

# 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.



## JANUARY MINUTES

The January meeting of the Nacogdoches Amateur Radio Club (NARC) was held as scheduled on January 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 read.

The ARRL January VHF contest will see a group of club members participating

as rovers running the usual route of Logansport, LA on Saturday followed by Jasper on Sunday. Other hams are most welcome to join the group.

The raffle this month saw N6RH win a 2021 ARRL Calendar while KD5GEN was the recipient of the ARRL book "Oscilloscopes for Radio Amateurs".

Club dues are now due and payable to the club treasurer. Dues are just \$20 for the year, and cover all licensed Amateur Radio operators within a family. Dues can be paid to the treasurer at our February meeting or can be mailed to his callbook/QRZ address. New operators who obtained their first license through the NARC VE test sessions in 2020 are exempted from paying

dues for the following year.

## FROM THE PRESIDENT

This month is our Space Shuttle Columbia special event (February 6-7). The hope is that we'll have plenty of participation for our club's event. So if you can help please give Army, AE5P, the times, frequency and modes you would like to tackle.

I don't know about you, but I'm almost finished clearing from the last limb breaking snow storm. Our goats have really enjoyed the fresh green food. For a couple of years I've been wanting to clear the limbs from the north side of the pines along the road that are close to the fence. I wasn't able to drive along the fence with the small tractor or Kubota RTV, but the wet snow did a lot of the work for us. Now

it is easy to check the fence and electric wire condition. We use a very hot electric wire to keep any plants from shorting out the line by burning them clear. If you bump the wire it will restart your heart. Especially in the rain since you don't actually have to touch the wire to get shocked. The hot wire is not for goats or cattle, but for my draft horses. My mare knows how to put her foot on the metal "T" post and go vertical until the post is flat on the ground. When you weigh a ton you can go where you want. I've also had another mare who would use the fence to scratch her massive butt and stretch out the wire until there wasn't a fence any more. To give you an idea of their power watch these horses pull 18,000lbs.

<https://www.youtube.com/watch?v=VBy9Bz6NrXE>

What chance does a fence have with that much power?

Tom's (W5TV) tower was never taken down in November (or December, or January) so maybe February will be a good month to disassemble his tower. So, again it is time to watch the weather closely for a good date. I'll need some help. If I use the horses and I'm on the tower... who will drive the horses? So if you're interested in helping to take down Tom's tower, let Army or me know.

Hope to see you at our February 3<sup>rd</sup> meeting.

73, Bill KT5TE

[bill@watershipfarm.com](mailto:bill@watershipfarm.com)

## FROM THE VP CHAIR

### How to use Winlink without a TNC

Part of the arsenal of a prepared ham is the ability to operate Winlink for emergency communications and a little fun to boot. I use a Kantronics KPC3+ Terminal Node Controller to operate packet communications for Winlink on both HF and VHF. While this is a fine device, it is a bit cumbersome to set up. If you have a radio that is multiband and has VHF onboard, you can connect to Winlink through alternate means.

Many of us are now using USB sound cards to connect to WSJT-X for FT-8/FT-4. I use a Signalink USB but several other similar devices are on the market for about \$125. Your USB sound device, coupled with a software soundcard, will operate Winlink like a champ.

Winlink Express has discontinued support for Winmor that I used for HF Winlink. A new virtual soundcard TNC called "Vara", written by EA5HVK, is available for download at <https://rosmodem.wordpress.com>. There is also a Vara FM and a VARA HF version but I have yet to test the FM version. You can use a freeware version, which will run in Winlink Express or pay \$69 for a license and get significantly faster speeds. Of course, faster is ALWAYS better. I could gain several seconds of free time a week during my "Winlink Wednesday" test net with the fast version. ☺ I have successfully passed Winlink traffic on 80m and 40m with this setup.

I am also experimenting with the freeware "Soundmodem100" by UZ7HO, for FM Winlink on my small laptop that travels with my Yaesu FT-857D. I am using a Signalink wired for this radio. Connection to

W5NAC-10 was instantaneous and uploads and down loads were comfortably fast.

Download the Soundmodem100 software <http://uz7.ho.ua.packetradio.io.htm>. Set your computer playback for sound to onboard speakers and mic. Start Soundmodem100 and go to Settings then Devices. Set Output and Input devices to the USB Audio Codec option (your Signaling device), uncheck TX Rotation, check Single Channel Output and Stop Waterfall on Minimize. The AGWPE port should be 8000 and the KISS server port 8100. Uncheck Dual PTT and Swap Com Pins. Next go to Modems and check Default settings, KISS Optimization, non-AX25 Filter. Under Modem type channel A, Set Mode to AFSK AX.25 1200bd and a TX delay of 500 msec.

