

# Nacogdoches Amateur Radio Club

## 2020 CLUB OFFICERS

Pres: Bill Rascher - KT5TE

Vice Pres: Steve Bartlett-WB5IDY

Sec/Treas: Army Curtis - AE5P

Visit our web site at

<https://w5nac.com/>

## MISSION STATEMENT

The Mission of the Nacogdoches Amateur Radio Club is to support and promote Amateur Radio by public service, offering training to unlicensed interested parties and licensed Amateurs, mutual support of other Amateurs, engaging events that promote Amateur radio to the general public and other Amateur radio operators, and continuing fellowship by regularly scheduled organized meetings and events and having fun.



## SEPTEMBER MINUTES

The September meeting of the Nacogdoches Amateur Radio Club (NARC) was held as scheduled on September 2nd. Because of the Wuhan virus, the meeting was again held as a virtual meeting using the club's 147.32 repeater. **President Bill KT5TE** opened the meeting at 7:00 p.m. Thirteen members and guests checked in. Minutes of the previous meeting were approved as published. The Treasurer's report was read.

Reports were made on Club participation in the various contests available since the last meeting.

The North American QSO Party, CW version, saw several club members participate. Most of them agree that CW contests are much easier than phone contests to play in.

Thanks to **Andy KE5EXX** for once again making facilities available at the International Church of Nacogdoches for VE testing in September. Unfortunately no one presented themselves for testing. Full details later in this newsletter.

Other contests and special events coming up in September were mentioned. All club members are encouraged to participate in as many

of these as possible. They are a wonderful way to improve your communications skills as a Radio Amateur.

There being no further business, the meeting was adjourned at 7:18 p.m.

**Program: Army AE5P** presented a program on the problems we have had with the 147.32 repeater. The radio, an older Motorola MSR-2000, has been replaced with a new Yaesu DR-2X. Work is underway to interface the new radio with the existing repeater controller to get more features than the basic Yaesu radio provides.

**Army** also described the upcoming ARRL September VHF contest, scheduled for the weekend of Sept. 12 - 13. Several club members have indicated their intent to participate in the contest as rovers. All club members are invited to participate.

## FROM THE PRESIDENT

Don't know about you but September disappeared fast. For me the days and weeks have been so filled with things to do that I feel like I've not finished anything. But in reality a lot has been accomplished when it comes to our farm and helping family. This feeling of getting behind with my ham radio plans could come from the fact that I haven't touched my radios, except for the VHF contest and net meetings, for the entire month of September. Every night I promise myself that I'll start improving my CW skills the next day. By the following night the key is still not plugged in and I'm ready to sack out. Maybe with shorter days and the last hay cutting behind me I'll spend some time with radio stuff.

Let's see; My daughter is about to have our first grandchild, so most likely Lauren will be gone or commuting to Huntsville

for the next few weeks. Lauren needs a 40m x 100m arena built in a section of the south pasture to get ready for the November horse driving contest. To give the goats some good winter browse a  $\frac{1}{4}$  mile plus of new fence for the area we inherited needs to be completed. The goats will turn that area into a park over winter.

I'm moving my horses into another pasture so I need to install an electric wire as the top wire of the fence. Belgian draft horses can be hard on fences because when you weigh a ton you go where you want. ...etc!

The to do list for radio is long and so is the darkroom list. There are 6 rolls and 8 - 4x5 sheets of film to develop. Believe it or not all these lists are slowly getting shorter.

Boredom has not been a problem for Lauren and I since we retired, and that probably is a good thing. I hope you're not stuck staring at walls wondering what to do with so much

of our society locked down. If you are bored let me know because I need to finish the ground field around two towers. In other words I need trenching done, and I won't charge you a thing for the exercise. :-)

73, Bill KT5TE

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## FROM THE VP CHAIR

### Emergency Water Treatment

Preparations for disaster situations go hand in hand with amateur radio. If you intend on helping with communications during any sort of disaster, you must first be able to take care of yourself and those immediately in your care.

The second most important component of survival is having clean drinking water. Even though our public water systems now employ great power backup generators to keep water wells and treatment facilities working, they are only as reliable as machines can be and are subject to the mercy of biweekly fuel deliveries. Our elevated storage tanks generally only hold about 1 to 2 days of water storage in the city and less in rural areas. Yes, you can run out of water.

