November 2019 Volume 11-2019

Nacogdoches Amateur Radio Club

2019 CLUB OFFICERS

Pres: Jack York – KG5POU

Vice Pres: Bill Rascher – KT5TE

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 2nd. **President Jack KG5POU** opened the meeting at 7:00 p.m. in the Lunch Room of Christ Episcopal School. Sixteen members were present. Each person present introduced them self. Minutes of the previous meeting were approved as published. The Treasurer's report was read.

Contests:
The ARRL September VHF contest was held the weekend of Sept. 14-15. A group of five club members including **AE5P, N6RH, KT5TE, WB5IDY** and **KI5FIQ** roved in the event.

The Texas QSO Party is now sponsored by the TXDXS who has changed the date from Sept. 28-29 to Sept. 14-15. Because of the conflict with the ARRL Sept. VHF Contest, there was no activity this year in TQP by members of NARC.

Bob K5ME entered the California QSO Party, using CW of course.

Nominating Committee: President **Jack** appointed a nominating committee consisting of **Army AE5P**, **Andy KE5EXX** and **Bill KT5TE** to report back to the club at the November meeting with a recommended slate of candidates for 2020 club

officers. Election of officers will be held at that meeting. Nominations from the floor are always welcome.

Robert KD5FEE discussed an earthquake in Snyder, TX. Snyder is 80 miles SE of Lubbock.

Andy KE5EXX reports that the club Winlink gateway W5NAC-10 is back on the air. Thank you **Andy**.

Army AE5P discussed the West Gulf Division election for Director, with a strong recommendation for our current Director, **John Robert Stratton N5AUS**.

The monthly book raffle was won by **Jonathan W5WJC**. The book for October was **"Dits and Dahs, the A(.-) B(-…) and C(-.-.)'s of Morse Code Operating" by Ed Tobias KR3E**.

Meeting closed at 7:59 p.m.

Program:

Rusty KD5GEN presented a fine program on Fire Safety, which as retired Fire Chief he is uniquely qualified to speak on.

FROM THE PRESIDENT

VOICES FROM THE T-LAYER

BY PAUL A SCIPIONE

TUNING IN A MYSTERY.

At 0305 UTC Mac exchanged honest 579s with a G3 station outside Liverpool and then in quick succession worked an SP1 from Poland and a semi-exotic UG1 from Armenia. "Hot Damn!" Mac exclaimed. "Tonight is gonna be great for DX" Now how about finding an E3 or ST? A few minutes later Mac was copying a mini pileup of fast fists fighting for S0KCH at 14.027.5. This would be a brand new one for him on CW. Mac listened carefully to understand both the pace of calls and the split frequencies until he could tell where the DX operator was listening. He also optimized his Yagi, using a chart, he had made up from his QTH. He bagged the S-zero station on only his third try and carefully recorded the contact on his laptop. He then started tuning further up the CW section at 20 meters until he switched over to the lower SSB portion of the band. There seemed to be zero SSB activity. Mac fiddled with various voice filters until he heard something - just above 14.175, a weak but copyable voice, high pitched as if there were some kind of emergency.

" Cyrenaica - do you copy us? This is Desert Thunder 221. We are lost and getting low on fuel. We need an immediate fix on Benghazi."

Total silence. Then the same worried voice again. "Cyrenaica, this is Desert Thunder 221. Please help

us! We are flying at 7 thousand, with zero visibility and can't get any beacon from Benina. Can you give us a bearing back to base?"

