



The June TARS meeting will be held at the Claude Pepper Building, 111 W Madison, Street beginning at 7:30 p. m. For more information about TARS, and directions to the meeting, visit: <http://www.k4tlh.org/>.

PRESIDENT'S CORNER

David Heupel, KG4ACF

TARS President

I can't believe that it's June already. That means its time for two important events: 1) Field Day, and 2) elections. Field Day will be June 23 and 24, the fourth full weekend in June (as always), and barring any last minute problems, we'll be back at the Mission San Luis this year. Elections of course will be held at our Annual Meeting on June 7, 2001, at the Claude Pepper Building in downtown Tallahassee. If you haven't attended a meeting in a while, please try to come by. I believe our program will be on handling NTS and/or emergency traffic via amateur radio, so it should be interesting. Tune in to the Sunday evening ARES net at 8:00 p.m. local for Field Day updates, among other useful information.

As many of you know, I was up in Dayton again this year. I had the chance to attend a few forums this year. A couple were very interesting, especially one on high-fidelity single-sideband (SSB) transmission. A group of Japanese hams are designing circuitry, and modifications to existing radios to enhance the audio quality of transmitted SSB signals. If you would like more information about this project, send an e-mail message to hifissb@hotmail.com, and they will keep you updated.

Beginning next month, I will assume duties as editor of *The Printed Circuit*, so please submit all copy to me for inclusion in the newsletter. The submission deadline will be the 15th of the month

prior to publication. Don't be surprised if *The Printed Circuit* looks a little different next month.

That is about all I have for now.

Until next month, 73!

Dave, KG4ACF

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CURRENT EVENTS

David Pienta, KG4DVW

TARS Vice-President

Well good news! I might be staying in the Tallahassee area after all. I go on Tuesday, May 30th to interview for a computer job in Tallahassee. I will keep you all posted on how it goes.

Elections are this month. I do have to say that I am disappointed that more people are not getting involved with the club. More people should think about running for office. You do not have to know anything to get involved; there are enough people to help you out when called upon.

I want to thank Dave, KG4ACF. Since I was in school for most of my Vice Presidency, I had to regularly call on Dave to help me out with picnics or programs. He has always been there to lend that helping hand. Thanks, Dave, it has been an honor and a privilege to help lead TARS for the last year.

Dave, it was my pleasure to serve, and help you out – I hope you get to stick around for a while longer. Good luck on job hunting! – Dave, KG4ACF

For those of you who do not know, Matt May is no longer with us. He has moved to Kansas to take on a different job. He sends his regards and said that his e-mail should forward to his new email address.

Lastly, keep an ear to the 2-meter radio. If I do end up leaving town I plan on having a going away party sometime around the 16th of June. Let's pray that I do not have to do this and that I can stay in Tallahassee! Thank you, everyone, for making this last year a lot of fun for me – I sure enjoyed it.

David Pienta, KG4DVW, TARS Vice President
219-6247 (home)
weatherman_fs@yahoo.com

MAY 3, 2001, MEETING MINUTES

David Pienta, KG4DVW

Meeting called to order at 1932.

Introduction of visitors: Richard, KG4KPH (new member); W1XO, W4RHC (out of the area ham from Gainesville); Ian Jones, KA4WEF; and Warner Garrison, KG4MIU, a new member.

Letter produced and sent to Mr. Randy Kirksey, GA Forestry Commission, and Mr. M. R. Stewart (Poncho), in thanks for properties used during TOSRV. Reminder to produce letter for Bobby Bailey (EMS) for tires donated for the van.

Treasure's report:

Checking: \$1144.39. Other account: \$2450.00 total.

Committee reports:

Repeaters:

147.03 is up and will require tones soon

The 442.85 UHF repeater is fine, please identify as K4TLH when using.

TV-40 has allowed us back on their tower – stay tuned for updates on this.