Treating water to a level safe for human consumption involves two different treatment regimes. Both are necessary to ensure that you have clean water. Addressing both biological and chemical contamination are important steps in creating usable drinking water.

The removal of biological contaminants is the most commonly discussed treatment process. Camping stores sell iodine drops, filter straws, and ceramic filters all designed to kill or strain out biological stuff, or "bad bugs" as we say in the business.

Orgasms like E. Coli, Giardia, and Cryptosporidium, can play havoc on our digestive system to the point of severe dehydration and even death. Most bacteria, viruses, and other pathogens can be killed with an oxidizing chemical like chlorine or iodine and even removed using a fine ceramic filter. Apart from killing the "bugs" we must also

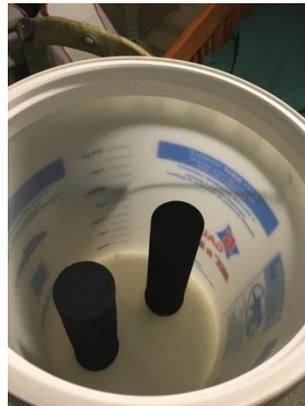
treat any offending chemicals that could be in the water system. Heavy metals, petrochemicals, pesticides and other poisons can also make any water source unsafe for drinking.

Simple home treatment is possible using some special filters that contain activated carbon combined with fine mesh filters. These filters can remove about 99.9% of most chemicals and organisms. One vender I have tested is Berkey Filters

(<https://www.berkeyfilters.com/>). All such filters are slow drip systems and are intended to only make safe drinking water due to their production rate. Cooking or bathing water can be treated with less rigorous methods like cloth filtering and boiling.

Berkey sells a two part filter canister where contaminated water is poured into an upper container and slowly passes (drips) through the filter into a lower container. I can treat 4 gallons of drinking water in a few hours. Being

frugal, I only bought the filters and installed them in between two 5 gallon buckets. I used Gamma lids and a coffee spout in the lower bucket to dispense clean water. You can also buy their complete system with nice stainless containers for some additional bucks. I have treated green pond water with this filter with success and commonly use it when our rural water supplier calls for a boiled water condition.



Even though a combination filter can remove 99% or more of all contaminants, I still prefer to add a bit of chlorine bleach to the final product. Making your own bleach is easy and economical. Using Calcium Hypochlorite, or pool shock (no additives), you can make numerous gallons of fresh bleach for a few dollars. Use 1 tsp of pool shock per gallon to make a bleach solution. Use  $\frac{3}{4}$  oz (4.5 tsp) of this bleach solution to a gallon of raw water to make treated water. Let stand for a minimum of 20 minutes after stirring. Pool shock can be bought at any big box store.

I have read that chlorine is not needed if the water is mixed with a lime and a top shelf adult beverage. I may test the science behind that for another article.

73, Steve WB5IDY

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## NOTES FROM OUR EC

What a pretty day, nice and cool this morning, good temperatures for the day and a cool evening coming up. A full moon, the Harvest Moon, is tomorrow 3 October. Watch out for the crazies. (30 Sept 2020).

The weather has finally turned; well more or less. My truck thermometer said it was mid 80's when I got in the truck leaving work.

The 2020 hurricane season is still upon us and a tropical depression is messing around the Yucatan peninsula. So, we're not quite out of it. We've been lucky but the season ends in November. Stay vigilant.

Our ARES and Weather nets have been doing very well. We're hearing about 12-15 participants in each net and some have been quite lengthy. Lots of

casual talk a bit of tech(ish) talk but living up to a place and time to gather, practice and maintain our skills. I've noted some of our longer winded participants are remembering to pause to let the repeaters catch their breath.

We have been lucky, we haven't opened our nets for hurricanes, however the weather net has come up due to possible tornadic activity. And because of that we still should practice. Even a coffee klatch net will get some practice and knowledge.

There are a few nets around the area. Does anyone participate in them? Has anyone participated in a specialized net, like WinLink Wednesday or one of the CW or SSB nets to pass traffic? What about the digital forms, anyone stuck their toe in those waters. RTTY? There was a RTTY contest not long ago and some of the control systems (fldigi) and newer radios support RTTY. Now you don't need

a Kleinschmidt or a Model 20 with attached 60VDC keying circuit to communicate. We'll expand on these other forms later.

Two full moons this month and the next one will be Halloween weekend. We fall back and return to CST (31 Oct/1 Nov). It may be an interesting month.

