

Nacogdoches Amateur Radio Club

2021 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.



OCTOBER MINUTES

The October meeting of the Nacogdoches Amateur Radio Club (NARC) was held as scheduled on October 6th. **President Bill KT5TE** opened the meeting at 7:00 p.m. in the Nacogdoches City/County Emergency Operations Center off FM 3314. Self-introductions were made by members and guests present. Minutes of the previous meeting were approved as published. The Treasurer's report was not available.

Old Business:

There were no applicants for VE testing in September.

Several NARC members participated as Rovers in the ARRL September VHF Contest. Many thanks to **Army AE5P, Mike AA5HH, Wolfie KI5MHB** (and **Dena**, Wolfie's driver and **Mama**), and **Darrell KI5PYQ**.

Texas QSO Party. Several club members participated and sent in logs for TXQP. There were 463 logs received. Results will be posted later this year.

Parks On The Air (POTA) continues to be very popular with our members. **W5NXX** has logged over 1800 POTA contacts and **AA5HH** over 1000. Congratulations to both.

New Business:

The book raffle this month was extended to many books and items that sent many members home with new prizes.

Program:

Soldering was the topic of this month's program. Several different club members were presenters. **Darrell KI5PYQ** showed us how to solder copper pipe for antennas; **Bill KT5TE** showed us how to solder a number of different items; **Army AE5P** showed us a number of items not to solder and how to solder others that should be.

FROM THE PRESIDENT

At the time of this writing we are having nearly 90 degree days or it feels that way in the sun. The high humidity doesn't help. Even though October 21st was humid, it was nearly the perfect day to take down Tom's, W5TV, radio tower. Tom had donuts, coffee & water waiting for us when we arrived. Army, AE5P, came up with a clever idea to bring down Tom's tower.

After disconnecting the tower from the house bracket and a counter ballasting rope added it took just seconds to bring down the four sections of the Rohn 25g tower with mast. All that was left was to disassemble the tower on the saw horse and put the sections on the trailer. Special thanks go out to Rusty, KD5GEN, and Ralph, N6RH for the help in getting the job done.

November looks to be a busy month with contests and special event stations. Plus there seems to be a lot of POTA activity this fall. With all these activities going on you should be able to make some QSOs just about any time you sit down with your radio. For me fall is the perfect time to get some outdoor work done, so winter and summer is a better time to be on the radio during the day. The days are getting shorter so there is always a good chance to get on the radio for an hour or two in the evening.

Hope to see everyone at our monthly meeting on Wednesday, November 3rd.

73, Bill KT5TE

bill@watershipfarm.com

FROM THE VP CHAIR

Tech Tips

All About the Vee

Last month we looked at end fed antennas as an inexpensive multi-band HF antenna solution. On that same path, we will look at several other economical wire antennas you can build yourself.

My very first antenna was a 14 ga speaker wire dipole, tuned for 40 meters, fed at the center of two equal length legs where the feed point was elevated well above the end points making an upside down "V" shape. Since ham operators are such original creative folk, this type of antenna was given the scientific name of "Inverted V".

An Inverted V antenna is a simple half wave with the ends downward making a 90-120 degree angle which reduces the ground footprint over a

conventional flat dipole. This antenna is horizontally polarized and can be fed directly with a conventional 50 ohm coax or through a 1:1 balun.

The formula to calculate wire length: Total Length = $468 / \text{freq in mhz}$ then 5 % is subtracted from that number as a correction for the V shape. This formula is used to get you close to the desired lengths, but always cut a little long to allow you to tune the antenna to the desired frequency, usually in the middle of the band. The Total Length is divided by 2 to give you the length of each leg. Tie the legs to an insulator at each end leaving a pigtail that you can trim to optimize SWR. The Inverted V works best with the apex as high as you can get it.

As a Novice, I could not find a place at my parent's house to tie-off the ends of the antenna other than the corner of the house and a chain link fence corner. The legs of the Inverted V were not in the

same plane making a V both vertically and horizontally. As I plotted my CW contacts on a map over the next year, I noted that all of them were in one swath all the way to Canada. Hmmm, I learned my first lesson on how to make a dipole semi-directional !! I talked to lots of folks in Kansas, but nobody in southern Florida!!

A simple V antenna gets you operational on one band. You can also build its cousin, the Fan Dipole, which is simply several Inverted V antennas tied to a single feed point on a balun. Each antenna wire is separated by spacers, usually eight or more inches apart. Since each wire will be resonant at a frequency on a particular band, the transmission energy is directed to this wire with the lowest impedance as the path of least resistance. Tuning can be a little more challenging as the parallel wires can interact and may require several passes to trim and test. I installed a

fan dipole in my attic as a backup antenna.