6-meter repeater has not had any work done. We need to allocate funds to buy the receiver and transmitter link for the machine. We may need to just belly up to the bar with the funds.

Quincy APRS digipeater antenna has been raised to 200ft and the antenna gain has been increased. This doubled the footprint of the digipeater.

For the 146.91 machine, we have verbal permission for a remote receiver site out by the water treatment plant. We want 200ft but they want us at 400ft.

Status of voice over IP for 146.91 is in negotiation. We want the equipment for 4 remote sites. However, money is tight. We are looking at about a \$3500 cost.

Matt wants to get rid of the portable repeater. Ted Zateslo volunteered to take it back.

Dave, KG4ACF, is working on acquiring 200ft+ of a dismantled commercial AM radio tower.

Testing:

4 people tested. All 4 passed, and one from as far away as Marianna. The testing site manager has changed and she was freaked out at first but was cool with it when she saw Alan.

Kent: Security wants to make sure that we all exit the building once finished with the meeting.

Program? - Graduation notice given about FSU and 2 Hams (KG4DVW – KG4KLR)

Motion to accept minutes? - Motion carried

Old business:

Gas card for van? - Dave (ACF) still working on it.

Contact with guy from cell phone company along with free service forever – not remembered.

W1XO is helping liquidate George Thurston's equipment. 9AM Sat tower breakdown party.

Break (15 mins): reconvene at 8:20

\$34 to the club in the drawing (KG5GXT won and donated his winnings back to the club).

Nomination of new officers:

No committee was formed due to no interested parties

Secretary: Randy Bishop, KD6UAN, nominated, but he is moving to Indiana. Carliane Johnson, KG4CJT, nominated (Shawn Wilson, KG4GXU, says he does not know if she'll accept). Nomination seconded for KG4CJT.

Treasurer: Kent Hutchison, KC4TOC, elected for life in 1999.

Vice President: Brett Wellman, KG4KLR, nominated by Dave Pienta, KG4DVW. Randy Pierce, KC4YWP, volunteered for helping with programs.

President: David, KG4ACF nominated for a 2nd term by Carl Hayes, NN5I, and Dave accepted.

Nominations closed and elections are next month.

New Business:

Randy Pierce, KC4YWP: Opportunity for us – 1 week Soldering class. This is offered through Randy's work. Possibly will cost \$10 to \$15. If a positive response is received we could have this class offered. This will be at Innovation Park. More information will be available next meeting. This is trying to be set up in the latter part of June and assured to be after field day.

Brett, KG4KLR: Weathering the storm...Event May 19th from 10-3. Sponsored by the Weather Channel and Comcast Cable.

Matt May, KC4WCG: Authorize Kent to spend up to \$500 to fix relay failure in the control panel in the van, and routine maintenance for the generator. Motion is brought to the floor, seconded, and carried.

Carl Hayes, NN5I: How many people will be at the Dayton Hamvention[®]? Attendance from Tallahassee amateurs expected to be around 10 to 12.

Dave, KG4ACF: motion for \$150 expenditure with the Capital City Cyclists to show appreciation for the Thomasville and Albany clubs for the continued support of TOSROV. Mentioned the idea for Albany and Thomasville to pick up more responsibility in this event in the future. Motion seconded. There was discussion about plaques with

plates so the plaques can be updated each year. However, there is concern that plaques would be put in the closet. Therefore we should think about another way to thank them. Has TOSROV already done something like this? Mention that TOSROV crew and cyclists should be showing support for us every year after the event since we are supporting them. Motion to table... Motion to table passes

Jackie, KG4CZX: 146.655 expense of \$2000 a year. Is the club going to assist in this? A notice will be sent to amateurs in the area for help with this expense. Bill Jordan's repeater... he is the one who paid the first \$2000, and they are expected to send letters out sometime in the future.

