

The Printed Circuit

The Monthly Publication of the
Tallahassee Amateur Radio Society
March, 2020



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P.O. Box 37127
Tallahassee, FL 32315



FROM THE TARS PRESIDENT

Due to the current pandemic situation the board has decided to cancel the April 2020 TARS meeting. We will reschedule Tom's (K4TB) talk on Using Amateur Radio Satellites for a later date.

We encourage everyone to join in the Club Net at 2000 hours Thursdays on 146.910 MHz . In addition to the monthly meeting, other in-person TARS activities have been cancelled until further notice. This includes but is not limited to :

License Testing

The Friday Lunch Bunch at the Golden Corral

During this time of everyone should keep your family, friends, neighbors and the country as a whole in their thoughts. Please watch out for your neighbors and your neighborhood. Luckily, the virus is not transmitted by radio waves so continue to join the nets, continue to make QSOs, and stay connected.

Don Pace

KK4SIH

President

Tallahassee Amateur Radio Society

MINUTES OF THE MARCH 5, 2020 TARS MEETING

Compiled and Submitted by: Tom Brooks (K4TB) – TARS Secretary

Call to Order: President Don Pace (KK4SIH) at 7:00 PM

Guests/Visitors: Mike Bishop

Program: Gerry Gross (WA6POZ) presented an overview of HF Propagation and DX. He described how point-to-point HF radio works using ground waves and sky waves to propagate signals, vs. using repeater stations to relay signals as commonly done with VHF and UHF hand-held radios. Gerry covered the fundamentals of the radio spectrum and the physics of skywave propagation, to include a discussion of the solar effects on HF propagation. He discussed best ways to make radio contacts around the world and the fun of “chasing DX” on HF. He said with HF radio he has contacted stations in over 300 countries.

Business Committees:

Minutes: Secretary Tom Brooks (K4TB): Approved as published in the February 2020 Printed Circuit on the website.

Treasury Report: Treasurer Doug Ferrell (KD4MOJ) said there were no expenditures last month but we received some membership renewals, a \$28 donation from Amazon, and a \$30 donation. (As reported in the February 2020 Printed Circuit, beginning balances as of Feb. 26th are: Checking \$3,548.20, Savings \$3,101.52, Total \$6,649.72.)

Education and Testing: Education Coordinator Phil Ashler (N4IPH) said the next class will probably be around Field Day. Testing Coordinator Norm Scholer (K4GFD) said the next testing session will be Tuesday April 2nd at 7pm. He said recent testing had 6 people taking tests, with all passing.

Repeaters: Repeater Coordinator Randy Pierce (AG4UU), said he is not aware of any issues with the .03 repeater or the 442.1 SARNET repeater. He said also the .91 repeater is working but the 6-meter repeater is still down pending relocation to another tower, and the 444.4 repeater is down pending conversion from a Fusion to an analog repeater.

Old Business:

Mag Lab Open House: Vice President Todd Clark (KN4FCC) said it was a good

turnout for the event but a smaller one this year as it was a cool morning, and we had about 5 hams helping out with the club's exhibit.

Havana Hills Spring Classic Bike Ride: Todd said we had 13 operators that helped provide the race with radio communications. He thanked Sal Martocci (K4YFW) for being net control and discussed some of the issues that were worked out during the event and some lessons learned for next year. Todd thanked all the helpers and in return was thanked by applause for his work with the event.

Field Day: Jerry Kessler (N4JL) reminded everyone that it is the 4th weekend in June and he recapped the plans to date. He asked for and got a volunteer for captain of the phone station. Jerry said they already have an RV for the CW station, and Randy volunteered his RV to support a station. There followed several minutes of discussion by club members regarding participation in the event and the types of radio operation to be used.

PIO: Don said we still need a Public Information Officer and asked that anyone interested in volunteering to see him.

Antique Radio Donation: Gerry said he met with the donor and received the radio. He showed it at the meeting. Gerry suggested we ask if Florida State University might want the radio. Todd said he had a contact at FSU who can tell him the right contact at FSU with whom to discuss the donation. Member at Large Phil "Chief" Fusilier (KA5USN) moved that Todd contact FSU on behalf of the club to inquire if FSU is interested in receiving the radio. It was seconded by David Miner (W4SKG) and approved by voice vote of the members present.

