most vintage radios.

https://bama.edebris.com/manuals. *This is a free download site with a considerable inventory.*

https://kaysgoods.wixsite.com/kays-manuals/about. *A good inventory of vintage and current reprint manuals of exceptional quality – many times they are easier to read than the originals. The books include large size schematics. Heavy paper and binders that allow the manual to lay flat on the workbench while in use.*

https://manualman.com. An outstanding supplier of hard-to-find manuals. The quality is exceptional. *Heavy paper and binders that allow the manual to lay flat on the workbench while in use. The proprietor is also a vintage radio restorer and contributor to vintage radio reflectors.*

[4] Older editions of the Radio Amateurs Handbook, old tube manufacturers data sheets and data books (some available online), and general internet searches by vacuum tube model (such as 6146B and 12BY7A in this case) can also net specific vacuum tube specifications. Be careful with tube model suffixes. For instance, the 6146 and 6146A do not have the same filament specifications as the 6146B.

GARS Membership

New Members in March

Leonard Johns (KQ4OSW)

Michael Pringle (KQ4QHP)

New Members: 2

Total Members as of April 1, 2024 351

Join GARS members for our:

- weekly lunch bunch at 11:30 AM most Fridays
- weekly breakfast gathering at 8:00 AM most Saturdays

Both weekly gatherings are held at an ad-hoc location until a permanent location is decided upon.

Note: The 5 Spot is changing ownership and is currently undergoing renaming and renovation.

Birthdays in April

Angelo Bione (WB9RWL)
Jim Boyd (KJ4YN)
Paul Branson (KA4YZR)
Charles Burts (K4CHB)
Mark Case (K5MTC)
Scott Deitchman (WB8ICQ)
Chet Dickenson (KM4FMO)
Lisa Fischer
Emma Guidry (K4ECG)
JoAnn Heath
Walter Hill (KQ4KAO)
Janette Janssen
Stan McDonald (KI4H)
Ricardo Medina (W4RMZ)
Richard Morris (KG4BVU)
Gemarl Perry
Russell Prevost (AB4QQ)
Roy Rickert (KQ4DRH)
Patricia Schroder (KT4CAT)
Linda Tcimpidis (W6LWT)
Isi Thanthiriwatte (KQ4BKD)
Randy Tonne (KN4DY)
Kathleen Vogt
Keith Wells (WA8B)
Evelyn Whalen (KE4PLW)

GARS MEMBERSHIP

Your current GARS membership status is shown in the monthly newsletter e-mail towards the bottom of the message. To become a GARS member, or to renew your GARS membership, please visit our website – http://www.gars.org. To make changes to your GARS membership (moved, new e-mail address, new phone number, etc.), please contact the Membership Chair at Email (https://gars.org/contact/) with any changes to your Membership information.

Membership Chair: Karen Albritton, KI4HPP **Committee Members**: Dave Bruse, W4DTR

ARRL MEMBERSHIP

To update your ARRL membership information, please visit their website - http://www.arrl.org.

MAINTAIN YOUR LICENSE

You can update your Amateur Radio license information with the FCC at their website for free - https://www.fcc.gov/wireless/universal-licensing-system. License renewal is subject to the $35 FCC fee.

Donating to GARS

Your GARS donation can be used for a certain purpose by donating to one of these funds:

- GARS SK Memorial Fund for Education
- (to remember and honor Silent Keys);
- GARS Scholarship Fund (Administered by the ARRL for awarding scholarships);
- GARS General Fund (any club purpose).

GARS has joined these rewards programs (a portion of every purchase you make through these merchants may be donated to GARS):

- Kroger Community Rewards program.

For more information on how to sign up for these rewards programs, or to donate to GARS, visit

http://gars.org/gars/donations-to-the-club

GARS on Social Media

Discord Request:
http://gars.org/discord

Groups.io:
http://gars.org/groups.io

Visit GARS on Facebook:
http://gars.org/facebook

Follow GARS on Twitter:
http://gars.org/twitter

Join GARS on YouTube:
http://gars.org/youtube

GARS Mail Address:

