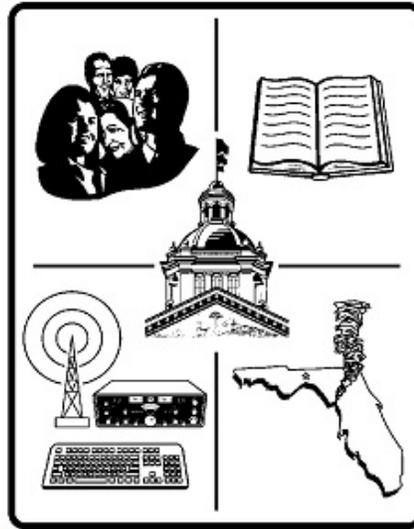


# The Printed Circuit

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



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## MINUTES OF THE FEBRUARY 6, 2020 TARS MEETING

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

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

(Of the 10 people present, 3 were officers. Tom noted that 3 officers would be a sufficient quorum for a Board meeting according to the TARS Bylaws, but there was no clear quorum set in the Bylaws for a meeting of the club members, so we may want to address that with the club sometime.)

Guests/Visitors: None

Program: Vice President Todd Clark (KN4FCC) presented a review of the radio club's recent support of the annual Tallahassee Marathon, and said we received a nice thank-you email for our support of the marathon.

Business Committees:

President Don Pace said, since only 10 people were present for the meeting (probably due to the storm that had just passed), we would not have committee reports. Chuck Basham (AI4KA) did say that recently 5 people attended a license testing session by the club and all 5 passed.

Old Business:

Due to the low attendance, the only Old Business discussed was as follows:

Mag Lab: Todd mentioned volunteers are still needed and he will send out a reminder by email.

Havana Hills Bike Ride: Todd reminded those present that the event will be Sunday, Feb, 23rd and we need volunteers.

New Business: None

Open Discussion/Announcements: Some brief discussion followed on pending changes to the ARRL band plan and a proposal for FT8 contesting on the WARC bands. Todd announced that Gerry Gross (WA6POZ) would present a program on DX at next month's meeting.

Adjournment – The meeting was adjourned at 7:47 pm.

## TARS Treasurer's Report

Submitted by Doug Ferrell, KD4MOJ, Treasurer

	<u>for period</u>	<u>year-to-date</u>
<b><u>Beginning Balances:</u></b>	26-Feb-20	Jan 1, 2020
Cash on hand	\$ -	\$ -
Checking Account:	\$ 3,548.20	\$ 2,688.20
Savings Account:	\$ 3,101.52	\$ 3,101.52
Total:	\$ 6,649.72	\$ 5,789.72

### **Summary of Month's Activity:**

Total Receipts:	\$ 218.21	\$ 1,232.21
Total Expenditures:	\$ -	\$ 154.00

### **Receipts Derived From:**

Members Dues:	\$ 160.00	\$ 560.00
Fifty/Fifty	\$ -	\$ 14.00
Donation (KI4NBU & N1HJ)	\$ 30.00	\$ 630.00
Veteran's Radio Fund	\$ -	\$ -

Field Day Radio Fund	\$ -	\$ -
Interest (Savings) smile.amazon.com	\$ 28.21	\$ 28.21
Total	\$ 218.21	\$ 1,232.21

**Expenditures:**

American Red Cross:	\$ -	\$ -
Fifty-Fifty	\$ -	\$ -
ARRL Insurance	\$ -	\$ -
Spagetti 100 - TARC	\$ -	\$ -
TARS & Feathers Plaque	\$ -	\$ -
Storage & Supplies	\$ -	\$ -
Field Day	\$ -	\$ -
VE Expenses	\$ -	\$ -
Tower Maintenance	\$ -	\$ -
Florida Dept of State	\$ -	\$ -
Post Office Box:	\$ -	\$ 154.00
Total:	\$ -	\$ 154.00

**Transfer Checking -> Savings:**

**Ending Balances - Jan 24, 2020:**

Cash on hand	\$ -	\$ -
Checking Account	\$ 3,766.41	\$ 3,766.41
Savings Account	\$ 3,101.52	\$ 3,101.52
Total	\$ 6,867.93	\$ 6,867.93

*Veteran's Radio Fund	\$ 500.00
*Field Day Radio Fund	\$ 697.00

Stan, K4SBZ, is vacationing on a cruise off the coast of Mexico, and his Contesting column will not be printed this month.

## **Marconi makes the first DX contact**

Last month we discussed the groundbreaking work of Michael Faraday in which he theorized that the force in magnetism was not in the material or matter, but in the field around the item. James Clerk Maxwell, in 1865, translated that observation into his famous Maxwell equations, which unleashed the creative energies of men in Europe and America.

Thus, Europe and America saw an explosion of research and development in electricity and the new field of radio in the latter part of the 19<sup>th</sup> century. For example Alexander Graham Bell invented the telephone in 1876, and Thomas Edison, the light bulb in 1879. Europeans were developing alternating current in the 1870s and 80s. There was also considerable discussion and experimentation about the possibility of wireless communications.