New Business: None

Open Discussion/Announcements: There was a brief open discussion.

Announcements included the Ft. Walton Beach Ham Fest on March 20 and a reminder by Chief of the weekly Friday TARs lunch meeting at the Golden Corral on at 11am.

Adjournment – The meeting was adjourned at approximately 8:50 pm.

Treasurer's Report

Submitted by Doug Ferrell,
KD4MOJ, Treasurer

	<u>for period</u>	<u>year-to-date</u>
<u>Beginning Balances:</u>	<u>1-Mar-20</u>	<u>Jan 1, 2020</u>
<u>Cash on hand</u>	\$ -	\$ -
<u>Checking Account:</u>		
<u>Savings Account:</u>	\$ 3,101.52	\$ 3,101.52
<u>Total:</u>	\$ 6,867.93	\$ 5,789.72

Summary of Month's Activity:

<u>Total Receipts:</u>	\$ 148.00	\$ 1,380.21
<u>Total Expenditures:</u>	\$ 61.25	\$ 215.25

Receipts Derived From:

<u>Members Dues:</u>	\$ 120.00	\$ 680.00
<u>Fifty/Fifty Donation (KI4NBU & N1HJ)</u>	\$ 28.00	\$ 42.00
<u>Veteran's Radio Fund</u>	\$ -	\$ -
<u>Field Day Radio Fund</u>	\$ -	\$ -
<u>Interest (Savings)</u>	\$ -	\$ -
<u>smile.amazon.com</u>	\$ -	\$ 28.21
<u>Total</u>	\$ 148.00	\$ 1,380.21

Expenditures:

<u>American Red Cross:</u>		
<u>Fifty-Fifty</u>	\$ -	\$ -
<u>ARRL Insurance</u>	\$ -	\$ -
<u>Spagetti 100 - TARC</u>	\$ -	\$ -
<u>TARS & Feathers Plaque</u>	\$ -	\$ -

<u>Storage & Supplies</u>	\$ -	\$ -
<u>Field Day</u>	\$ -	\$ -
<u>VE Expenses</u>	\$ -	\$ -
<u>Tower Maintenance</u>	\$ -	\$ -
<u>Florida Dept of State</u>	\$ 61.25	\$ 61.25
<u>Post Office Box:</u>	\$ -	\$ 154.00
<u>Total:</u>	\$ 61.25	\$ 215.25

Transfer Checking -> Savings:

Ending Balances - Mar 19, 2020:

<u>Cash on hand</u>	\$ -	\$ -
<u>Checking Account</u>	\$ 3,853.16	\$ 3,853.16
<u>Savings Account</u>	\$ 3,101.52	\$ 3,101.52
<u>Total</u>	\$ 6,954.68	\$ 6,954.68

<u>*Veteran's Radio Fund</u>	\$ 500.00
<u>*Field Day Radio Fund</u>	\$ 697.00

Ham Happenings

April 2020 DX

It is possible that some of the listed stations have cancelled their plans due to the Coronavirus

From	To	Prefix	Call, () is the IOTA designation
01-Apr	???	PJ4	PJ4/PA1KE
01-Apr	???	TT	TT8SN
01-Apr	???	ZL7	ZL7DX
01-Apr	01-Apr	P2	P29ZL
01-Apr	01-Apr	A7	A75GR
01-Apr	01-Apr	CT9	CT9/DL3KWF, CT9/DL3KWR
01-Apr	01-Apr	HC	by DL8UD
01-Apr	01-Apr	P2	P29ZL
01-Apr	01-Apr	YJ	YJ0CA
01-Apr	01-Nov	A3	A35JP
01-Apr	04-Apr	HR	HR5/F2JD
01-Apr	04-May	KG4	KG4NE