Back in the main window, at the top, use A: AFSK AX25 1200 bd, set 1700 in the next window. Leave the Soundmodem running

(always start it before Winlink Express). Start Winlink Express. Select Packet Winlink and start a session. Click Settings and set the TNC connection to KISS using a TCP serial port with a host address of 127.0.0.1 port 8100. Use the 1200 baud option and Enable IPoll. A more complete explanation of settings can be found at:

[https://www.winlink.org/sites/default/files/RMSE\\_FORMS/quick\\_setup\\_guide\\_for\\_winlink\\_with\\_signalink\\_on\\_windows\\_2018-08.pdf](https://www.winlink.org/sites/default/files/RMSE_FORMS/quick_setup_guide_for_winlink_with_signalink_on_windows_2018-08.pdf) (or Google "winlink signalink")

Once running, you should be able to dial in the frequency of the relay station and initialize a connection. If you do not use Winlink, consider adding it to your emergency skill set for radio preparedness.

73

Steve, WB5IDY

[bartlett.steve58@gmail.com](mailto:bartlett.steve58@gmail.com)

## NOTES FROM OUR EC

Welcome to February. Well almost, I wrote this 27 Jan. Just a few more days left in January.

It seems that Jan 2020 was very similar to other Januarys, wet, dry, warm, cold, rain, snow, windy; well four seasons in just a few days. We had a 2 inch accumulation at the mill, others around the area mentioned greater accumulations on the Monday night net. I had a couple of branches come down from an old oak that could almost be a tree based on size and weight. WOW. I expect a few of the readers had similar experiences. Thankfully, no tornadic activity and no fatalities like we had last year.

How many are having to do some unexpected antenna maintenance due to snowmageddon? I read something years ago, if you aren't making repairs it wasn't high enough or big enough. Rusty, did your

double G5RV survive? I let you ponder that.

The last couple of weeks have had reminders of the various tragedies that struck NASA. Seems January and February have been particularly painful. The Columbia Special Event is coming up. Please take some time to participate. I know COVID has muddled some of the operating plans from previous years. It's not a "remembrance" of that disaster but time to remember those that came together that weekend in February.

That dreaded problem Writer's block has hit. Maybe writer's cramp as I still put pencil to paper. So let's close this up. Don't forget our ARES and SKYWARN nets on Mondays and Thursdays. Even if you don't check in listen in and lurk. Thanks to all who keep our nets working.

73 de John Chapman  
KC5MIB  
[kc5mib@arrl.net](mailto:kc5mib@arrl.net)

## VE TESTING

The January VE session saw three individuals present themselves for exams. Nic Farmer KI5KEZ from Converse, LA, who had passed his Technician test with NARC in June, upgraded to General last month and came back again this month to upgrade to Amateur Extra. Nic brought his father Jodie with him this time, and Jodie not only passed his Technician exam, he also passed his General. Hilton George from Palestine also tested and passed his Tech.

Congratulations to all three of these hams.

I am excited that we had three people take exams and we wound up with a Tech, a General, and an Extra! Not often that happens.

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@arri.net](mailto:ae5p@arri.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

Our next meeting will be Wednesday February 3<sup>rd</sup> 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.

A program is planned. Hope to see you there.

