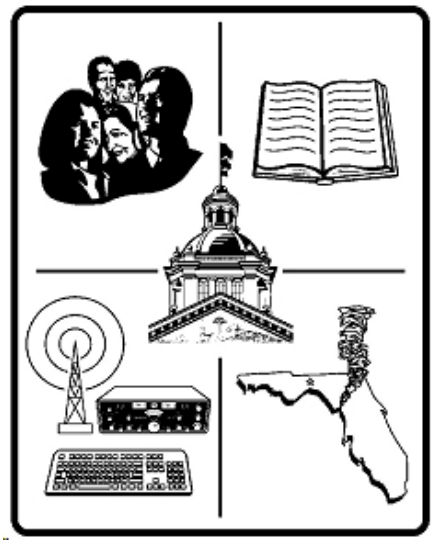
The Printed Circuit

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



TALLAHASSEE AMATEUR RADIO SOCIETY
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No TARS meeting for December 2020- The club leadership was at the North Pole helping Santa figure out who had been naughty or nice.

TARS Treasurer's Report

Submitted by Doug Ferrell,
KD4MOJ,Treasurer

	for period	year-to-date
Beginning Balances:	28-Dec-20	Jan 1, 2020
Cash on hand	$ -	$ -
Checking Account:	$ 3,971.41	$ 2,688.20
Savings Account:	$ 3,102.68	$ 3,101.52
Total:	$ 7,074.09	$ 5,789.72

Summary of Month's Activity:

Total Receipts:	**$ -**	**$ 2,099.88**
Total Expenditures:	**$ -**	**$ 910.51**

Recipts Derived From:

Members Dues:	**$ 100.00**	**$ 1,058.50**
Fifty/Fifty	**$ -**	**$ 42.00**
Donation (WB4FSU)	**$ 5.00**	**$ 895.00**
Veteran's Radio Fund	**$ -**	**$ -**
Field Day Radio Fund	**$ -**	**$ -**
Interest (Savings)	**$ -**	**$ 1.16**
smile.amazon.com	**$ -**	**$ 103.22**
Total	**$ 105.00**	**$ 2,099.88**

Expenditures:

American Red Cross:	**$ -**	**$ -**
Fifty-Fifty	**$ -**	**$ -**
ARRL Insurance	**$ 200.00**	**$ 200.00**
Spagetti 100 - TARC	**$ -**	**$ -**
TARS & Feathers Plaque	**$ -**	**$ -**
Storage & Supplies	**$ -**	**$ 284.57**
Field Day	**$ -**	**$ -**
VE Expenses	**$ -**	**$ 71.79**
Tower/Repeater Maintenance AG4UU	**$ -**	**$ 138.90**
Florida Dept of State	**$ -**	**$ 61.25**
Post Office Box:	**$ -**	**$ 154.00**
Total:	**$ 200.00**	**$ 910.51**

Transfer Checking -> Savings:

Ending Balances - Dec 28, 2020:

Cash on hand	**$ -**	**$ -**
Checking Account	**$ 3,876.41**	**$ 3,876.41**
Savings Account	**$ 3,102.68**	**$ 3,102.68**

Total	**$ 6,979.09**	**$ 6,979.09**
	***Veteran's Radio Fund**	**$ 500.00**
	***Field Day Radio Fund**	**$ 697.00**

January Radio Sports Highlights
Compiled by Stan, K4SBZ

Happy New Year! We start off the year with five major contests, one for each mode plus a VHF contest. There also is a DX contest scheduled for every weekend except the first. There are no State QSO Parties until February. WA7BNM Contest Calendar lists 109 RadioSport activities for January worldwide, more than enough to keep you busy whatever your interest – phone, CW or digital.

You don't have to wait until the weekend to play – there are many small activities scheduled throughout the week in the evenings. The minor events are too numerous, too short, or too focused to warrant attention here. The more significant ones are described below.

Preview of January Weekends

January 2-3

> The year starts off with a bang the first weekend with the ARRL RTTY Roundup. Although it's called a RTTY contest, it is actuallly a digital contest using RTTY, PSK, FT8, FT4, ASCII, AMTOR and Packet. If you have discovered FT8 and FT4, this is a good opportunity to try the contest mode of WSJT-X. Please note that in some other FT8 and FT4 contests, frequencies outside the normal operating bands are used. However, because those contest frequencies would fall into the standard RTTY band which will be occupied by RTTY operators, the rules do not provide for operating anywhere other than the normal FT8 and FT4 waterholes.