01-Apr	06-Apr	HS	HS0ZME
01-Apr	09-Apr	8P	8P6DR
01-Apr	12-Apr	VK9/N	VK9NK
01-Apr	15-Apr	EA	AO15DXXE
01-Apr	15-Apr	EA8	AO15DXXE/8
01-Apr	15-Apr	F	TM15DXXE
01-Apr	15-Apr	H4	H44MS (OC-047)
01-Apr	20-Apr	GU	MU/VK4VGG
01-Apr	25-Dec	9K	9K71QND
01-Apr	30-Apr	HS	HS0ZNY
01-Apr	30-Apr	SU	SU9TH
01-Apr	31-Dec	5B	5B60AIF
01-Apr	31-Dec	T6	T6AA
01-Apr	31-May	9J	9J2MYT
01-Apr	31-May	UR	EM30UCC
03-Apr	10-Apr	UA9	R207RRC (AS-207)
06-Apr	15-Apr	J8	J88PI (NA-025)
08-Apr	15-Apr	T8	T88HS T88SM T88UW (OC-009)
10-Apr	13-Apr	JW	JW/DC8TM JW/DF3TS (EU-026)
13-Apr	13-May	TG	TG9BBV
14-Apr	17-Apr	RA	DC8TM/P DF3TS/P
16-Apr	16-Apr	OX	OX80HM
16-Apr	16-Apr	OZ	OZ80HM
16-Apr	16-Apr	OZ	OZ80QUEEN
17-Apr	25-Apr	DU	DU2/SP5APW (OC-092)
18-Apr	25-Apr	HB0	HB0/PA Group

DX sources - The Daily DX, 425 DX News, or DX Zone

Contesting

April RadioSport Highlights

Through the magic of radio, we can both maintain our "social distance" from others, yet stay in contact with friends, both near and far, and around the world! Although the bands may be crowded, you can enjoy RadioSport from the privacy of your own radio shack.

April is a busy month for contesting with at least one activity every weekend.

There is only one Major contest this month, but the State QSO Party season makes up for it with 11 SQPs. WA7BNM Contest Calendar lists 81 RadioSport activities for April worldwide, so there are more than enough contests scheduled to keep you busy depending on your interest – phone, CW or digital.

Preview of April Weekends

April 4-5

April starts off with a bang with seven contests and a State Park on the Air event all during the first weekend. There are four SQPs which all include CW, SSB and all modes of digital. However, Nebraska excludes FT4/FT8. As with all SQPs, the object for out-of-state participants is to work as many counties as possible, plus any bonus stations.

There are also two DX contests this weekend. The SP DX Contest is a world works Poland contest using CW and SSB. The EA RTTY Contest is a world works Spain the for RTTY. Each USA, VE, JA or VK call area count as multipliers along with Spanish provinces and each DXCC entity.

The only Major contest this month is the North American SSB Sprint on Sunday, April 5th. If you have never worked a sprint, you should read up on them before entering this contest. There are some unique operating requirements.

April 11-12

There are four DX contests this weekend. The most significant one is the FTn DX Contest. Last year it was the FT8 DX Contest, but it now includes the new FT4 mode. This is one of the few contests for only the new FT4/FT8 modes. In the FT Roundup last December, I noted that there were very few FT8 stations contesting, but FT4 was very active. This was as expected because FT4 is a contesting/DXpedition version of FT8.

For CW there are two DX contests. The JIDX CW Contest is a world works Japan contest. The Yuri Gagarin International DX Contest, sponsored by Russia, is a world works anyone event. SSB has the OK/OM DX Contest, SSB. It is also a world works anyone, but you get 10 times more points for working a Czechoslovakian station.

There are three State QSO Parties this weekend. The New Mexico State QSO Party and the North Dakota QSO Party are both on Saturday, while the Georgia QSO Party is both days. You will find a few Floridians operating mobile in Georgia during the GAQP.

April 17-19

There are four DX contests this weekend, two start on Friday night and two on Saturday. The Friday night/Saturday DX contests are on opposite sides of Asia. The Worked All Provinces of China has the objective of working all provinces in China, while the Holyland DX Contest gives awards for working all Israeli areas. Both are opportunities to win a category with just a few QSOs.

Two more DX contests start on Saturday. Both are the world works everyone style, with the YU DX Contest giving more points for Yugoslavian contacts and the CQMM DX Contest giving more for Brazilian ones. Recent propagation should give plenty of contacts in both areas, while being able to submit some contacts to two different contests.

This is another good weekend for State QSO Parties. The Michigan QSO Party and the Ontario QSO Party are both on Saturday. Both are only CW and SSB.

