The Printed Circuit

The Monthly Publication of the Tallahassee Amateur Radio Society
March, 2021

TALLAHASSEE AMATEUR RADIO SOCIETY
K4TLH .NET
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P.O. Box 37127
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Minutes of the March 4, 2021 TARS Meeting

Compiled and Submitted by: Todd Clark (KN4FCC) – TARS Secretary
(Note: The business portion of the meeting was conducted via radio net due to the COVID-19 pandemic. The program portion of the meeting was conducted via video teleconference following the business meeting)

Call to Order: Gerry Gross (WA6POZ), as net control, opened the meeting net at 7PM local time on the 147.03 MHz repeater. Check-ins from:

KK4SIH – Don
KD5ODJ – John
KO4KSV – Bob
KN4FCC – Todd
KN4WFH – Stephen
K4TB – Tom
KN4UXJ – Larry
K4SQL – Hutch
WA4TEO – Richard
K4KRV – Keith
KN4WOW – Ed
K4GFD – Norm
KN4TRT – Paul
K4YFW – Sal

KQ3O – Justin
WA4WES – David
KN4SKW – Dave
KM4BRR – Richard
AD4E – Steve
WB4FSU – Don
N4JL – Jerry
WA6POZ – Gerry

Business Meeting:

Don (KK4SIH) opened the meeting at 7:06 after check-ins.

Approval of minutes: The minutes were approved as printed in the Printed Circuit. There were no corrections and no objections.

Committee Reports
Treasurer's Report – Doug – KD4MOJ: No report this evening. There were no questions from members on the net.

Education – Phil - N4IPH
The club does not have any sessions coming up due to COVID-19. We cannot get into the Red Cross building to hold classes.

Testing Coordinator – Norm - K4GFD Testing March 6 is full (actually over by 1), but still within the Red Cross limits for COVID. There were no questions from the members. Don thanked Norm and the Volunteer Examiners for continuing testing during the pandemic.

Repeater Committee – Randy – AG4UU: No report this evening. Norm (K4GFD) said that we are still working to get the 6m repeater up, maybe next week if we don't get any rain. The tower crew installed the antenna this last week. We hope to have the repeater working within the next two weeks. K4TB asked if 444.8 MHz repeater is still working. Norm said it was still operating. Works on analog and the FUSION digital. Tom asked if it required a tone? Norm said it is still running a digital tone 023. Tom was not able to activate the repeater.

Old Business

Dues Reminder – club dues are past due. You can get the address from the TARS website or from the Printed Circuit. Please send in your dues if you have not already done so.

Field Day – ARRL will use the same contest rules as last year. But TARS is trying to set up a site at Tom Brown Park. We are still looking for additional volunteers. Great learning experience for new Hams. Still looking for a Voice Station captain. If you are interested, let Don know. We may have to cancel if we cannot get permission to host the event at TBP. It will depend on COVID, but we are planning the event as an in-person event.

New Business

Nothing heard for new business. Don called for any other comments or questions. K4TB, Tom, reviewed the upcoming programs, John Hellmer tonight on 5G communications, April, UF professor to talk about radio astronomy, May is planned for hurricane preparedness by Dave Davis and June will be Field Day preparations. We may be able to meet in person again after June. Any additional program ideas may be provided to Tom, K4TB. Don thanked Tom for his work to get speakers and programs for the club.

KD5ODJ asked if his membership dues were received. Todd provided information that the club roster on the TARS website has information about who has paid dues for the current year or beyond.

Don thanked everyone for attending and returned the net back to WA6POZ. Jerry closed the net at 1922 and reminded everyone about the club net on Thursday evenings at 8pm on 146.910 MHz.

Zoom Meeting:

Tom introduced John Hellmer to talk about 5G. Opened doors to enhanced speeds and lower latency. Increased bandwidth and system is building out. Crown Castle is one of the leading companies helping to build this system.

John introduced his supervisor, Vincent Rhone, who is also all the Zoom call.

What makes the asset (spectrum) viable? How do the service providers compete with each other?