January 9-10

On the second and third weekends, the North American QSO Party takes over the bands with the CW NAQP first, followed by the SSB NAQP the next weekend. NAQP is a fun contest with everyone limited to 100 watts maximum, so Little Pistols can compete well with the usual Big Guns.

If you are looking for an SSB contest the second weekend of the month while the NAQP CW is going on, try the YB DX Contest. Although this is an anyone-works-anyone contest, you get (many) more points for a QSO with an Indonesian (YB-Land) contester. YB prefixes (YB0-YB9 / YE0-YE9, YC0-YC9 / YF0-YF9, YD0-YD9 / YG0-YG9, 7A – 7I, 8A – 8I) and countries all serve as multipliers. This is a good opportunity to get some of those hard-to-get YB prefixes in your log.

January 16-17

This week it is SSB's turn with the North American QSO Party. Read last week's entry for information.

There is also another major contest on the third weekend with the ARRL January VHF Contest Like most VHF contessts, it has the objective of working stations in many different Maidenhead grid squares. All legal modes are permitted. While CW and SSB are most common, FT8 and MSK144 are gaining popularity. Limits for the low power categories vary by band and range from 50 watts to 200 watts PEP.

The third weekend has the HA-DX Contest for both CW and SSB. Participants are worldwide, but Hungarian QSOs are worth 2-5 times more points. Multipliers are countries and Hungarian counties.

January 23-24

BARTG (British Amateur Radio Teledata Group) is sponsoring the BARTG January Sprint RTTY Contest on this fourth weekend. Although it is called a "sprint" there is no QSY rule listed. Also, unlike most sprints that are 4 hours long, this is a full 24-hour event. Because the contest has an emphasis

on speed, the exchange is simply a message number (no RST); e.g., K4XXX 156.

January 29-31

Rounding out the month on the last weekend is the popular CQ 160-Meter CW Contest. Because 160 meters is mostly a night-time band, the contest starts the weekend early on Friday night. Individuals who are members of contest clubs can contribute their scores to the club competion.

In the REF HF Contest, CW, multipliers are the 97 French metropolitan departments and overseas territories.

The UBA DX Contest, SSB has Belgian provinces, Belgian prefixes and each EU DXCC country all as multipliers. Belgian contacts are worth 10 points, while other EU stations are worth only 3 and non-EU contacts are just one point.

Finally, it's time for the Winter Field Day. The Winter Field Day Association (WFDA) is a dedicated group of Amateur Radio Operators who believe that emergency communications in a winter environment is just as important as the preparations and practice that is done each summer but with some additional unique operational concerns. This annual event, held this year on January 30/31, is similar to ARRL Field Day, but with more emphasis on emergency communications. Like the ARRL Field Day, the Winter Field Day is not considered to be an approved contest. However, it is a fun event and its activity will fill up the bands.

About Participating

Before participating in any of these contests or events, please familiarize yourself with the times, bands, 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 give you a "flavor" for the contest and let you know about any plaques or other special prizes like a bottle of wine or a frozen salmon. Alternatively, you can Google the name of the contest or event and go directly to their home page.

If you are a new or casual contester, there is never a better time to start or return to contesting than now. Pick one of the easier contests, such as a State QSO Party or one of the minor DX contests, and jump in. (No, first read the rules as suggested above.) You do not have to score a lot of points but do spend some time in the chair having fun. As you are enjoying the leisurely pace of one of these slower contests, picture it on steroids as a major contest with wall-to-wall stations all calling CQ. After it is completed, submit your log to the contest sponsor and report your activity on 3830Scores. Then look at the contest results on 3830 to see how you compared with all others. With this contest completely under your belt, check the Schedule of Contests to see what next weekend has in store for you.

Summary

Contest	Type	Weight	Date	Time	CW	SSB	RTTY	Other Digital
ARRL RTTY Roundup	Major	10	2-Jan	1800Z			R	D
YB DX Contest	DX	5	9-Jan	0000Z		S		
North American QSO Party, CW	Major	10	9-Jan	1800Z	C			
Hungarian DX Contest	DX	5	16-Jan	1200Z	C	S		
North American QSO Party, SSB	Major	10	16-Jan	1800Z		S		
ARRL January VHF Contest	Major	10	16-Jan	1900Z	C	S	R	D
BARTG RTTY Sprint	DX	5	23-Jan	1200Z			R	
CQ 160-Meter Contest, CW	Major	10	29-Jan	2200Z	C			
REF Contest, CW	DX	5	30-Jan	0600Z	C			
UBA DX Contest, SSB	DX	5	30-Jan	1300Z		S		

LICENSE TESTING

For 2021 and beyond, please read the following.