GARS
P.O. Box 492531
Lawrenceville, GA 30049

Officers

 Kevin Igarashi-Ball, President W4KIB

 Alex Kowalchuk, Vice President AK4AM

 Bill Hawkins, Secretary WR1TR

 Glen Wendt, Treasurer W3WWT

 Kevin Scott, Program Manager K4GTR

Managers and Committee Chairs

 Karen Albritton, Membership Chair KI4HPP

 Dave Bruse, VE Team Leader W4DTR

 David Adcock, Webmaster, Field Day Chair, TechFest Chair KA4KKF

 Ralph Pickwick, Education Chair KJ4CNC

 Earl Whatley, Apparel Manager AF4FG

 Bob Hoffmann, GARzette Editor K4CQO

 Eddie Foust, Repeater Chair WD4JEM

 Mike Weathers, WAS / DXCC QSL Card Checker and Historian ND4V

 Chuck McCord, Net Manager KK4TKJ

 Steve Back, Technical / RFI Advisor WB2OGY

 Dallas Mellichamp, Workshop Leader N4DDM

 Sandy Jackson, Health and Wellbeing KJ4DRO

 Kevin Igarashi-Ball, Multimedia Chair W4KIB

 Dallas Mellichamp, Georgia QSO Chair N4DDM

 Neil Derryberry, Elmer Manager WD4NET

Open Winter Field Day Chair

Directors and Trustees

 Joe Biddle, AD4PZ

 Kyle Albritton, W4KDA

 John Davis, WB4QDX

 Bill Cherepy, WB4WTN W4GR Trustee

GARS Meeting Minutes

GARS – MEETING 3/12/2024

There were 46 in-person attendees

President Kevin Igarashi-Ball (W4KIB) opened the meeting at 7:02 p.m. and closed the meeting at approximately 8:35 p.m.

New hams and visitors: Kevin (W4KIB)

- First time visitors recognized.
- New hams and upgrades recognized.
- March birthdays listed, and congratulated.

Treasurer Report: Kevin (W4KIB)

Membership: Kevin (W4KIB) Currently there are 354 members.

Education: Ralph (KJ4CNC)

- STEM nights are coming up at the schools.
- Ham Cram is on March 23 and 24. The class is full with 21 students. This is the biggest class since Covid.

VE Team: Bob (K4CQO)

- Going forward testing will be on the 3rd Sunday of each month.
- This Month it will be on the 17th.
- We need more Ves for the HamCram exam

ARES: Hal (W4IGE)

- Last month Kevin (K4KIB) did a presentation on DIY Lithium Ion battery packs. The slides are on the ARES site.
- This month's program will be on packet.
- Deployment day will be coming up this spring. Deployment day is a day of field practice.
- The ARES trailer has been rejuvenated.

Programs: Kevin (K4GTR)

- April may be STEM school student presentations or Tom Crowly will present on STEM.
- We have nothing for May, as of yet.
- Kevin wants more entry level presentations for newcomers for the upcoming programming. If anyone wants to give a presentation on starter antennas or any other topic contact Kevin (K4GTR)
- April 8th will be a total eclipse and there are opportunities to participate in propagation research.
- Kevin has asked that anyone setting up for POTA or SOTA post a message to the Groups.io inviting people to join in.

Apparel: Earl (AF4FG)

- Those that ordered last month should check with Earl and pick up your orders.

Repeaters: David (KA4KKF)

- We are waiting for a Saturday when it is not raining to raise an antenna at the tower.

Dog Show: David (KA4KKF)

- Ralph is the lead on the Dog Show.
- March 27th – 31st.
- Catered food.
- Sign up on the web site.
- We will see funny looking dogs and their owners.
- We do 4 hour shifts, and the work is generally a matter of traffic control. We get breaks and the hosts feed us well.
- The dog show is significant fund raiser that pays for field days and other events. Half of the proceeds goes to ARES.

Georgia QSO Party: Dallas

- Dallas is scouting spots in northern Gwinnett County. Final location to be announced.
- There will only be two stations. Both are already provided.
- Show up and get on the air.

Other: Kevin (W4KIB)

- We need more active volunteers for events. Spread the word,
- Steve (W4BOG)will not be able and Ed (KK4NUY) is a new member that will help with the Northeast GA Council Scout Show at the fairgrounds. He would like to get set up like a mini-field day to get kids on the air. There will be a fox hunt. Start time will about 9 a.m. April 20th. The scouts will be cooking and providing food. Anyone that wants to contribute and help can join us.

Program: Antenna Modelling Lee Johnson (N4WYE)

Minutes prepared by club secretary Bill Hawkins (WR1TR).

Workshop Minutes - March 19, 2024

Number in Attendance: 12
Workshop Topic: Antenna Modeling
Presenter: Lee Johnson N4WYE

Brief Summary: Lee helped folks download and install the latest version of MMANA-GAL as their website is confusing. The Demo Ver. 0.4 is easy to find but the latest version requires a few extra steps.

Then Lee walked us through the steps to model a basic antenna and make small changes to see what those changes would make to SWR, Far Field, and 3D plots.