April 25-26

The last weekend of the month is a big weekend for Floridians or any follower of State QSO Parties. The Florida State QSO Party is one of the 3-4 biggest QSO Parties. This is an opportunity for Florida hams to experience what it is like to be DX, with everyone else trying to add another Florida county to their list. If you are in Florida, the exchange is easy – “59” and your county. You should check the FLQP website <https://floridaqsoparty.org/counties/counties-list/> to find the three-letter abbreviation for your county.

If you are a fan of RTTY and not of State QSO Parties, then you do have one DX contest this weekend. The SP DX RTTY Contest is a worldwide anyone works anyone contest with countries, continents and Polish provinces as multipliers.

State QSO Party Challenge

With all of the State QSO Parties on most weekends, you should be aware of the State QSO Party Challenge. The annual Challenge will recognize all radio amateurs' participation in U.S. State and Canadian Province QSO parties. Anyone who operates in two or more approved State QSO Parties and who makes at least two contacts in those contests is automatically registered by submitting their reports to 3830Scores.com. 3830Scores has an up-to-date score tracking menu choice for the State QSO Party Challenge. For more details see <http://StateQSOParty.com/>.

Other Activities

Parks on the Air. The National Parks on the Air event was extremely popular. Since then, the WWFF-KFF (United States Worldwide Flora and Fauna) has continued the effort with the Parks on the Air (PoTA) program, with hams activating state and national parks on weekends. Several states have declared one weekend a year as a special event for their state parks.

This month we have two states with PoTAs. Our own Florida State Parks on the Air is the first weekend of the month. If you have an HF mobile or portable rig, you can go to any of Florida's 172 state parks and activate that park. See <http://flspota.org/rules/> for rules and awards. The Texas State Parks on the Air is the weekend of April 18.

Rookie Roundup. The ARRL Rookie Roundup, SSB, is on April 19. Anyone with 3 years or less as a ham can get on the air and experience contesting. All hams are encouraged to work the rookies and welcome them to contesting.

Summary

Contest	Type	Date	Time	CW	SSB	RTTY	Other Digital
Nebraska QSO Party	QSO	4-Apr	1300Z	C	S	R	D*
Louisiana QSO Party	QSO	4-Apr	1400Z	C	S	R	D
Mississippi QSO Party	QSO	4-Apr	1400Z	C	S	R	D
Missouri QSO Party	QSO	4-Apr	1400Z	C	S	R	D
Florida State Parks on the Air	PoTA	4-Apr	1400Z	C	S	R	D
SP DX Contest	DX	4-Apr	1500Z	C	S		
EA RTTY Contest	DX	4-Apr	1600Z			R	
North American SSB Sprint Major		5-Apr	0000Z		S		
JIDX CW Contest	DX	11-Apr	0700Z	C			
OK/OM DX Contest, SSB	DX	11-Apr	1200Z		S		
FT8 DX Contest	DX	11-Apr	1200Z				D
New Mexico QSO Party	QSO	11-Apr	1400Z	C	S	R	D
Georgia QSO Party	QSO	11-Apr	1800Z	C			

Yuri Gagarin International DX Contest	DX	11-Apr	2100Z	C			
North Dakota QSO Party Worked All Provinces of China DX Contest	QSO	12-Apr	1800Z	C	S	R	D
Holyland DX Contest	DX	17-Apr	2100Z	C	S	R	D
YU DX Contest	DX	18-Apr	0700Z	C	S		
CQMM DX Contest	DX	18-Apr	0900Z	C			
Texas State Parks on the AirPoTA	AirPoTA	18-Apr	1400Z	C	S	R	D
Michigan QSO Party	QSO	18-Apr	1600Z	C	S		
Ontario QSO Party	QSO	18-Apr	1800Z	C	S		
ARRL Rookie Roundup, SSB	Special	19-Apr	1800Z		S		
SP DX RTTY Contest	DX	25-Apr	1200Z			R	
Florida QSO Party	QSO	25-Apr	1600Z	C	S		

D* = No FT4/FT8

As you can see, this month has something for any taste, major contest or small, CW, SSB, RTTY or other digital. If you have never contested, everyone has a first time. Give one of them a try.