TARS will conduct test sessions for all classes of Amateur Radio Licenses on the Saturday following the TARS Club meetings on odd numbered months, at 10 am and 1 pm at the American Red Cross, 1115 Easterwood Dr. near Tom Brown Park.

Test sessions are also scheduled for Saturday morning on Field Day weekend. If required, a special session can be scheduled.

Also ALL test sessions, due to Covid-19 test sessions are limited to 5 participants and pre-registration is mandatory. To register, send an email to Norm, K4GFD at TALLYTARSVE@GMAIL.COM.

Due to Covid-19, face masks covering the nose and mouth are mandatory for all attending these test sessions.

There is no fee for testing. Be sure to bring two pencils and a calculator with a memory that can be cleared (not a smart phone).

Bring a photo ID and your FCC issued Federal Registration Number (FRN). If you do have an FRN, go to the FCC's Registration Page HTTPS://FCC.GOV/CORES/ register and obtain your FRN number. TIN's are no longer used.

Beginning January 1st an email address is mandatory for all participants. This is an FCC requirement.

If you are upgrading to a higher-level license, bring a photocopy of your existing license or a Certificate of Successful Completion of Examination (CSCE), that you may hold from a previous exam sessions, the photocopy(s) will not be returned.

The Thomasville ARC also offers testing sessions on a regular basis. Check their calendar for this schedule at http://thomasvilleamateurradioclub.com/calendar/.

More information about getting licensed is available from the ARRL at http://www.arrl.org/licensing-education-training.

Test session for 2021 are as follows: January 9th; March 6th; May 8th; June 26th; July 10th**; September 4th; and November 6th

** Held the second Saturday because of the July 4th weekend.

Notice for VEs. Test sessions are limited to 3 VEs. Please do not just drop in. Because of testing for General or Extra class license only Extra Class VEs can be used. When necessary Norm, K4GFD or Gerry, WA6POZ will make the necessary call for VEs.

Ham Happenings

January 2021 DX

It is possible that some of the listing stations canceled their plans due to the Corvis-19

From	To	Prefix	Call, () is the IOTA designation
??-Jan		HL	DT8A (AN-010)
01-Jan		???	Z8 Z81D
01-Jan	01-Apr	HK	HK3JCL
01-Jan	03-Jan	S5	S521PMC
01-Jan	09-Jan	JD1/O	JD1BMH (AS-031)
01-Jan	12-Jan	3D2/R	3D2AG/P
01-Jan	15-Jan	JD1/M	JG8NQJ/JD1 (OC-073)
01-Jan	20-Jan	YI	YI9WS
01-Jan	31-Jan	6O	6O1OO
01-Jan	31-Jan	PA	PA5150EVH
01-Jan	31-Jan	S5	S520SAFE
01-Jan	31-Mar	JX	JX2US (EU-022)
01-Jan	04-Apr	PA	PE75BORNE
01-Jan	04-Jan	SX	SX8A/80
01-Jan	15-Jan	3D2	3D2AG/p (OC-060)
01-Jan	22-Apr	JA	8J17CALL
01-Jan	30-Jun	DL	DL73TXL
01-Jan	31-Dec	CT	CQ750RSI
01-Jan	31-Jan	DA	DA2025C
01-Jan	31-Jan	JA	8J1RL (AN-015)
01-Jan	31-May	VR	VR2HK9O
05-Jan	14-Jan	SV	SX7A/79-SX7A/70
15-Jan	26-Jan	CP	CP1XRM: Bolivia
15-Jan	24-Jan	SV	SX6A/69-SX6A/60
25-Jan	03-Mar	SV	SX5A/59-SX5A/50

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

Weird Ways Signals Bounce Off the Sky

I grew up in ham radio believing that all radio signals would, eventually bounce off one of the ionized layers at varying distances above the earth. The D layer was bad because it absorbed radio waves, and the F layer was good because it reflected them. The E layer was a mystery.