Matt May, KC4WCG: Specific date for the TOSROV post-mortem – Set for Thursday of next week 7:00 PM at Golden Corral

Dave, KG4DVW: Notice of moving away... and mention of the Florida nets and hurricane nets with hurricane season right around the corner. Motion of appreciation by Carl Hayes for David Pienta... seconded and carries.

David, KG4ACF: Field day is next month. It is going to be at Mission San Luis again this year. June 23rd and 24th. People want to set up early. Motioned, seconded, and carries. Station captains asked for. Tom will cover the Satellite station. List of captains given and duties explained.

Open Mic

Motion to close open mic without comments, seconded, and carried.

Motion to adjourn, seconded, and carried at 2117.

AMATEUR RADIO LIGHTHOUSE SOCIETY

The Amateur Radio Lighthouse Society is the only society devoted exclusively to Maritime & Ham Radio, lightships, and lighthouses. The purposes for which this society is formed are:

- To promote public awareness of the role ham radio and light beacons have played in assisting and maintaining safety at sea.

- To preserve the heritage and history of lighthouses and lightships
- To aid in preserving those lights in danger of destruction or decay
- To recognize the keepers of the lights as maritime heroes
- To foster camaraderie within the ham fraternity
- To provide fellowship amongst members in the Amateur Radio Lighthouse Society (ARLHS).

Membership in ARLHS includes a membership certificate, an iron-on decal for your T-shirt* (with your call letters or name and the Society logo), and a subscription to the newsletter that is mailed to members somewhat sporadically throughout the year.

Members use their number in various on-the-air events, and are entitled to use the Society's logo on envelopes, QSL's, and stationery. For more information, go to <http://arlhs.com/>.

**T-shirt not included.*

IMPEDANCE AND RESISTANCE: WHAT THE HELL ARE THEY?

An essay by AmigaPhreak (submitted by Shawn Wilson, KG4GXU)

Chapter I: What is resistance?

Resistance is the characteristic of a conductor to resist electron flow (current).

When electrons go streaming through a conductor, they invariably bump into things in the material. When they do, it gets hot.

Power into a resistor is referred to as "real" power or thermal power.

Chapter II: OK, I understand resistance, what is impedance?

Impedance is the characteristic of a conductor to resist electron flow, just like resistance.

But, the difference between resistance and impedance is that impedance factors in "reactive" components. These components, known as

capacitors and inductors, can store energy in electric (for caps) and magnetic (for inductors) fields. The energy is returned to the circuit.

In an ideal capacitor and resistor, absolutely no power is lost in the charging and discharging of these fields. In the real world, however, there is some wire resistance associated with charging these devices, so a very slight amount of power is lost.

Power into an inductor or a capacitor is referred to as "reactive" power. You don't want to have a reactive component in a power supply circuit if at all possible, because, for the same amount of "thermal power", you must provide more current due to the reactive components.

For example, if you put 1 A through a 10 ohm resistor, you immediately get 10 Volts across it. But if you attach a 10V power supply across a capacitor, it will draw a lot of current at first (with low voltage), then the current slowly goes down until the capacitor is fully charged at 10 V and current = 0.

Chapter III : OK, but what about characteristic impedance?

This is usually only of interest in high-speed digital circuits or RF circuits, where rise time/fall time and oscillation are of interest.

Characteristic impedance is approximately $\sqrt{L/C}$, assuming negligible resistance.

In general, it is best to match the characteristic impedance of the cable with the impedance of the load you are feeding for maximum power transfer.

At low frequencies, this is not terribly important, however.

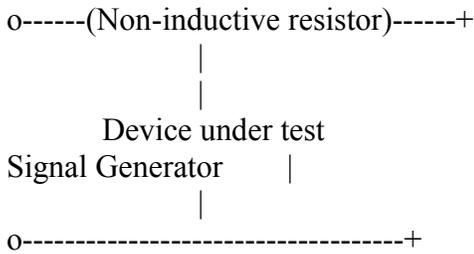
Chapter IV : How do I measure impedance?