Before participating in any of these contests or events, please familiarize yourself with the times, frequencies, exchanges, rules, etc. associated with the event. The WA7BNM Contest Calendar (<http://www.contestcalendar.com//index.html>) can provide most of the information, as well as a link to the contest's home page, which will have the rules, give you a "flavor" for the contest and let you know about any bonus stations or plaques awarded. Alternatively, you can Google the name of the contest or event and go directly to their home page.

RadioSport (Amateur Radio contesting) is a diverse and somewhat complex subject area. If you have any questions about contesting or any suggestions or comments about this column, please address them directly to Stan Zawrotny, K4SBZ, at K4SBZ.Stan@gmail.com.

If you find that you are interested in contesting, consider joining a contesting club in your area. The Florida Contest Group (FCG) <https://floridacontestgroup.org/> has over 300 members throughout the state, the US and several foreign countries.

Pre-Hurricane season Exercise

The annual pre-hurricane season exercise will be held on Saturday May 16 from 0900 to 1200 hours. The focus this year will be on making weather reports to the National Weather Service Office in Tallahassee. Unlike last year, the problem this year will involve not only the Capital District, but Florida Counties west of Tallahassee, southwest Alabama and southern Georgia. It is more expansive because the NWS office's jurisdiction covers those areas.

The scenario will involve a category 3 or 4 hurricane hitting the Gulf County and moving generally northeasterly through Gadsden/Leon counties. It will move into Georgia where it will stall over Albany and then dump several inches of rain there. The local rivers and streams, including the Flint River will flood.

As the storm moves inland hams will relay weather observations to the NWS station, WX4TAE. Those reports will include wind, rain, and flooding observations, as well as damage reports such as downed trees and flooded streets and rivers.

The problem play will compress time. That is, exercise will start at 0900 and will progress to Albany by 1130, but in problem play time that may occur over 24 hours.

All Capital District and surrounding counties and state hams are invited to participate. If you are interested, please send Dave, WA4WES, an email that you would like to join the exercise. Wa4wes@winlink.org. He will send you more details about what you can do. At this point, stations will likely stay at their homes although we may have some roaming about the District, and it would be particularly valuable if one or more could go to the coast.

The History of Radio-Modern radio starts in the 20th century

Marconi gets the credit for being the first to send a radio signal across the Atlantic. His transmitter was essentially a spark plug. It was effective, but crude and inherently limited in what it could do.

The 20th century, however, brought some significant, fundamental changes to the way we approached radio communication. The latter 19th century laid the foundations. Heinrich Hertz had discovered or defined the idea of frequency. Others further refined the idea of inductance and capacitance. Alternating current was also invented. Then early engineers and scientists began to connect resistors, capacitors, and inductors into circuits and analyzed what happened when a current was applied. Of course, DC worked only for circuits involving resistors. Inductors

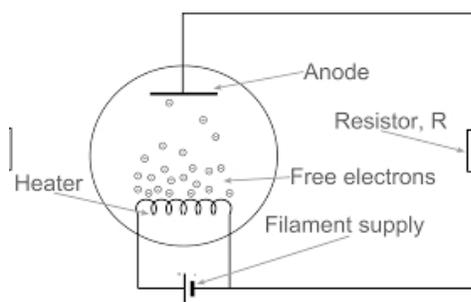
were short circuits and capacitors were open circuits when used with DC.

Interesting things developed when an alternating current was applied to circuits with inductors and capacitors. Current and voltage, which are in phase in DC circuits, lag or lead when AC is applied to circuits with inductors or capacitors. The discovery, development, or invention of inductive and capacitive impedance significantly increased the complexity of circuits involving inductors, capacitors, and resistors. The notion of tuned circuit developed when inductors and capacitors were connected in series or parallel, and it was discovered that the inductive impedance varied directly with the frequency whereas the capacitive impedance varied inversely with changes in impedance. Notions of bandwidth emerged as well as the “Q” of a tuned circuit.

All this was very fine, but what made these RLC circuits important emerged from another invention—the light bulb.

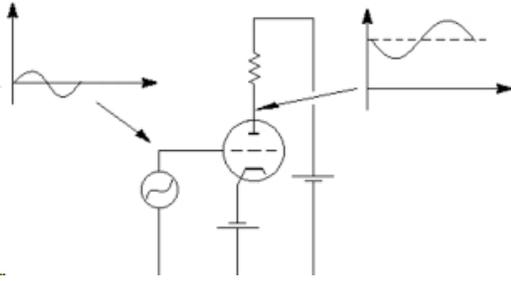
Thomas Edison invented this amazing device in 1876??, and without any further use of this leap in technology, his place in the history of the United States would have been secured.