Inverted V and fan dipoles can easily be built at home and only require a tall tree or a telescoping pole to get the center point in the air. The following are good links with construction directions. Many suppliers also offer great premade products for under \$100.

Checkout ARRL's wire antenna book and many other downloadable resources for wire antennas. There are as many designs of wire antennas as there are radio operators. Throw a rope in a tree and experiment with different designs. Making a contact 5,000 miles away with a piece of speaker wire you bought at a garage sale is what makes ham radio fun!

<https://www.electronics-notes.com/articles/antennas-propagation/dipole-antenna/build-ham-inverted-v-dipole-80-40-20-15-10-metres.php>

<https://www.hamuniverse.com/multidipole.html>

73
Steve Bartlett
WB5IDY

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NOTES FROM OUR EC

Didn't I just do one of these a month ago? Oh yeah, that's right, it's that time again. November is almost here and with Halloween the start of the fall eating and holiday season. I've heard on good authority that we will be having the Christmas Pot Luck and White Elephant auction in December. Plan accordingly.

Let's do some EC things. Hurricane Season 2021 is almost over. As of this writing 35 days left, the season ends 30 November.

That unique storm that hit the Mexican Pacific coast that was to track up into Texas didn't pan out. It fizzled out somewhere in Mexico. We'll do the numbers next month.

Daylight Saving Time ends 7 November, we get back that hour we lost in the spring. And here it comes: The DST dates are good times to check the batteries in your smoke detectors. How many of you know when your smoke detector(s) was installed or replaced? I've read the service life is about 10 years.

Since you're checking those batteries, what is the condition of your handheld radio's batteries and anything else that needs a battery? What about your generator?

For those of you that heard Rusty and Wolfie on the WX net the 21st; Rusty did a roll call asking which repeaters you could access. Wolfie suggested and ran an impromptu net on the 440 repeater to exercise it. An additional

note here, Robert had some good information about the use of multiple repeaters. During the Columbia Disaster 2 repeaters were used, one acting as a gate keeper to filter (for lack of a better phrase) the traffic. Great results and thanks to everyone for participating. And thanks to everyone who does participate in our nets

Looking forward to hearing you on the nets,

73 de John Chapman
KC5MIB
kc5mib@arrl.net

VE TESTING

The October VE session had no applicants.

Many thanks to VE's Rusty KD5GEN, Ralph N6RH, Mike AA5HH, Mike W5NXX, Robert KD5FEE and Army AE5P.

Remember that we give VE tests the third Wednesday of EVERY month. For the latest

information always check the club website at:

<https://w5nac.com/ve-testing/>

73 de AE5P.

email: ae5p@arrl.net

TWO METER CLUB NETS

Please join us each week for the two meter nets sponsored by NARC. All stations are welcome to check into the nets.

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

Our next meeting will be Wednesday November 3rd at the City/County Emergency Operations Center off FM3314. Meeting starts at 7:00; doors open at 6:30. Come early for a little socializing before the meeting.

We will have our monthly book raffle, with everyone present receiving a raffle ticket without charge. One ticket will be drawn and the winner will be given a book on a ham radio subject. There may be more than one book given away this month.

Robert Judy KD5FEE is planning to present a program on solar activity and its relationship to radio propagation. You do not want to miss it.

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 30 - 31, 2021

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

ARRL Sweepstakes

CW

Nov 6 - 7, 2021

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

ARRL Sweepstakes

SSB

Nov 20 - 21, 2021

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

CQ WW CW

Nov 27 - 28, 2021

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

Check out the many contests listed on the Contest Calendar link shown here. There are many State QSO parties and 'Parks-On-The-Air' events that may be just right for you. Check 'em out.

Generating Frequency Modulation

by

Thomas Atchison W5TV

Generating a frequency modulated (FM) signal can be accomplished by directly modulating the carrier frequency oscillator. If the oscillator is a parallel tuned L-C circuit whose frequency is

$$f_c = \frac{1}{\sqrt{LC}}$$

then f_c is the carrier frequency. We can vary the carrier frequency by varying either L or C using a modulating signal voltage. An oscillator circuit whose frequency is controlled by a modulating voltage is called a **voltage controlled oscillator (VCO)**.

A voltage-controlled capacitor is one method of making an LC oscillator vary its frequency in response to a control voltage. Actually, any reverse-biased semiconductor diode provides a measure of voltage-dependent capacitance and can be used to change the frequency of an oscillator by varying a control voltage applied to the diode. **Varactor diodes** are available that provide a wide range of capacitance in the oscillator tank circuit. FM circuits using such techniques are called **reactance modulators**. (See Fig. 1).