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73 de Jack York

KG5POU

gtjakco@yahoo,com

FROM THE VP CHAIR

Winter pastures are in and the deer stand is ready, but I have yet to test the KX2 in the stand with a new 40m extension. There is also a new counterpoise wire to go with the new 40m extender. Hopefully the additional length of counterpoise wire and 40m extender will work as advertised. With the KX2 using FT8 on 20m with only 5W I've made several more contacts recently while sitting at our porch table. It looks like it will have to wait until the first week of November to test this setup and also a random length wire antenna. I've thought about using a magmount to stick the whip antenna on top of the stand's steel roof. Now that is a thought… Usually I just put the antenna out on the fence post a few feet away to the front and slightly to the side. It would be bad if I shot the antenna while looking through the scope at a deer. :-) You really don't see antennas and branches through the scope. Most often the view through the scope is slightly dimmed or blurred. This year I have not put up the game camera, so who knows what is out there. I imagine I'll probably have to put a lot of time in the stand just being picky with who goes in the freezer. By mid November most deer have become vampires with all the human activity in the woods. It doesn't help that several neighbors use their land as a firing range a couple weekends a month. They usually show up Friday night and shoot for several hours. Then on Saturday they shoot periodically throughout the day or run around on their 4-wheelers. The last time they fire is Sunday before noon. At least the rest of the week is quiet. By Sunday at sunset the does come out with the yearlings and graze. The bucks are a different story!

Until next month,

73, Bill KT5TE

bill@watershipfarm.com

NOTES FROM OUR EC

Let's start this missive with a WOW! Tornado between Carthage and Chapman (yes there is a spot in the road on US 79 called Chapman). Downed trees and the usual mess. Out of that same system came tornadoes in Dallas, Rockwall, Rowlett, Wills Point, Ferris, Midlothian and Garland. Insurance agencies are estimating $5.1B (yes billion, with a B) damages in Dallas alone.

I was traveling that Sunday and the cloud build up over Henderson was beautiful, but the destruction not so much.

There is no real single season for tornadoes, they can occur anytime the conditions are right.

The upcoming calendar, DST ends Sunday Morning 3 November, Hurricane Season 2019 ends 30 November, and a Simulated Emergency Test (SET) is scheduled for 9 November.

Simulated Emergency Test (SET):
An unusually cold and powerful Artic Air Mass has descended deep into South Texas. This storm has produced blizzard conditions in Oklahoma, North and West Texas, ice accumulation in Central Texas and heavy rains into the Rio Grande Valley. The combined effects of the storm system have resulted in widespread power outages throughout the region. Local shelters are open throughout the region.

The full ICS 201 is published later in this newsletter. It may seem like some foreign language, but please look it over. I will try to open an exercise net at 9 am 9 November on the ARES repeater. I'll be asking each station that checks in a few questions. One question I'll be asking during the net, who has 60 capability, not just on your radio, but also antennas.

This is an exercise. Some folks may be listening on their scanners. Remember to conclude each transmission with "This is an exercise" and then sign. If you have questions, please email me at kc5mib@arrl.net. I will do my best to get answers.

Don't forget our regular Monday and Thursday nets.

73 de John Chapman KC5MIB
jlchapman2@juno.com

VE TESTING

Our next VE testing is scheduled for **Wednesday November 20 at 7:00 p.m.** in the Lunch Room of Christ Episcopal Church School.

Applicants should bring a picture ID, the original and a copy of their current Amateur license, the original of any CSCE's and $15 to cover the cost of the exam(s). Correct change is always very much appreciated.

More information is available on the club website at https://w5nac.com/about/testing/

73 de AE5P.

email: ae5p@arrl.net

NEW HAMS

At our VE testing session October, we had no applicants. Our group of VE's had an enjoyable social evening.

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 be **Wednesday November 6th at 7:00 p.m.** in the Lunch Room of Christ Episcopal Church School. A program is planned.

BOOK RAFFLE

Each month, we give away a book on a topic of interest to Amateur Radio operators. Everyone present at the meeting will receive one ticket. Additional tickets can be purchased at $1 per ticket, or 6 tickets for $5. A ticket will be drawn at the end of the meeting for the book of the month.

The book for November will be **"HF Antenna Handbook" by William Orr W6SAI**. The book in print and the book on DVD will be given away. You must be present at the meeting to win.

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.