Edison, however, seems to have been satisfied with lighting up the night in the country, and allowing men and women to now work past sundown. Others, however, saw more than that. In particular, Lee DeForest put a metal plate inside the light bulb and discovered that when that plate had a positive voltage applied to it, a current flowed from the cathode, or the element that was heated until it glowed, to the anode, or plate. On the other hand, no current flowed when he applied a negative voltage to the plate. If an AC voltage was applied to the plate, only a positive current flowed when the voltage was positive. Hence, the diode was born, and rectification of AC discovered.

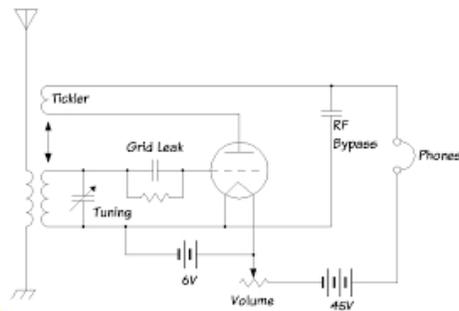


While that discovery was important, there were other discoveries. Someone put a wire mesh or grid between the cathode and anode and applied a voltage to it. That relative small voltage, it was discovered, control the plate voltage. There was an amplification effect going on. A small increase in the grid voltage developed a relatively large change in the plate voltage. Hence this “triode”

tube could amplify a signal that was applied to the grid.



More directly applicable to the radio, Reginald Fessenden in 19– used the new developments in circuit analysis and the triode to invent the regenerative radio. This was a significant, fundamental shift in sending and receiving radio transmissions. Instead of a “spark plug” transmitter that splattered a signal across the radio spectrum, a tuned circuit could limit the signal to a small, defined section or bandwidth of the band.



More developments also occurred in the first two decades of the 20th century. Edwin Armstrong invented the superheterodyne radio, which significantly increased the sensitivity and selectivity of the receiver. The triode evolved as well with a fourth and fifth grid being inserted between the cathode and anode to better control the flow of electrons from cathode to anode.

Amateur radio operators operated on the frontier of radio development. The general opinion among the scientific community was that the radio frequency spectrum below 200 meters, or above about 1.6 MHz had no value. Hence, it was given to the radio amateurs or hams to play with. And we did, discovering the joys of DX, the mysteries of the atmosphere, and the wonders of sunspot numbers, among other of the many variables making HF radio communications so maddening and fun.

Commercial radio also developed and in 1924, Calvin Coolidge, the President of the United States became the first president to use radio to give a speech to the listening public

As marvelous as the vacuum tube was, it had several problems. First, it had a relatively short life span. When metal grids, plates, or cathodes were heated in a vacuum, they tended to wear out quickly. Second, and this is a serious problem, the tubes produced heat, a lot of it. Two, three, or four tubes confined in a small metal box made that container hot enough to almost fry an egg. Hence, when scientists began developing computers, hundreds and even thousands of these tubes were used for just the simplest calculations, and getting rid of the heat became a major engineering problem.

Another device that did not generate as much heat, and which was more reliable was needed, particularly as America in the late 1950s began to look to space exploration. The answer was the transistor, and next month we will meet William Shockley who will invent that device and move the world of radio into an era of increasingly small devices with far more capacity than offered by tubes.



TARS Officers

Don Pace KK4SIH President dgpace @yahoo.com @hotmail.com	Todd Clark KN4FCC Vice President KN4FDCC @ARRL.net	Tom Brooks K4TB Secretary K4TB @earthlink.net	Doug Ferrell KD4MOJ Treasurer KD4MOJ@ KD4MOJ.org	Bob Clark K9HVW Board Member at large K9HVW@ARRL.net
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TARS COMMITTEES/COORDINATORS

Repeater Trustee: Randy Pierce AG4UU

Assistant: Doug Ferrell KD4MOJ

K4TLH Callsign Trustee: Dave Miner W4SKG

Equipment Manager: Vacant

Education: Phil Ashler N4IPH

Testing Coordinator: Norm Scholer K4GFD