Each generation improves the efficient use of the spectrum by 3x to 10x. With 5G think about mm wavelength, but service providers will need to use all of the spectrum they have acquired. 6GHz to 600 MHz. Will use the spectrum, but also need to have the technology to use these frequencies. Lower frequencies will travel farther. Higher frequencies will have more bandwidth but lower range. Much bigger footprint with 600 MHz compared to 3500 MHz. 6oo MHz good for coverage, mm wavelengths much better for the large bandwidths. 600 MHz is able to use the existing infrastructure. LAA is "free", license access assisted that can co-exist with Wi-Fi. The competition with Wi-Fi can be a serious drawback. CBRS (Citizen's Band Radio Service) will be prioritized in tiers, supporting incumbent users. C-band is mid-range. 3700-4200 MHz. This spectrum was just recently auctioned off. C-band will have the most focus for ubiquitous coverage. It's about 1 to 2 years out. New phones will be capable of operating on all of these bands. With the lower propagation range, the service providers will need a greater density of antennas. These will probably mostly in urban areas, to support the larger customer base. Satellite coverage will be available, but much more capacity with land-based, terrestrial systems. Working to a system where service providers will share infrastructure / towers. Systems still need to use 4G technology to transmit 5G systems, so 4G will probably be around for a while. Using existing towers allows greater coverage, but one tower may experience user overload and some environmental / aesthetics concerns. Rooftop towers work well, but the coverage

footprint is smaller than a tower and may be limited coverage due to surrounding structures / shadowing. Small cells can be put on existing infrastructure, such as streetlights or power poles and can be used to fill in coverage areas. For most stand-alone sites, there will be 2 to 4 hours of backup power in the event of a power outage. Also unique infrastructure for large capacity venues such as hospitals, malls, conference centers, and sports arenas. Competition is the ability of service providers to use the spectrum as efficiently as possible. MIMO = multiple input / multiple output, can increase through put for the same spectrum. Primary schemes are 2x2 and 4x4. 5G is expected to have very reliable, high bandwidth and low latency to support self-driving cars and e-healthcare (including remote surgery) and the Internet of Things (IOT). This is possible due to the much lower latency times available with 5G bands. Beams may be focused – use a wide beam to locate a device and then narrow the beam to improve the signal to the device after its location has been determined. There were 5 billion devices connected in 2018, now expected be 50 billion devices connected to 5G in 2020.

TARS TREASURER'S REPORT

Submitted by Doug Ferrell, KD4MOJ,Treasurer

	for period	year-to-date
Beginning Balances:	22-Mar-21	1-Jan-21
Cash on hand	$ -	$ -
Checking Account:	$ 4,450.11	$ 3,876.41
Savings Account:	$ 3,103.07	$ 3,102.68
Total:	$ 7,553.18	$ 6,979.09
Summary of Month's Activity:		
Total Receipts:	$ -	$ -
Total Expenditures:	$ -	$ -
Recipts Derived From:		
Members Dues:	$ 380.00	$ 1,061.70
Fifty/Fifty	$ -	$ -

Donation (AI4CO)	$	30.00	$	90.00
Veteran's Radio Fund	$	-	$	-
Field Day Radio Fund	$	-	$	-
Interest (Savings)	$	-	$	0.39
smile.amazon.com	$	41.21	$	41.21
Total	$	451.21	$	1,193.30

Expenditures:

American Red Cross:	$	-	$	-
Fifty-Fifty	$	-	$	-
ARRL Insurance	$	-	$	-
Spagetti 100 - TARC	$	-	$	-
TARS & Feathers Plaque	$	-	$	-
Storage & Supplies	$	-	$	-
Field Day	$	-	$	-
VE Expenses	$	-	$	-
Tower/Repeater Maintenance AG4UU	$	-	$	-
Florida Dept of State	$	-	$	-
Post Office Box:	$	-	$	168.00
Total:	$	-	$	168.00

Transfer Checking -> Savings:

Ending Balances - Mar 22, 2021:

Cash on hand	$	-	$	-
Checking Account	$	4,901.32	$	4,901.32
Savings Account	$	3,103.07	$	3,103.07
Total	$	8,004.39	$	8,004.39