I think I've hit a brick wall in this rabbit hole. Ah well, so let's stick a fork in this and call it done.

Don't forget to check into our Monday and Thursday night nets and listen around for any of the local area nets.

Please stay smart and stay safe,

73 de John Chapman  
KC5MIB

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## VE TESTING

Thanks to Andy KE5EXX, we were able to continue our VE testing in August and September at the International Church of Nacogdoches. Due to the Wuhan virus, we were forced to cancel the test sessions originally scheduled for March, April and May. In June and July, we met at the North Street Church of Christ thanks to Steve WB5IDY and have now moved to ICON.

The August VE session had one candidate and saw Charles Rambin pass his Tech and be issued the call of KI5KRH.

The September VE session did not have anyone appear for testing.

For the latest updates, please check the club website at:

<https://w5nac.com/about/testing/>

73 de AE5P.

email: [ae5p@arrl.net](mailto:ae5p@arrl.net)

## TWO METER CLUB NETS

Remember to join us each week for the two meter nets sponsored by NARC. Each **MONDAY** is the **NARC ARES/RACES** net, at 8:00 p.m. on the club's 146.84 repeater (PL 141.3). Second, on **THURSDAY** evenings at 8:00 p.m. is the **Deep East Texas Skywarn Emergency Weather Net** on the 147.32 repeater (PL 141.3). Please join us for one or both.

## NEXT MEETING

The next meeting will again be a virtual on-air meeting **Wednesday October 7th at 7:00 p.m.** on the 147.320 repeater (PL 141.3). All stations participating are asked to check-in giving their callsign and name when asked for. An on-air program is planned.

## UPCOMING EVENTS OF NOTE

Mark your calendars for the following events coming up in the next few months. Full information on these events and much more can be found at <http://www.hornucopia.com/contestcal/contestcal.html>

Note that all dates shown here are local, CST dates while all contest logging uses UTC dates and times.

### **CQ WW SSB**

Oct 24-25, 2020

<http://www.cqww.com/rules.htm>

### **ARRL SS CW**

Nov 7-9, 2020

<http://www.arrl.org/sweepstakes>

### **ARRL SS SSB**

Nov 21-22, 2020

<http://www.arrl.org/sweepstakes>

### **CQ WW CW**

Nov 28-29, 2020

<http://www.cqww.com/rules.htm>

### **ARRL 160M CW**

Dec 4 - 6, 2020

<http://www.arrl.org/160-meter>

### **ARRL 10M CONTEST**

Dec 12 - 13, 2020

<http://www.arrl.org/10-meter>

## The 220 MHz Amateur Band

by

Thomas Atchison W5TV

From the ARRL Website, the band plan for 1.25 Meters (222-225 MHz) is as follows:

### 1.25 Meters (222-225 MHz)

222.0- 222.150	Weak-signal modes
222.0- 222.025	EME
222.05- 222.06	Propagation beacons
222.1	SSB & CW calling frequency
222.10- 222.15	Weak-signal CW & SSB
222.15- 222.25	Local coordinator's option; weak signal, ACSB, repeater inputs, control
222.25- 223.38	FM repeater inputs only
223.40- 223.52	FM simplex
223.52- 223.64	Digital, packet
223.64- 223.70	Links, control
223.71- 223.85	Local coordinator's option; FM simplex, packet, repeater outputs
223.85- 224.98	Repeater outputs only

**Note:** The 222 MHz band plan was adopted by the ARRL Board of Directors in July 1991.

This band has a somewhat colorful history so let's explore it a bit. This band has been in the hands of amateur radio operators for the past several years but it was shared with military users for a while. Amateurs have used the band for several purposes including moon bounce communications, but most have used it for FM repeaters. Amateur repeaters use 25 kHz channel spacing and a unique 1.6 MHz offset between transmit and receive frequencies.