Leading the research was the German Physicist, Heinrich Hertz. From 1886-1888 he used Maxwell's equations to guide his experiments, and in doing so, he invented devices that could send and receive what he called "Hertzian waves," but which in 20 years will be renamed radio waves. In particular he invented a device that would create a spark across a gap in a metal loop. Placing another metal loop nearby, that loop "received" a similar spark when the first loop was excited. These sparks, he discovered had a wave nature, and hence a wavelength or frequency. He also discovered that these electromagnetic waves traveled at the speed of light. In 1886 he had published the results of his research, which concluded or demonstrated that an electromagnetic field could be transmitted and received. As significant as Newton's discovery of gravity, he postulated that this field behaved like a wave and had a frequency, as we consider that word today. Hertz was the first to use the term and describe the concept that his Hertzian waves traveled at the speed of light and could not be bent or deflected or focused.

There were many others in England, Germany, and even the United States who began to explore and expand on the pioneering work of Hertz. Guglielmo Marconi was one of these, but he was perhaps more of an entrepreneur and engineer than scientist. Forming a company of 50 men in 1897, he sought to develop and sell the idea that people could communicate over distances without wires or other forms of physical connection between the sender and receiver. They

could do so wirelessly, which must have seemed like magic.

Now Marconi was an Italian by birth, but when he approached the Italian government for financial help it turned a deaf ear. Not so, the English, so he moved to the Island country to further his business and scientific interest in electricity and the new field of radio.

At the time, radio transmitters, and that term is used loosely, were little more than spark generators, much like the spark plugs in a car. As such, and from a modern perspective, these transmitters probably splattered RF energy across what is now known as the radio spectrum, and hence were tremendously inefficient. But they worked.

The maximum distance signals could be sent with these early radio transmitters was about  $\frac{1}{2}$  mile. Marconi, through diligent refinement of his devices, got that extended to about 2 miles, and during the next several years his transmitters sent radio signals up to 12 miles and then across the English Channel. In 1899 he came to the United States where he provided wireless coverage of the America's Cup yacht race, which was off the coast of New Jersey.

Within two years Marconi's company had developed transmitters that could send and receive messages over hundreds of miles, and the grand prize or goal was to be able to send and receive a signal to and/or from England and North America. The initial effort to receive a signal from England to Cape Cod, Massachusetts failed, so the engineer tried a shorter distance, from Cornwall, England to Newfoundland. The Cornwall transmitter was a monster producing sparks a foot long. 2,100 miles away in St. Johns, Newfoundland he attached an antenna to a balloon, which promptly blew away. Then, mimicking Benjamin Franklin's methods, he attached his antenna to a kite and a 500-foot tether. This contraption worked. Unlike Alexander Graham Bell's famous utterance of "Watson come here I need you," that ushered in the age of the telephone, Marconi simply received three dits or the letter "S" in Morse Code on December 12, 1901.

Building on this shaky success and within a year, Marconi was sending news stories regularly across the ocean at distances of 1500 miles at night and 700 miles during the day. Unlike the invention of the airplane by the Wright brothers in 1903, the United States and other countries immediately recognized the value of this new device. Within a few years navies, including commercial shippers, quickly installed radios on their ships. The wisdom of this move became quickly apparent. In 1912, the HMS Titanic struck an iceberg in the North Atlantic ocean on its maiden voyage from England to New City, and sunk within two hours. As the ship vainly struggled to stay afloat, the radio operator telegraphed the disaster. Several ships in the vicinity received the signals and responded to the distress call.

700 people owed their lives to the radio operators on those ships.

Ten years earlier, a small article appeared in the journal, *Scientific America* Titled, “How to Construct an Efficient Wireless Telegraphy Apparatus at Small Cost.” It signaled the beginning of Amateur Radio, and within a few years “ham” operators, as they would be known, were building the primitive radio transmitters and receivers Marconi and others had developed. Yet, the small cost of the transmitters meant small radios, and the signals they produced had a limited range. Hence, hams organized themselves to relay messages, and from that early beginnings arose the American Radio Relay League.

But, as suggested above, the transmitters of this age were crude devices, simply spark plugs that splattered RF across the spectrum. The development of the oscillator, the heterodyne radio, and signal amplification would come next, and radically change radio. At the forefront of this revolution was an American, Edwin Armstrong, and next month we will look at his extraordinary impact on the development of radio.



## **TARS Officers**

<b>Don Pace</b> KK4SIH President dgpac @yahoo.com @hotmail.com	<b>Todd Clark</b> KN4FCC Vice President KN4FDCC @ARRL.net	<b>Tom Brooks</b> K4TB Secretary K4TB @earthlink.net	<b>Doug Ferrell</b> KD4MOJ Treasurer KD4MOJ@ KD4MOJ.org	<b>Bob Clark</b> K9HVVW Board Member at large K9HVVW@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**

**TARS Officers**