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

APRIL 2021 CONTESTING

April RadioSport Highlights

April is a busy month for contesting with 23 activities. There are two major contests and several smaller DX contests scheduled. The State QSO Party season is at full steam with 9 SQPs, including our own Florida QSO Party. One weekend has a major contest, 4 QSO parties, and 4 DX Contests to enter. (I bought a third monitor to be able manage all the logs). WA7BNM Contest Calendar lists more than enough contests to keep you busy depending on 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. These minor events are too numerous, too short, or too focused to warrant attention here. The more significant ones are described below.

Preview of April Weekends

April 3-4

On Saturday evening is the North American Sprint, SSB. Sprints are not for the weak hearted or for hesitant, possibly inexperienced, operators. The sprint format is very different from a standard contest. You aren't allowed to "run." You must give up your frequency to whoever answers you and QSY elsewhere to either CQ or call someone else who is calling CQ. If you work him/her, you will inherit their frequency – for one call. Others will be waiting for you to make your one contact so that they can claim your frequency. You must QSY or wait until someone else has the frequency. The contest is only four hours long, but, believe me, you will be exhausted at the end. Be sure to read up on sprint protocols before trying one.

The Louisiana QSO Party is one of two state QSO parties (SQPs) this weekend. There are 64 Louisiana parishes that count as multipliers. Any station working N5LCC, the Louisiana Contest

Club station, may claim a one-time 100-point bonus. The LAQP is one of the few contests that understands that wire antennas can't compete equally with tri-band beams, so they have a separate WIRES-ONLY overlay. The also have the usual TB-WIRES overlay for tri-banders. The Louisiana Contest Club offers a large number of awards for you to compete for as an out-of-state station.

If you have a beam, you won't need to rotate it to work the other state QSO party this weekend. In the neighboring state Mississippi QSO party, there are 82 counties that count as multipliers. If you are using FT8/FT4, grid squares count as multipliers. Certificates will be awarded to the highest scorer in the state and for anyone making 100 contacts or more.

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 contest for RTTY. Each USA, VE, JA or VK call area count as multipliers along with Spanish provinces and each DXCC entity.

April 10-11

The only other major contest this month is this weekend with the FTn DX Contest. The number of new digital contests for FT8/FT4 is growing, but this is the premier FTn contest. It has been evident in several FT8/FT4 contests that, despite FT8's popularity, FT4 is the contest mode, as it was designed to be. The exchange is signal report and state (not grid). WSJT-X has a contest mode in the Advanced Settings. You can also use MSHV, software using WSJT-X ass a basis, but adding additional features for contesting and DXpeditions. The multipliers are the states, provinces and each DXCC entity. Power is limited to 100 watts.

There are two CW-only contests this weekend. The Japan International DX (JIDX) CW Contest is a Japan works World and World works Japan contest. Non-JA need to work as many JA

prefectures and JD1 islands as possible. Exchange is RST and CQ zone.

The Yuri Gagarin International DX Contest, sponsored by Russia, is a world-works-anyone event for CW.

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.

The IG-RY Worldwide RTTY Contest is a relatively new contest promoted by the "Interest Group RTTY" (IGRY). It is an everyone works everyone contest with a unique exchange and scoring. The exchange is RST plus the four-digit number of the year of the operator's first ever amateur radio license. That year serves as a multiplier.

This is a big weekend for State QSO Parties. The Nebraska QSO Party, New Mexico QSO Party and the North Dakota QSO Party all allow all modes (CW, SSB, RTTY and other Digital, including FTn). The modes for the Georgia QSO Party are only CW and SSB. The GAQP also has ten special 1x1 callsigns to spell out NFARL, for the North Fulton Amateur Radio League. All the SQPs use the traditional RS(T) and state exchange, except New Mexico which uses name and state. All four are recognized for the State QSO Party Challenge and are needed for the Worked All QSO Parties (WAQP) award.

April 16-18

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 the 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.