Those people (non-amateurs) who are looking for spectrum space may find the 222 - 225 MHz amateur radio allocation attractive. The ARRL and many amateur radio operators have been very vocal in defense of this portion of the spectrum. Unfortunately, since we don't seem to be very active in this spectrum, the FCC may decide to reallocate the spectrum if they receive a compelling commercial proposal for its use. Case in point, amateur radio had the 220 - 222 MHz band as an allocation and it was used for weak signal work. The FCC was convinced that 220-222 MHz would be best served in the Land Mobile Service. The United Parcel Service (UPS) proposed the use of 220-222 using Amplitude Companded Side Band (ACSB) as their mode of operation. The FCC reallocated the 220-222 MHz band to UPS even though we (amateur radio operators) argued that there were an increasing number of amateurs using the band. The ACSB system never worked well for UPS. Basically, ACSB was poor technology and UPS abandoned the project. Unfortunately, the 220-222 MHz band didn't revert back to amateur radio operation and it is basically an empty segment.

Back when a code test was required, the FCC allowed entry-level licensees who passed a written examination to use 222 - 225 MHz without taking the code test, but the number of amateurs using that band didn't increase since few choices of radio products were available for the band. Currently, of course, amateurs holding a Technician license can operate on 1.25 meters.

The band offers desirable propagation for VHF activities; however, without a complement of suitable equipment manufacturers and without active use, it is hard to defend the continued allocation of this band to amateurs. One of the problems is that the band pair 70cm/2 m is not harmonically compatible with 1.25 m. An antenna designed for the band pair isn't resonant at 1.25 m. On the positive side, some manufacturers who have made 222 MHz repeaters have discovered that it's an excellent, low-interference band. Some believe it delivers the best propagation among the three bands (70 cm, 1.25 m, and 2 m).

There are currently some rigs available for the 222 - 225 MHz band. For example, Alinco makes a DR-235T MKIII, Yaesu has the VX-6R, Kenwood has the TH-D74A, and

Wouxun has the KG-UV7D. There are other such rigs on the used market. The last time I checked there were 88 repeaters in Texas on the 222 MHz band.

You can find additional information regarding the 1.25 m band at the following site:

<https://www.bridgecomsystems.com/blogs/bridgecom-tx-rx-blog/18727781-why-220-mhz-for-amateur-ham-radio>

## MICROWAVE BAND NAMES

By Army Curtis AE5P

There is confusion and controversy about the microwave frequency band definitions used in North America. Legend has it that the designators were originally contrived during World War II to confuse the enemy. Engineers in Fort Monmouth New Jersey came up with the letter codes, which were classified as Secret at the time. Naturally, a logical progression of A, B, C wouldn't do for that purpose, so they chose L, C, X and K, and a whole bunch of lower-case letter sub-band designators that have been all but forgotten, with the exception of the Ku and Ka bands. After the war, Uncle Sam didn't declassify the system for everyone's use, different companies such as Sperry, Motorola, Narda, Hewlett Packard and Raytheon made educated guesses on the secret frequency bands, with inconsistent results and little attempt to organize an industry-wide standard.

In 1959 the world came to an agreement on the designator letters, at the International Telecommunications Union meeting in Geneva. The 1959 approved designators (Article 2, Section 11 of the Radio Regulations) are available in the ITT Reference Data for Radio Engineers. Now this data is obsolete, perhaps because they never considered that anyone would be interested in frequencies above 40 GHz. Kind of like when the phone company standardized on seven digit phone numbers, thinking that one area code for each U. S. state would provide enough phone numbers to last forever. Thanks to this short sightedness, the misery of changing area codes has become routine. But I digress...

In 1984, the IEEE microwave nerds agreed on the standard letter-band designations shown in the table below, the first two columns of which you should commit to memory if you want to be taken seriously. The first IEEE standard was published in 1976, then updated in 1984 and now exists as IEEE Standard 521-2002. The next update is estimated for 2019.

For more information on this topic, see:

( <https://www.microwaves101.com/encyclopedias/frequency-letter-bands> )

**Standard Radar Frequency Letter-Band Nomenclature(IEEE Standard 521-2002)**

Band Designator	Frequency (GHz)	Wavelength in Free Space (cm)
HF	0.003 to 0.030	10000 to 1000
VHF	0.030 to 0.300	1000 to 100
UHF	0.300 to 1	100 to 30.0
L band	1 to 2	30.0 to 15.0
S band	2 to 4	15 to 7.5
C band	4 to 8	7.5 to 3.8
X band	8 to 12	3.8 to 2.5
Ku band	12 to 18	2.5 to 1.7
K band	18 to 27	1.7 to 1.1
Ka band	27 to 40	1.1 to 0.75
V band	40 to 75	0.75 to 0.40
W band	75 to 110	0.40 to 0.27
mm	110 to 300	0.27 to 0.10