If you want to calculate impedance and assume that all parts are ideal (they are pretty close to it at audio frequencies), use these equations: $Z = R + (2 * \text{PI} * \text{Freq} * L) + 1 / (2 * \text{PI} * \text{Freq} * C)$ R = resistance in ohms L = inductance in henrys C = capacitance in

farads. For a capacitor, assume R and L = 0, which leaves $Z = 1 / (2 * \text{PI} * \text{Freq} * C)$.

If you want to measure it, the easiest way is to buy a non-inductive resistor with a value close to what you expect the impedance you are measuring.

Then get a signal generator and a good means of measuring AC voltage at potentially high frequencies (a scope works well):



Set your signal generator for a convenient voltage, 1 V or so.

Connect it to the circuit above and measure the voltage across the device under test.

$$Z_{dut} = Z(\text{resistor}) * V_{dut} / (V_{tot} - V_{dut})$$

A good general value for the resistor is 50 ohms and you probably get the most accurate results when you tweak the frequency such that the voltage across the device under test is about 1/2 of the source voltage.

Chapter V: How do I measure characteristic impedance?

This one is kind of tricky. For cables, you use the same non-inductive resistor.

The device under test is the cable.

For capacitance, you connect the conductor of the cable to one end of the signal generator through the non-inductive resistor and the other end of the signal generator to the shield.

Do not connect the conductor to the shield! Tweak the frequency and this will give you the capacitance, using the same method described

above. You must convert from Z_{dut} back to farads to get the actual value.

For inductance, connect one end of the conductor to the signal generator through the resistor and connect the other end of the conductor directly to the signal generator “ground”.

Repeat the measurement as described above, converting back to henrys to find the inductance of the cable.

If you want to be exact, you can measure the resistance of the cable and plug it into this equation to get characteristic impedance:

$$Z = \text{SQRT} ((R + 2 * \text{PI} * \text{Freq} * L) / (G + 2 * \text{PI} * \text{req} * C))$$

(Author's note: This will be overkill in most cases)

For low-loss cable, you can use the more simple equation given before.

MEMBERSHIP INFORMATION

To renew your membership or become a member of the Tallahassee Amateur Radio Society, please remit \$25 for single membership or \$35 for the whole family to: Kent Hutchinson, 911 San Luis Road, Tallahassee, FL 32304. Make checks payable to “TARS” and include your call sign, regular postal mail (and e-mail addresses if you have one), and phone number. We also need to know whether you would prefer to receive the newsletter via e-mail or postal mail. For further information, contact Kent Hutchinson, KC4TOC, at 574-4200 or KC4TOC@earthlink.net. If you would like to receive *The Printed Circuit* via e-mail send an e-mail message to David Heupel at kg4acf@arrl.net

EDITORIAL POLICY

ANY and ALL submissions made by members in good standing will be printed as space permits. These articles are in NO way to be taken as representing the opinions of the Tallahassee Amateur Radio Society, but only as the opinions of the author whose name and call will be clearly stated in each article's by-line. Submissions for *The Printed Circuit* may be emailed to: kg4acf@arrl.net.



TO:

Activities/Events/Info

DATE/TIME	WHAT	WHERE - WHO
June 7, 7:30 p. m.	TARS Elections	Claude Pepper Building
June 23-24	Field Day	Mission San Luis Historical Park\
June 23 – Time TBA	Testing Session	Mission San Luis – at Field Day
Sundays, 8 p. m.	ARES Net	Freq: 146.655
Sundays, 8:45 p. m.	APRS Net	Freq: 144.390
Fridays, 11:30 a. m.	Lunch	Golden Corral, N. Monroe Street
Saturdays, 8:30 a. m.	Breakfast	Golden Corral, N. Monroe Street
Any Time Chat	TARS E-Group	http://groups.yahoo.com/group/tars
Capital District ARES	Web Site	http://latenight.net/ares