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. Remember that the Ontario QSO Party is needed for both the State QSO Party Challenge and the Worked All QSO Parties (WAQP) award, even though it is a Canadian Province rather than a US state.

April 24-25

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 the second biggest QSO party. 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. I can already feel the adrenalin of a pileup. If you are in Florida, the exchange is easy: "5 9" 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.

About Participating

Before participating in any of these contests or events, please familiarize yourself with the 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 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.

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 an NAQP, a State QSO Party or many of the minor DX contests, and jump in. (No, first read the rules as suggested above.) You don’t 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 and report your activity on 3830Scores. Then check the schedule of contests to see what next weekend has in store for you.

Join the Online Scoreboard Fun. Contesting has traditionally been a very lonely sport. You sit in your shack, make QSOs, and then find out how you did at the end. That requires a lot of self-motivation to keep going, particularly when conditions are poor. But now you can watch an online scoreboard while operating to see how you are doing compared to others.

Please go to https://contestonlinescore.com/blog/documents/ and follow instructions to register. The scoreboard works with several contest loggers. After registering on-line, follow your logger’s instructions for linking to the scoreboard.

April 2020 Contest Schedule

Other Contest Type		Weight	Date	Time	CW	SSB	RTTY	Digital
Louisiana QSO Party	QSO	7	3-Apr	1400Z	C		R	D
Mississippi QSO Party	QSO	7	3-Apr	1400Z	C	S	R	D
Missouri QSO Party	QSO	7	3-Apr	1400Z	C	S	R	D
SP DX Contest	DX	5	3-Apr	1500Z	C	S		
EA RTTY Contest	DX	5	3-Apr	1600Z			R	
North American SSB Sprint	Major	10	4-Apr	0000Z				S
JIDX CW Contest	DX	5	10-Apr	0700Z		C		
IG-RY Worldwide RTTY Contest	DX	5	10-Apr	1200Z				R
OK/OM DX Contest SSB	DX	5	10-Apr	1200Z				
FTn DX Contest	DX	10	10-Apr	1200Z				D
Nebraska QSO Party	QSO	7	10-Apr	1300Z		C	S	D

New Mexico QSO PartyQSO		7	10-Apr	1400Z	C	S	RD
North Dakota QSO PartyQSO		7	10-Apr	1800Z	C	S	RD
Georgia QSO PartyQSO		7	10-Apr	1800Z	C	S	
Yuri Gagarin International DX Contest	DX	5	10-Apr	2100Z	C		
Holyland DX Contest	DX	5	16-Apr	2100Z	C	S	RD
Worked All Provinces of China DX Contest	DX	5	17-Apr	0600Z	C	S	
YU DX Contest	DX	5	17-Apr	0700Z	C	S	
CQMM DX Contest	DX	5	17-Apr	0900Z	C		
Michigan QSO Party	QSO	7	17-Apr	1600Z	C	S	
Ontario QSO PartyQSO		7	17-Apr	1800Z	C	S	
SP DX RTTY Contest	DX	5	24-Apr	1200Z			R
Florida QSO PartyQSO		20	24-Apr	1600Z	C	S	

Ham Happenings

April 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
01-Apr	???	C9	C91BVA
01-Apr	???	FJ	FJ/K2LIO
01-Apr	???	V7	V7/KA4WPX
01-Apr	???	VP2E	VP2EE
01-Apr	???	ZC4	ZC4GR
01-Apr	01-Apr	EA	EH3DWN
01-Apr	01-Apr	FG	FG4KH
01-Apr	01-Apr	HK	HK3JCL
01-Apr	01-Apr	FG	FG4KH (NA-102)
01-Apr	01-Jun	J2	J28PJ
01-Apr	01-Jun	JW	JW/LB2PG (EU-027)
01-Apr	03-Apr	K	KT3Q/2 (NA-026)
01-Apr	05-Apr	FS	TO1K
01-Apr	08-Apr	KH9	KH9/NL7RR
01-Apr	10-Apr	KL	KL2JE (NA-059)
01-Apr	10-Jun	JD1/M	JG8NQJ/JD1 (OC-073)
01-Apr	15-Apr	ZD8	ZD8HZ (AF-003)
01-Apr	15-Jun	YU	YU51ANO
01-Apr	15-May	HC	HC1MD/2
01-Apr	16-May	F	TM150PAR
01-Apr	17-Apr	DL	DQ11WCA
01-Apr	20-Apr	JA	8N0J
01-Apr	22-May	UA0	RI0Q (AS-152)
01-Apr	29-May	VK	VI100AF
01-Apr	30-Apr	HK	HK3JCL
01-Apr	30-Apr	DL	DC220GERKE
01-Apr	30-Apr	SP	SQ0MORSE
01-Apr	30-Apr	UA	R108M
01-Apr	30-Jun	F	TM8AA
01-Apr	30-Jun	IS	II0QSE