## 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.

**SHUTTLE COLUMBIA  
SPECIAL EVENT  
STATION K5C**  
Feb 6-7, 2021

### **CQ WPX RTTY**

Feb 13-14, 2021

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

### **ARRL DX-CW**

Feb 20-21, 2021

<http://www.arrl.org/arrl-dx>

### **NAQP RTTY**

February 27-28, 2021

<http://www.ncjweb.com/NAQP-Rules.pdf>

### **ARRL DX-SSB**

Mar 6-7, 2021

<http://www.arrl.org/arrl-dx>

### **CQ WPX-SSB**

Mar 27-28, 2021

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

### **ARRL ROOKIE**

### **ROUNDUP SSB**

April 18, 2021

<http://www.arrl.org/rookie-roundup>

### **SAN JACINTO DAY SPECIAL EVENT**

### **STATION K5T**

April 24-25, 2021

### **CQ WPX CW**

May 29-30, 2021

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

### **ARRL JUNE VHF**

June 12-13, 2021

<http://www.arrl.org/june-vhf>

### **ARRL FIELD DAY**

June 26-27, 2021

<http://www.arrl.org/field-day>

### **CQ VHF CONTEST**

July 17-18, 2021

<http://www.cqww-vhf.com/>

### **NAQP RTTY**

July 17-18, 2021

<http://www.ncjweb.com/NAQP-Rules.pdf>

### **NAQP CW**

Aug 7-8, 2021

<http://www.ncjweb.com/NAQP-Rules.pdf>

### **NAQP SSB**

Aug 21-22, 2021

<http://www.ncjweb.com/NAQP-Rules.pdf>

## Dipole Height and Antenna Gain

by

Thomas Atchison W5TV

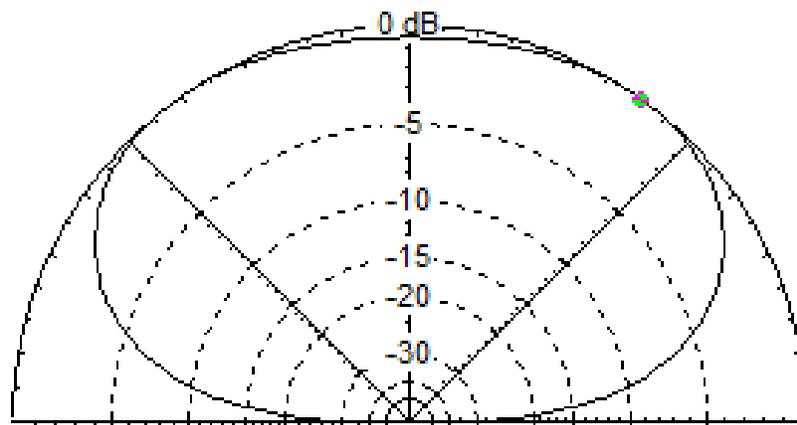
Not long ago I was talking with Army Curtis about topics that would be interesting to write about and he mentioned looking at dipole antennas using EZNEC to determine how the height of a dipole would affect gain. This seemed like a good topic so here we go.

Let's consider a wire dipole constructed using #12 wire. We will make the dipole 33.8 feet long and feed it at the center with 50 ohm coax. I plan to use EZNEC 6.0 to simulate this antenna over a real ground that has medium conductivity. If you would like to do some simulation with EZNEC 6.0 you can download a free demo version at [www.eznec.com/demoinfo.htm](http://www.eznec.com/demoinfo.htm).

Before we begin we need to talk about antenna gain. The apparent increase in signal of an antenna is not an amplification of signal; it is the redistribution of available RF signal into a preferred direction. In short, antennas only divert, direct, or concentrate radio energy in some direction, **they do not create it**. The increase in signal using an antenna is called gain and it is measured in dBi. The base for dBi measurement is an isotropic radiator i.e. an idealistic model that has the same value when measured in different directions at radio frequencies. Since an antenna does not create RF, the stronger signal is achieved by redirecting RF energy in a particular direction. An antenna that radiates energy equally in all directions is said to have no gain, therefore the gain is 0 dBi.

We will begin with the dipole mounted horizontally at 20 feet in the air. The elevation plot is shown in Fig. 1.

Total Field



Elevation Plot		Cursor Elev	54.0 deg.
Azimuth Angle	0.0 deg.	Gain	6.19 dBi
Outer Ring	6.19 dBi		0.0 dBmax
Slice Max Gain	6.19 dBi @ Elev Angle = 54.0 deg.		
Beamwidth	133.6 deg.; -3dB @ 23.2, 156.8 deg.		
Sidelobe Gain	6.19 dBi @ Elev Angle = 126.0 deg.		
Front/Sidelobe	0.0 dB		

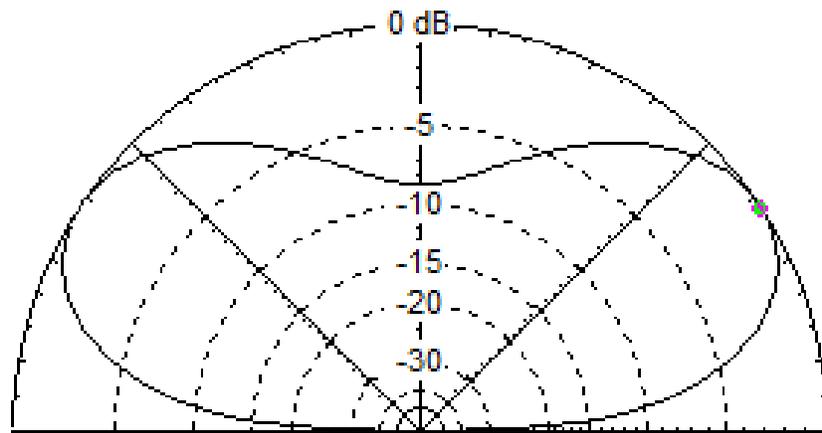
Fig. 1

Notice the gain is 6.19 dBi at 54.0 degrees elevation.