ARRL SWEEPSTAKES CW
Nov 2-4, 2019
http://www.arrl.org/sweepstakes

ARRL FREQUENCY MEASURING TEST
Nov 7, 2019
http://fmt.arrl.org/

ARRL SWEEPSTAKES SSB
Nov 16-18, 2019
http://www.arrl.org/sweepstakes

CQWW DX CW
Nov 22-24, 2019
http://www.cqww.com/rules.htm

ARRL 160 METER CONTEST
Dec 6-8, 2019
http://www.arrl.org/160-meter

FT8 ROUNDUP
Dec 7-8, 2019
http://www.rttycontesting.com/ft8-roundup/rules/

ARRL 10 METER CONTEST
Dec 13-15, 2019
http://www.arrl.org/10-meter

ARRL ROOKIE ROUNDUP CW
Dec 22, 2019
http://www.arrl.org/rookie-roundup

ARRL RTTY ROUNDUP
Jan 4-5, 2020
http://www.arrl.org/rtty-roundup

NAQP CW
Jan 11-12, 2020
http://www.ncjweb.com/NAQP-Rules.pdf

ARRL JANUARY VHF
Jan 18-19, 2020
http://www.arrl.org/january-vhf

NAQP SSB
Jan 18-19, 2020
http://www.arrl.org/january-vhf

Mixing Signals

by

Thomas Atchison W5TV

When we begin to talk about receivers we must talk about several particular processes. One of these processes is **heterodyning**. This is a technique that was invented by Reginald Fessenden that involves combining or mixing two frequencies to create new frequencies. The two frequencies are combined in a nonlinear device called a **mixer**. In one common application, two signals at frequencies f_1 and f_2 are mixed, creating two new signals, one at the sum frequency, $f_1 + f_2$, and another at the difference frequency, $f_1 - f_2$. These are called heterodynes.

The mathematics used to describe this process is based on the trigonometric identity

$$\sin(2\pi f_1 t)\sin(2\pi f_2 t) = \frac{1}{2}\cos\left[2\pi(f_1 - f_2)t\right] - \frac{1}{2}\cos\left[2\pi(f_1 + f_2)t\right]$$

The product on the left hand side represents the multiplication or mixing of two sine waves. The right hand side shows that the resulting signal is the difference of two sinusoidal terms, one at the difference of the two original frequencies and the other at the sum of the two original frequencies. These are two separate signals.

To accomplish this we need a nonlinear device that combines two signals by multiplying them. Such a device is called a *mixer*. Let's assume that we have such a nonlinear device constructed from electronic components and examine how it is used. We can talk about mixer circuits later if we need to.

For example, suppose we have two frequencies, $f_1 = 1.5\,MHz$ and $f_2 = 1\,MHz$, that are injected into the mixer. The output will be two new signals

$$f_1 - f_2 = 0.5\,MHz \text{ and } f_1 + f_2 = 2.5\,MHz$$

The RF mixer circuit symbol is shown in Fig. 1.

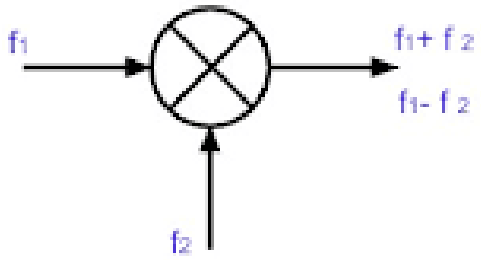

Fig. 1

RF mixers can be used for frequency translation in receivers and transmitters to move the frequency of a signal from one band to another. If we choose the sum frequency on the output we have an up-converter and if we use the difference frequency we have a down-converter.

There are several applications for mixers. For example, suppose we want to receive a signal at 144 MHz and convert it to 28 MHz. We could accomplish this using a mixer with two inputs, one at 144 MHz and the other at 116 MHz. One of the outputs would be the difference frequency of 28 MHz. The 116 MHz signal is generated from a local oscillator at the fixed frequency of 116 MHz and we would tune the receiver at 28 MHz to receive the various frequencies from 144 MHz. The result is a 2 meter converter.

REPEATERS – PART FOUR

by

Army Curtis AE5P

We have discussed so far in this series several basic principles of a repeater. One thing we have not touched on yet is the controller.