01-Apr	30-Jun	TY	ZS6JSI/TY
01-Apr	30-May	CE9	RI01ANT
01-Apr	31-Aug	VK	VK100AF
01-Apr	31-Dec	9J	9J2BG
01-Apr	31-Dec	CE9	8J1RL, LU1ZG
01-Apr	31-Dec	VP8/SH	DT8A
01-Apr	31-Dec	ZD8	ZD8HZ
01-Apr	31-May	DL	DQ100JL, DR100JL
01-Apr	31-May	HI	HI9/F5PLR
1-Apr	31-Jan	HL	DS4DRE/4 (AS-060)

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

WWV

Most of us are familiar with WWV or WWVH, the government radio stations that transmit a precisely calibrated signal and time on 2.5 MHz, 5 MHz, 15 MHz, 20 MHz, and most recently and on an experimental basis, on 25 MHz. Here are some more details.

WWV began broadcasting 100 years ago. At that time, it sent –.

Today, the station radiates 10,000 Watts on 5 MHz, 10 MHz, and 15 MHz; and 2500 W on 2.5 MHz and 20 MHz. The WWV antennas are half-wave verticals that radiate omnidirectional patterns. Each freqncy has its own antenna, and they connect to a single transmitter using a rigid coaxial line, which do not cross each other.

History

The call letters WWV were assigned to the National Bureau of Standards in October 1919. Although WWV is now synonymous with the broadcasting of time signals, why those particular call letters were chosen or assigned remains a mystery.

On December 15, 1920 the station began assisting the Department of Agriculture in distributing market news to farm bureaus and

agricultural organizations. A 2 kW spark transmitter was used to broadcast 500 word reports, called the Daily Market Marketgram, on 750 kHz. The signal originated in Washington DC, and had an operating radius of about 300 kilometers. These broadcasts continued until 1921.

By December 1922, the station's purpose changed to transmitting standard frequency signals. By May of 1923, the service broadcast using frequencies from 75 to 2000 kHz on a weekly schedule. The transmitter had an accuracy "better than three-tenths of one per cent." The output power of the station was 1 kW.

Within 15 years, WWV had a 30 kW transmitter used on 5, 10, and 15 MHz. In 1936, at the request of several music companies, the a 440 Hz tone was addedns. Other pulses were added in June 1937, and the geophysical alert messages began in July 1957. A quartz oscillator improved the frequency stability of the broadcast, and the transmitted frequency routinely stayed within 2 parts in 1000 of the national standard by 1958.

WWV's most well known feature is the announcement of time. A standard time announcement in CW was added in 1945, and voice announcements of time began in January 1950. The original voice announcements were at 5-minute intervals.

Services provided by WWV

Since WWV and WWVH broadcast on several of the same frequencies, using different voices enables listeners to distinguish which station they are receiving. WWV uses a male voice and WWVH uses a female voice.

The time, which is the official time for the United States, is kept to within less than 0.0001 milliseconds of Coordinated Universal Time (UTC) at the transmitter site. That signal, however, is delayed as it travels from the radio station to locations around world. This delay increases the further the receiver is from the station, and it can vary by as much as 1 millisecond if the signal bounces between the Earth and the ionosphere. However, for most

users in the United States, the received accuracy should be less than 10 milliseconds (1/100 of a second).