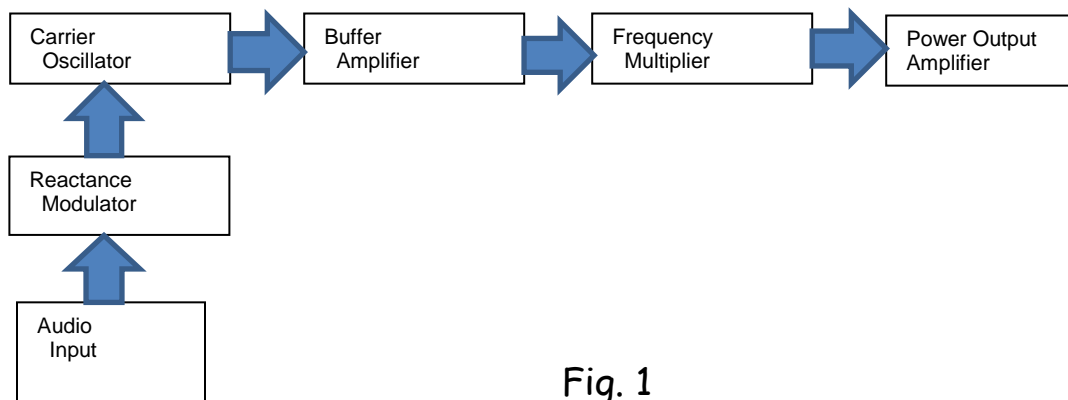


Fig. 1

Notice in Fig. 1 we are imposing our audio signal onto the carrier oscillator at a low power stage. The buffer amplifier is normally used to isolate the first stage and provide impedance matching if needed. The frequency multiplier stage is used to translate the operating frequency to a higher band. The power output amplifier is connected to an appropriate antenna.

If we were dealing with an amplitude modulated signal we would need a linear amplifier to amplify the signal without distortion. We do not need a linear amplifier to increase the power of our FM signal because the amplitude of the signal is constant. We should note that the carrier of an FM signal is at 100% power always so it is important to provide appropriate heat-sinking for the power output amplifier.

Since the carrier of an FM signal is constant i.e. the amplitude is constant, then the signal is not corrupted by noise that would affect an amplitude modulated signal. Since any amplitude changes in the input signal of an FM receiver are spurious, we could impose an amplitude limiter in the receiver of such a signal that would reduce amplitude noise which is a major source of noise. A limiter also reduces major changes in signal strength resulting from mobile operation.

There is also a behavior of an FM signal in a receiver called the **FM capture effect**. In this phenomenon, if two FM signals are received at or near the same frequency, only the stronger of the two will be demodulated. The capture effect is defined as the complete suppression of the weaker signal at the receiver's limiter where the weaker signal is not amplified but attenuated. When both signals are nearly equal in strength or are fading independently, the receiver may rapidly switch from one to another and exhibit flutter. You may have observed this effect when two people have attempted to check in to one of our 2 meter nets at the same time. In that case two signals are on the repeater receiver simultaneously and you may copy the stronger one; however, if both signals are almost the same strength you only get 'flutter' and neither station is copied.

Remember that the deviation of our 2 meter signals is ± 5 kHz. It is possible to speak so loudly into the microphone that the transmitter attempts to deviate more than that. When this occurs you transmit distorted audio. In the same way, if you speak too softly or are too far from the microphone your audio will modulate the signal much less than ± 5 kHz and you may be more difficult to understand. My advice is to speak in a normal voice with the microphone a few inches from your mouth. If you have any doubts ask another station for a report on your audio.

ARRL Scholarship Program

by

Rusty Sanders - KD5GEN

Do you have a family member, close relative or family friend that has plans to attend a school of higher learning this next year?

If so, would they need financial assistance to make that dream come true? This last year, ARRL awarded 120 scholarships that totaled \$561,000!!! The article in the September 2021 *QST* gave information on the program and there were not that many young folks from the "5" region.

ARRL has a scholarship program of more than 100 scholarships ranging from \$500 to \$25,000 that will or may be awarded in 2022. Some of the scholarships are limited such as the person must be from a particular area, but not all the awards have limitations.

The applicants must be active, FCC licensed ham radio operators.

So, if you know of someone who could benefit from one of these scholarships, you may need to nudge them into obtaining a license and becoming active in their local club. I am sure that the more active they are, will go a long way towards receiving a scholarship.

To learn more about the scholarship program, go to the ARRL website and perform a search for scholarships. The page will give you the basic information with links to the various scholarships and links to the application documents.

ARRL has set November 1, 2021, as the date the scholarship application program will open.

The money is there and with a limited amount of documentation, some ham operator with aspirations for higher learning could be the beneficiary of some of that money.

KD5GEN - Rusty