LINKS:

- MMANA-GALbasic ver 3.5.3.82
- Library of 1500+ antenna models
- GAL-ANA Manual

Elmers are always present at the GARS Workshops. Feel free to bring your questions to the Workshop and if your project is small enough to bring to the meeting, let us know in advance via email so we can bring tools, test gear, etc.

Events – GARS and others

ARRL CONTESTING INFO

From ARRL Contest Calendar

> For more information click the links <

2024	**January**
1	Straight Key Night
6	Kid's Day
6-7	RTTY Roundup
20-22	January VHF Contest
	February
12-16	School Club Roundup
17-18	International DX – CW
	March
2-3	DX Contest -- SSB
	April
21	Rookie Roundup – Phone
	May
	No planned contests
	June
1-2	International Digital Contest
8-10	June VHF
15	Kid's Day
22-23	Field Day
	July
13-14	IARU HF World Championship
	August
3-4	222 MHz and Up Dis Contest
17-18	10 GHz & Up – Round 1
18	Rookie Roundup – RTTY
24-25	EME - 2.3 GHz & Up
	September
14-16	September VHF
21-22	EME - 2.3 GHz & Up – Rnd 2
21-22	10 GHz & Up – Wknd 1
	October
19-20	EME - 50 to 1296 MHz
21-25	School Club Roundup
	November
2-4	Nov. Sweepstakes - CW
16-17	EME - 50 to 1296 MHz
16-18	Nov. Sweepstakes - Phone
	December
6-8	160 Meter
14-15	10 Meter
22	Rookie Roundup–CW

For more information:
http://www.arrl.org/contest-calendar

HAMFEST CALENDAR

[Please confirm the status of a Hamfest before making plans to attend]

04/13/2024 - Tampa ARC Hamfest
Location: Tampa, FL
Type: ARRL Hamfest
Sponsor: Tampa Amateur Radio Club

04/27/2024 - Calhoun GA Hamfest
Location: Resaca , GA
Type: ARRL Hamfest
Sponsor: Cherokee Capital Amateur Radio Society
Website: http://www.k4woc.com

04/27/2024 - Mobile Hamfest
Location: Mobile, AL
Type: ARRL Hamfest
Sponsor: Mobile Amateur Radio Club
Website: http://w4iax.net/

04/27/2024 - Savannah Area Swap Meet Hamfest
Location: Savannah, GA
Type: ARRL Hamfest
Sponsor: Coastal Amateur Radio Society
Website: https://coastalamateurradiosociety.net/wpW4LHSblog/

05/11/2024 - Forsyth Georgia Tailgate & Swap Meet
Location: Forsyth, GA
Type: ARRL Hamfest
Sponsor: Put on for Amateurs by Amateurs
Website: http://barnesvillega.net

05/25/2024 - WormFest 2023
Location: Pinellas Park, FL
Type: ARRL Hamfest
Sponsor: The Glorious Society of The Wormhole
Website: https://w4orm.org/

06/01/2024 - Atlanta Hamfest, ARRL Georgia Section Convention
Location: Marietta, GA
Type: ARRL Convention
Sponsor: Atlanta Radio Club W4DOC & Kennehoochee Amateur Radio Club W4BTI
Website: http://www.atlantahamfest.com

06/22/2024 - Dade City Lodge Pre-Field Day Hamfest
Location: Dade City, FL
Type: ARRL Hamfest
Sponsor: Dade City Lodge/Green Swamp Chapter NAQCC

For more information: www.arrl.org/hamfests-and-conventions-calendar

When searching by division, remember some states adjacent to GA are in different divisions: Southeastern: GA, AL, FL Delta: TN Roanoke: NC, SC

GARS Events Calendar for 2024

TechFest	January 13 2024
Winter Field Day	January 27-28 2024
Spring Technician HamCram	March 23-24, 2024
Dog Show Fundraiser	March 5-6 2024
Georgia QSO Party	April 13-14 2024
North metro area Fox Hunt	April 2024
Summer General HamCram	April 2024
Memorial Day Parade	May 27 2024
ARC/KARC Hamfest	June 1 2024
Field Day	June 22-23 2024
JOTA	October 2024
Fall Technician HamCram	September 2024
Stone Mt. Hamfest	November 2-3 2024
Holiday Party	December 7 2024