The repeater controller is the device that will allow the repeater to identify itself and possibly a lot more as well. FCC rules require repeaters to identify themselves at certain intervals. A basic radio does not provide that capability without some form of controller. But a controller can also provide many other features beyond just allowing the repeater to identify.

Our local repeaters on 146.840 and 444.050 are Yaesu DR-1X units, synthesized, solid state, analog/digital, dual band repeaters with a simple built-in controller. These are very nice radios that were offered to ham radio clubs at a very attractive price a few years back. One drawback to them is the simple controller which only provides basic identification and timing.

Our local repeater on 147.320 uses a Motorola MSR-2000 radio, a venerable design that has been around a long time now. It is not synthesized, but requires separate crystals to set the transmit and receive frequencies. It can operate over the entire 2 meter Amateur band, but is not dual band like the Yaesu DR-1X radios. It is a very conservative design that can run 24/7 for many, many years. On it, we use an external controller, in this case a CAT-1000 from Computer Automation Technology. This is an extremely versatile controller, with way more capabilities than we currently use. Let's explore some of what it does for us.

First, it provides identification of the repeater, and can do so in either Morse code or in voice. The controller includes a digital voice synthesizer with an extensive vocabulary of words, numbers, phrases, and even sound effects. Of course, such synthesizers always seem to be missing some words we would like to use like "Nacogdoches", but the CAT-1000 also has a built-in voice recorder. With these capabilities, we can make the repeater say pretty much whatever we want it to.

Second, the controller provides a very versatile set of timers that can used in many ways. FCC regulations require the repeater to identify itself at least every 10 minutes when it is being used and anytime it is accessed. If the repeater is currently being used

when it is time to identify, the controller will make the identification in Morse code, otherwise it will make the id in voice.

The controller includes a Real-Time-Clock, which stores the time of day, the day of the week, and the date. This information can then be used by other facilities in the controller including a versatile Scheduler, which can control various functions based on time or date.

The controller also has extensive Autopatch capabilities, which used to be very popular for interconnecting a repeater with a telephone line to allow phone calls to be made through a repeater. With the advent of cell phones, this capability is seldom utilized today.

The controller has the ability to interconnect with other radios located at the repeater site. The 147.320 repeater has two such radios located on site, one for 2M and one for 70cM. Both radios can be programmed remotely via the repeater. Such radios are called Remote Base radios and can be used to allow our repeater to be connected to other repeaters or users in the area.

The controller also has the ability to interconnect with a local weather station at the repeater site and make the weather station data available to repeater users.

Lots and lots of capabilities and all of them totally programmable.

We will continue this next month. Stay tuned.

WEST GULF DIVISION SIMULATED EMERGENCY TEST

The Fall 2019 West Gulf Division SET is on November 9, 2019, from 8:00 AM to 4:00 PM.

Scenario: An unusually cold and powerful Arctic Air Mass has descended deep into South Texas. This storm has produced blizzard conditions in Oklahoma, North, and West Texas, ice accumulation in Central Texas, and heavy rains into the Rio Grande Valley. The combined effects of the storm system have resulted in widespread power outages throughout the Region. Local Shelters are open throughout the region.

Objectives: The primary objective of the SET will be to assess the ability of the Amateur Radio Service (ARS) throughout the Division to respond to a major event and exchange supporting information throughout the Division. Information about the status of the local infrastructure and local weather will be gathered and consolidated from counties and forwarded to the Districts, Sections and Division levels. Region 6 Army MARS will assist in gathering information as well.

Secondary Objectives are at the discretion of ECs and DECs. The secondary objectives can include assessing the ability to stage deployable ARO resources and assessing the ability to gather, consolidate, and report Critical Infrastructure Assessment.

Additional information will be promulgated soon.

73,

Greg Evans, K5GTX
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ARRL NTX ASM
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Note: The ICS-201 Incident Briefing document is available on the club website at https://w5nac.com/simulated-emergency-test-2019/ .