We will now raise the height of the antenna to 30 feet and show the elevation plot in Fig. 2.

Total Field

EZNEC



14 MHz

Elevation Plot		Cursor Elev	33.0 deg.
Azimuth Angle	0.0 deg.	Gain	6.84 dBi
Outer Ring	6.84 dBi		0.0 dBmax
Slice Max Gain	6.84 dBi @ Elev Angle = 33.0 deg.		
Beamwidth	41.5 deg.; -3dB @ 15.8, 57.3 deg.		
Sidelobe Gain	6.84 dBi @ Elev Angle = 146.0 deg.		
Front/Sidelobe	0.0 dB		

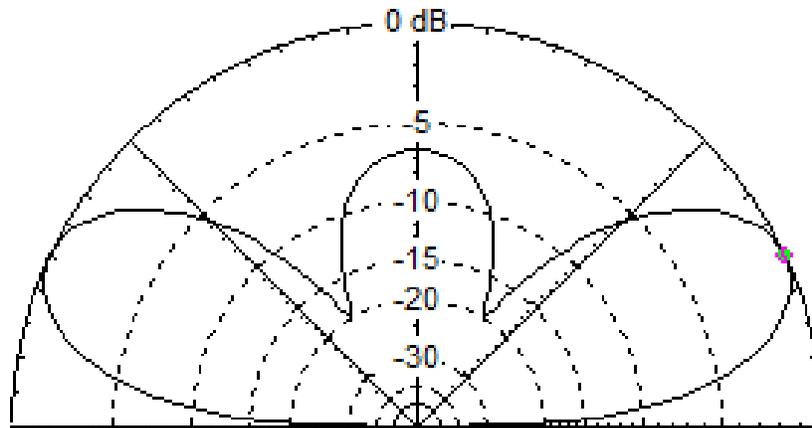
Fig. 2

Notice that the maximum gain is 6.84 dBi at 33.0 degrees elevation. This angle of maximum radiation is lower so it's more conducive to DX operation.

Next we will raise the height to 40 feet and show the elevation radiation pattern in Fig. 3.

Total Field

EZNEC



14 MHz

Elevation Plot		Cursor Elev	25.0 deg.
Azimuth Angle	0.0 deg.	Gain	8.62 dBi
Outer Ring	8.62 dBi		0.0 dBmax
Slice Max Gain	8.62 dBi @ Elev Angle = 25.0 deg.		
Beamwidth	27.6 deg.; -3dB @ 12.0, 39.6 deg.		
Sidelobe Gain	8.62 dBi @ Elev Angle = 155.0 deg.		
Front/Sidelobe	0.0 dB		

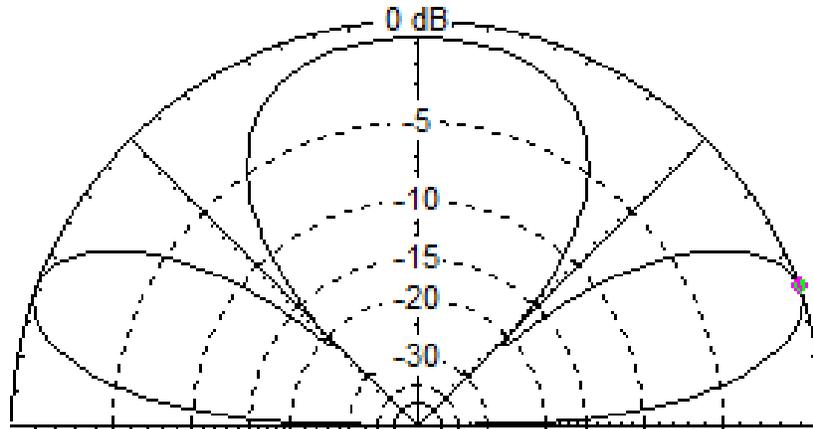
Fig. 3

Here the maximum gain is 8.62 dBi at an angle of 25.0 degrees. This is even better for DX operation and it has a small vertical lobe.

Finally, we will consider raising the height to 50 feet and show the corresponding elevation radiation pattern in Fig. 4.