The WWV minute

WWV's transmission, regardless of the frequency, follows a standard pattern, repeating each minute

0-1 second Minute-beep (0.8 seconds)
1-45 seconds -standard tone or voice announcement
45-52.5seconds silence except for the tick
52-60 seconds voice time announcement

The voice time announcement also remains the same: "At the tone, X hours, Y minutes Coordinate Universal Time." Coordinated Universal or UTC is the primary time standard the world uses to regulate clocks and time. It is not adjusted for daylight saving time, is effectively a successor to Greenwich Mean Time (GMT). WWV uses a male voice, but WWVH uses a female one.

Other announcements.

Besides time announcemts, the WWV and WWVH stations provide

1. Geophysical alert messages that give information about solar, terrestrial conditions. Geophysical alerts are broadcast from WWV at 18 minutes after the hour for WWV. The messages are less than 45 seconds and are updated every 3 hours. The geophysical alerts provide information about the current conditions for long distance HF radio communications, specifically the Solar flux, the A and K indices, the solar flux index, and the Space Weather, the latter of which is a consequence of the behavior of the sun, the nature of earth's magnetic field and atmosphere, and our location in the solar system.
2. Marine storm warnings at 8 and 9 minutes past the hour for the Atlantic Ocean, and at 10 minutes past the hour for the Pacific

WWV's time signals allow time-keeping devices such as radio-controlled clocks to automatically maintain accurate time without

the need to manually adjust them

Over the years, WWV has faced several efforts to shut it down. In 1926, only half the nation could hear it, and other stations in Minneapolis, at Stanford University, and MIT were making it redundant. Onluy an outpouring of protests from citizens kept it on the air. In 2019,talk swirled around Washington about closing the stations, but nothing happened.

Additional information about WWV and WWVH can be found at https://www.nist.gov/time-distribution/radio-station-wwv

The Canadians also have a time keeping service, CHU, which transmits-in French and English-on 3.33, 7.85, and 14.67 MHz.

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

Repeaters Capital Area Region

Location	County	Call Sign	Backup Power	Digital Mode	Output Freq	PL	Special Configuration	Height ft.
Crawfordville	Wakulla	K4WAK	No		145.450 -	94.8		300
Crawfordville	Wakulla	KB5IKR	Yes	Fusion	444.450 +	94.8	Yaesu System Fusion C4FM WIREX Connected (Auto)	400
Crawfordville	Wakulla			Fusion	442.850 +	94.8	Yaesu System Fusion (Auto)	
Greensboro	Gadsden	NX4DN		Fusion	147.390 +	94.8	Yaesu System Fusion DCS 023 WIREX Connected (Auto)	300
Greensboro	Gadsden	NX4DN		NXDN	444.125 +	94.8	NXDN World Wide Network	300
Monticello	Jefferson	WX4JEF	No		145.430 -	94.8		270
Quincy	Gadsden	W4EAF	Yes		147.165+	94.8		250
Tallahassee	Leon	AE4S	Yes	P-25	146.655 -	94.8		550
Tallahassee	Leon	N4PG	Yes		146.610 -	203.5		200
Tallahassee	Leon	K4TLH	Yes	P-25	146.910 -	94.8	Temp TARS Talk-In	375
Tallahassee	Leon	K4TLH	Yes		147.030 +	94.8		750
Tallahassee	Leon	KA4EOC	Yes		147.285 +	94.8		350
Tallahassee	Leon	K4TLH	Yes		442.100 +	94.8	Statewide Amateur Radio Net (SARnet) See Next Page	600
Tallahassee	Leon	K4TLH	No		442.850 +	94.8		275
Tallahassee	Leon	KJ4G	Yes		443.400 +	131.8	Host of Echolink Node #3950	575
Tallahassee	Leon			Fusion	444.800 +	94.8	Yaesu System Fusion (Auto)	
Tallahassee	Leon	AE4S	Yes	P-25	443.950 +	94.8		550
Tallahassee	Leon	N4NKV	Yes		444.600 +	131.8	NXDN World Wide Network	CRMC (200)
Tallahassee	Leon	KD4MOJ	Yes		444.000 +	94.8		TMH (200)
Tallahassee	Leon	NX4DN		NXDN	444.175 +	94.8	NXDN World Wide Network	175
Tallahassee	Leon	NF4DG	Yes	D-Star	146.835 -	DV		180
Tallahassee	Leon	NF4DG	Yes	D-Star	443.450 +	DV		180
Tallahassee	Leon	NF4DG	Yes	D-Star	1293 -	DV		180
Tallahassee	Leon	NF4DG	Yes	D-Star	1253	DD		180
Wacissa	Jefferson	K4TLH	No		147.000	94.8		300
Wacissa	Jefferson			Fusion	444.050 +	94.8	Yaesu System Fusion (Auto)	
Thomasville	Thomas				145.370 -	141.3		
Thomasville	Thomas				442.600 +	141.3		
Reno	Grady	KE4URL	Yes		145.170 -	141.3		600