As the VHF bands evolved in the 70s and 80s newer ways of using mother nature's capabilities evolved. Yet, fundamentally, if you wanted to use two meters or frequencies higher than that, you were stuck with line of sight communications, which meant that 30-40 miles was about as far as you could expect to communicate. The emergence and development of repeaters allowed you to cheat a bit, and maybe extend the range of your HT to about 100 miles. But that was about it.

Well, maybe not. Enter the picture of some exotic means of transmitting hundreds, perhaps thousands of miles on the VHF and especially the UHF frequencies. Here are some of them.

DUCTING. As you will recall, a radio signal has two parts: a ground wave and a skywave. The Skywave is important because, as we saw last month, it will, with varying degrees of efficiency, be reflected by the ionized layers of particles that form layers above the earth.

Well, this reflection works well in the HF(3-30MHz) frequency range. It decreases as the frequency increases, so that by the time we are, say, in the 50 MHz band, it happens only sporadically, and in the 2 meter and higher ranges, not at all.

But here comes the interesting part. Above the earth, up to say 1 or 2 miles high are water vapors that form, of course, the weather we experience. High and low pressure systems form and dissolve according to the mysteries mother nature has established and meteorologists discover. Just as there are layers of ionized particles above the earth, there are layers of water particles surrounding pressure systems, and most importantly they are associated with high pressure systems. So, what happens, and here we have to rely on our light analogy we used last month, that when you have an RF signal that goes from one layer to another, a certain, usually a small, amount of energy, will be reflected or refracted. That is, it will "bounce" off this layer. Of course, most passes through it, much like most of the light hitting a lake or pond goes into the water. But, again, like light, a small amount is "bounced" off the water or weather layer, and back into space.

Now whether these layers exist at all, often depends on the temperature, and there is something called a temperature inversion layer that is created when a layer of hot air exchanges places with a layer of cold air. That is, hot air most often is close to the earth's surface and the higher one goes the colder it gets. There are times, however, and they are most often associated with high pressure systems, when a layer of hot air will be above a layer of cold air. This "inversion" creates the critical boundaries that will serve to reflect or bend radio waves. Now, apparently, this bending does not work particularly well at HF frequencies, and even at the lower VHF range it works poorly. But, as the frequency increases from the upper VHF to the UHF frequencies and above, it does quite well. But, just as there is a "skip" in the HF frequencies as signals bounce off the F layer, there is a similar skipping of VHF and UHF signals as they "bounce" off the varying weather layers. Distances of 1000-1500 miles are common with this form of radio wave transmissions.

But, here is the strange thing. Just as the signal is bounced off one layer as the signal moves between layers, it may be "bounced" back as it bounces off one layer and returns to earth, only to be reflected back to the sky as it hits the lower layer. Sort of like the ball in a pinball machine, a radio wave will bounce back and forth between layers.

Now, these temperature inversions which create these layers occur most frequently when a high pressure system exists, or when a cold front passes by. The key seems to be when there are changes in the weather, these inversions arise which then allows for the reflection of radio signals as they hit the boundaries between the hot and cold, or cold and hot layers.

METEOR SCATTER. Space, the "final frontier" is hardly the empty vacuum, we see when we gaze into the cosmos. Millions of space particles bombard the earth, not on a daily basis, but almost on a minute by minute and second by second rate. As these space particles enter the earth's atmosphere, they burn up. When they do so, they create a thin, very temporary line of ionized particles, which, of course, can support a bending of radio waves that may hit them. Communications over a thousand miles or so is possible. Possible, but don't expect to take advantage of meteor scatter with your hand held radio and rubber ducky.

As might be expected, these ionized trails are short lived, and the signals reflected off them tend to be weak. Hence, the successful meteor scatter contact will involve a high powered transmitter and super sensitive receiver and sophisticated antenna system. They also use high speed morse code.

This technique also has a band of frequencies where it is most effective. For the amateur operator, this usually is limited to the 10, 6, and 2 meter bands, although there is an occasion successful contact on 430 MHz. But, the rewards can be impressive, as contacts of 1,000 miles are routine.

Other techniques exist, but as the meteor scatter method suggests, they often rely on super high powered and sensitive radios that as often require computers to handle the weak and fleeting signals. Hams, for example, can bounce signals off the moon, which gives DX an entirely new meaning. A number of amateur satellites have been placed in orbit that hams can and do regularly use. Rather than discuss them, however, I will defer to Tom, N4TB, the resident expert on satellite communications.

So, radio signals bounce off the sky, but they also bounce off other things as well, and even the beginning ham can take advantage of them as they arise.

TARS Officers

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

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