GARS Recurring Calendar

- 2nd Tuesday of the month at 7 pm (except December)
  Monthly Club Meeting
  690 Airport Rd, Lawrenceville, GA 30046
- 3rd Tuesday of the month at 7 pm (except December)
  Monthly Workshop
  690 Airport Rd, Lawrenceville, GA 30046
- 3rd Sunday of the Month at 2 pm
  GARS Ham Exam Session
  690 Airport Rd
  Lawrenceville, GA 30046
- Every Monday at 7:30 pm: GARS Want, Swap, Sell, and Information Net on the GARS 147.075 MHz repeater
- Every Monday at 8:30 pm: ARES Training on the GARS 147.075 MHz repeater
- Every Friday at 11:30 am, GARS Lunch at The 5 Spot
- Every Saturday at 8:00 am GARS Breakfast at The 5 Spot

GARS Calendar for April 2024

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1 **7:30 – 8:00 PM 2M Net**	2 **7:00 PM Exec Meeting**	3	4	5 **11:30 AM Lunch at TBD**	6 **8:00 AM Breakfast at TBD**
7	8 **7:30 – 8:00 PM 2M Net**	9 **7:00 PM Meeting EAA 690 Hangar**	10	11	12 **11:30 AM Lunch at TBD**	13 **GA QSO at Little Mulberry Park** **8:00 AM Breakfast at TBD**
14	15 **7:30 – 8:00 PM 2M Net**	16 **7:00 PM Workshop Meeting EAA 690 Hangar**	17	18	19 **11:30 AM Lunch at TBD**	20 **8:00 AM Breakfast at TBD**
21 **2:00 PM GARS Ham Radio Exams, EAA 690 Hangar**	22 **7:30 – 8:00 PM 2M Net**	23	24	25	26 **11:30 AM Lunch at TBDt**	27 **8:00 AM Breakfast at TBD**
28	29 **7:30 – 8:00 PM 2M Net**	30				

Local Ham Radio Exams & Meetings

GARS Ham Radio Exams

Beginning in March, GARS will march to the 3rd Sunday of the month

Preregistration is REQUIRED
Doors open at 1:45pm, exams start promptly by 2:00pm
For more information and to preregister, please visit https://gars.org/exams/

GARS VE-Team
VEC: W5YI-VEC
EAA 690 Hangar
690 Airport Rd
Lawrenceville, GA 30046

GARS VE Team Leaders
E-mail: exams@gars.org.

March 2024 Results

The GARS VE Team had a great exam session on February 11th.

6 New Technicians

- Christopher L Brouillette – KQ4QBF
- Joseph M Estes – KQ4QAF
- Taylor Estes – KQ4PZV
- Hoon Jae Jung – KQ4PZW
- Bryan S Morrow – KQ4QAI
- William M Packwood – KQ4PZX

2 Upgrade to General

- TIM B BRADY – KJ4FHZ
- LEONARD JOHNS – KQ4OSW

1 Upgrade to Extra (from the HamCram session)

- Yosef Beck - KQ4HIR

Special thanks to the Volunteer Examiners who made this exam session possible:

W4DTR – Dave (CVE)
K4CQO – Bob (CVE)
AB4QQ – Russell
KM4SWL – Richard
W4SHT – Lynn
AF4FG – Marvin
KQ4DWZ – Doug
NV4Q – Bill

Thanks & 73,
Dave Bruse, W4DTR (CVE)
GARS Exam Team Leader

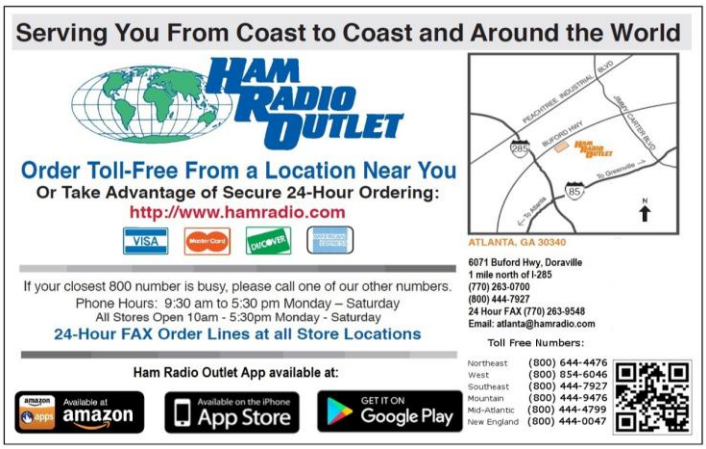
Local Ham Radio Exams

In order to find an exam session near you, please visit http://www.arrl.org/exam_sessions/. Contact the information in the listing for further information.

Local Ham Radio Meetings

In order to find a local Ham Radio Club meeting near you, please visit http://www.arrl.org/find-a-club. Contact the club for meeting information.

GARS Supporters



In order to have your ad included, contact editor@gars.org. Current ad prices are:

Business Card	$50
1/4 page	$125
1/2 page	$150
Full page	$200