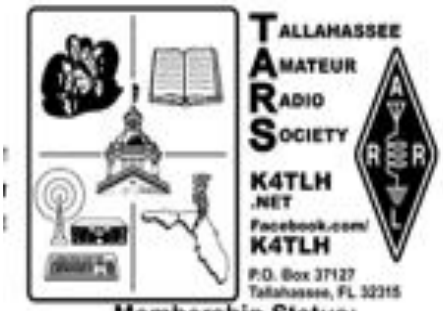
The most current repeater list is available on the TARS website:
www.k4tlh.net/repeaters
For ***SARnet*** information (Locations, Repeaters and operational status) visit:
http://www.sarnetfl.com/

Regional Nets

TARS News & Information Net	Thursday • 8 PM EST (not 1st Thrs.)	**147.030** MHz, K4TLH + *600, 94.8*
North Florida Amateur Radio EmComm Net	Daily • 9:00 AM ET *except Sunday*	**3950** kHz
Capital District EmComm Training Net	Sunday • 7:30 PM ET	**147.030** MHz, K4TLH + *600, 94.8*
Capital District ARES Net	Sunday • 8 PM ET	**147.030** MHz, K4TLH + *600, 94.8*
Leon County ARES Net	Tuesday • 8:15 PM ET	**147.030** MHz, K4TLH + *600, 94.8*
Florida Phone Traffic Net	Daily • 6:55 AM ET	**3940** kHz
Florida Midday Traffic Net	Daily • Noon ET	**7242** kHz
North Florida Phone Net	Daily • 7:30 PM ET	**3950** kHz
North Florida Digital Net	Sunday • 7 PM ET	**3590** kHz **PSK-31 Mode**
TARC Thursday Night Net	Thursday • 8 PM ET	**147.060** MHz, + *600, 141.3*
Thomas County ARES Net	Thursday • 7:30 PM ET	**147.060** MHz, + *600, 141.3*
Grady County ARES Net	Tuesday • 7:30 PM ET	**145.170** MHz, - *600, 141.3*
North Florida 6M SSB Net	Sunday • 8:30 PM ET	**50.150** MHz
Morse Code Practice Net (Informal / Open) 5-15 WPM	Wednesday (or any day) 8:30 – 9:30 PM ET	**28.114** MHz CW Mode
Morning Drive-Time Net (Informal)	Mon-Fri • 7:30 – 9:00 AM ET	**147.030** MHz, K4TLH
Southwest Georgia HF Weather Net	Third Thursday 7:30 PM ET (or after GA SSB Net)	WX4TAE, **3975** kHz (+/-)
Southwest Georgia ARES Net	Thursday • 9 PM ET	**145.170** MHz, + *600, 141.3*
SKYWARN Net	First Sunday • 7:30 PM ET	WX4TAE, **3810** kHz (+/-)

Some nets have been inactive for some time, however, individuals are encouraged to re-activate these nets as guest net controls.

Have any corrections or additions? *Contact Dave at davedavis1@embarqmail.com* prior to the 20th of the month to make changes.