Total Field

EZNEC



14 MHz

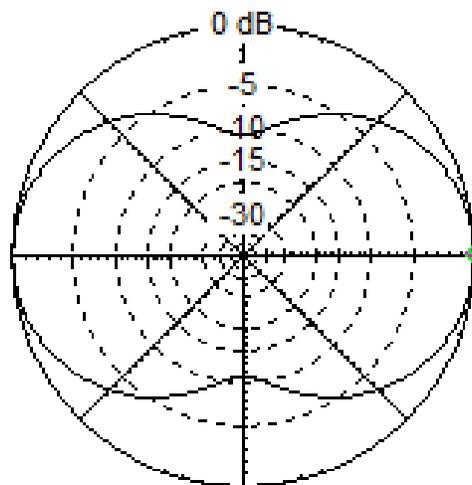
Elevation Plot		Cursor Elev	20.0 deg.
Azimuth Angle	0.0 deg.	Gain	8.03 dBi
Outer Ring	8.03 dBi		0.0 dBmax
Slice Max Gain	8.03 dBi @ Elev Angle = 20.0 deg.		
Beamwidth	21.2 deg.; -3dB @ 9.7, 30.9 deg.		
Sidelobe Gain	8.03 dBi @ Elev Angle = 160.0 deg.		
Front/Sidelobe	0.0 dB		

Fig. 4

Here the maximum gain is 8.03 dBi at an angle of 20.0 degrees with a vertical lobe that is almost as strong. Note that the gain is slightly less than the 40 feet height and the angle of elevation is lower. We are getting into trade-offs with the radiation pattern. The lower angle of maximum radiation is better for DX but the maximum gain is less.

Since the maximum gain of the 20 meter dipole was at 40 feet, I want to show the azimuth radiation pattern for the antenna at a height of 40 feet in Fig. 5.

Total Field



EZNEC

14 MHz

Azimuth Plot		Cursor Az	0.0 deg.
Elevation Angle	25.0 deg.	Gain	8.62 dBi
Outer Ring	8.62 dBi		0.0 dBmax
Slice Max Gain	8.62 dBi @ Az Angle = 0.0 deg.		
Front/Side	10.97 dB		
Beamwidth	85.2 deg.; -3dB @ 317.4, 42.6 deg.		
Sidelobe Gain	8.62 dBi @ Az Angle = 180.0 deg.		
Front/Sidelobe	0.0 dB		

Fig. 5

The maximum lobes are perpendicular to the plane of the antenna and this is a slice that is at 25.0 degrees which was the maximum gain of the antenna at this height.

Now we will display a 3-dimensional view of the radiation pattern of our 20 meter dipole at a height of 40 feet in Fig. 6.

EZNEC

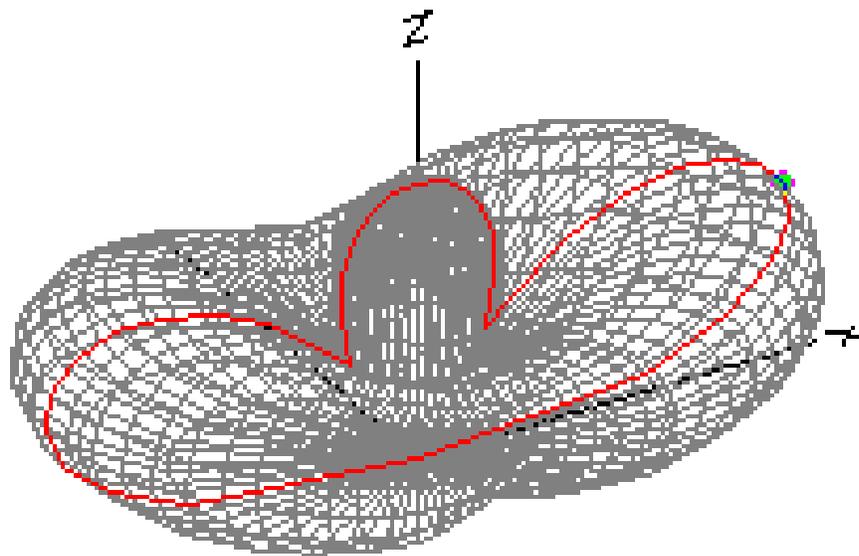


Fig. 6

The red outline is the 2-dimensional elevation that is perpendicular to the plane of the antenna as shown in Fig. 3.

In summary, we have determined what appears to be near optimal height for our 20 meter dipole as far as gain is concerned.

I must point out that Scott Davis, N3FJP, has written a very nice article with more general descriptions of this topic. His article is entitled "Dipoles and Vs" and it is available on the N3FJP Web page at [N3FJP's Amateur Radio Software](#).