Tallahassee Amateur Radio Society

New Membership / Renewal Form

Updated 11/3/16

This form can be used for new members or for renewals. If you have no changed any information from last year, merely complete the form with you name, indicate your member type and ARRL membership status and mak payment to TARS.

Membership Status:

- Individual; Single member; full voting privileges.
- **Family**; Single member, plus participating family members residing at the same address; all members have full voting privileges. Complete a form for each member.
- **Student**; Free for students (elementary school through college) with ID; all rights and privileges except voting.
- **Introductory**; Free until the end of year (next year for December) for anyone who passed Amateur Licensing Exam facilitated by TARS; all rights and privileges except voting.

If no personal information has changed, current memberships can be renewed simply by making payment to TARS.

You must be a licensed Amateur Radio operator to *join the Society*; however, any non-licensed radio enthusiast may attend the TARS business meetings and functions. Membership dues for the Tallahassee Amateur Radio Society are only ***$20* per individual** *or family* (complete a form for each family member.) **Students** (with valid ID) **can join for free!**

Membership is per calendar year and the deadline for paying dues for renewing membership is February 20th. Individuals wishing to reinstate their expired membership status must reapply and pay full dues ($20) for the current year. TARS is a "not-for-profit" organization and dues are used to help defray the cost of repeater maintenance and TARS events. Most of TARS's revenue is derived from donations, which are gladly accepted.

Please make your dues check payable to the **Tallahassee Amateur Radio Society** (or **TARS**) and include your telephone number on the check. Bring your check (or cash) along with the completed form provided below (including e-mail address please) to the next monthly TARS business meeting and give it to the Treasurer - or mail your check and completed form to:

Tallahassee Amateur Radio Society, C/O Treasurer, P. O. Box 37127, Tallahassee, FL, 32315

Name:		**Call Sign:**
Address:		
		Date: / /20___
City:	**State:**	**Zip:** -
Member Type: ☐ Individual ☐ Family ☐ Student ☐ Introductory (Check One)		
Home Phone: ( ) –	**Work Phone:** ( ) –	**Cell Phone:** ( ) –
E-Mail Address:		
ARRL Member: ☐ Yes ☐ No	**"Elmer":** ☐ I would like a ham mentor ☐ I can be a ham mentor	
Interests: ☐ EmComm ☐ Contest ☐ Phone ☐ Digital ☐ CW Other:_____		

Updates of Information If you are aware of any updates, changes or corrections to any of the information in this newsletter such as news write-ups, information about our neighboring clubs, local nets, repeaters, frequencies or etc., please forward that information to us at TallyAmateurRadio@Gmail.com or *Dave Davis, WA4WES*, (Editor in Chief) at davedavus1@embarqmaill.com for inclusion, retraction or correction in future newsletters publications. Corrections and additions cannot be reflected until the following month's edition.

At NO Cost The Printed Circuit is provided as a service **FOR FREE!** Articles and content are written and edited on a volunteer basis. Please consider the large amounts of time each month put into making these newsletters a "great read." Monetary contributions are encouraged to be made to the Tallahassee Amateur Radio Society, Inc., which depends on your support. You may also consider donating your time and talents by writing for The Printed Circuit or submitting material or information to be considered for publication. The Printed Circuit is MORE than just a club newsletter!

Distribution The Printed Circuit is distributed via ***gmail*** account via a PRIVATE BCC recipient list, generally one week prior to the following TARS business meeting. **Re-Distribution IS ENCOURAGED**, however you may consider sending us any new addresses for interested recipients (with their authorization.) Back issues and past articles organized by topic can be readily found at http://k4tlh.net/tars-newsletter/ and http://k4tlh.net/index-of-newsletter-articles/

E-mail Addresses Please forward any additions or changes of e-mail addresses for delivery of the Newsletter to the TARS email address: TallyAmateurRadio@Gmail.com , or *Dave Davis, WA4WES*, (Editor in Chief) at davedavus1@embarqmaill.com. Also, notify us if you wish to no longer receive the newsletter and would like to have your address removed.

73,

Dave
WA4WES
Printed Circuit Editor