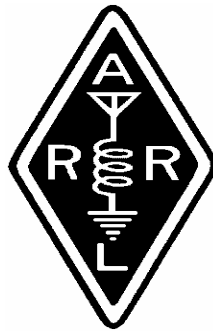


Nacogdoches Amateur Radio Club

Pres: Lon Glaze - AE5BN

VP: Tom Atchison - W5TV

Sec/Treas: Army Curtis - AE5P



JUNE MINUTES

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.

The June meeting of the Nacogdoches Amateur Radio Club (NARC) was held as scheduled on June 3rd. Twenty-six members and four guests were present. **President Lon, AE5BN**, opened the meeting at 7:00 p.m. in the Parish Hall of Christ Episcopal Church. Each person present introduced himself. Minutes of the previous meeting were approved as published. The Treasurer's report was read.

Lots of activities coming up. The weekend of June 12-13 will see Ham-Com in Plano, and the ARRL VHF

Contest, followed the next weekend by Field Day.

Field Day assignments were reviewed:

KD5SHM - arrange for City/County EMCOMM trailer.

K5JLW - Radio & Laptop

N5AIU - Radio & Laptop

AE5P - Antennas and power supplies

KE5USH - Drinks, ice and photos

W5TV - Photos

AE5P - Banner

AC5Z - Field Day message

Marshall, K5QE, announced that he participated in a special 6 meter "dx-pedition" to grid EL58 south of New Orleans on May 28 - 29. Grid EL58 is very rare, being reachable only by boat.

Meeting was adjourned at 7:40 p.m.

Program:

Bob - **K5ME** gave an excellent program on HF propagation.

**HAMMING IT UP**

Wow, another month has gone by and it was a hot one. It has also been a busy month for ham radio related stuff.

We took part in the June VHF contest. John Jordan and I ran as N5AIU/R. We had a real good time.

Nothing super interesting happened this time like getting run off from prisons, etc. We were much better at managing our time this go around thanks to very good help on Marshall's end. We were leaving the Beaumont area within an hour or so of the start of the contest and we got back to the Lufkin area much earlier than we normally

do. This allowed us to be much more rested for Sunday morning.

John and I got off to a little late start due to me not setting my alarm correctly. That didn't hurt us too much though. We kept up a pretty good pace all day Sunday too. We got back to Nacogdoches a lot earlier than we normally do too.

We worked a good bit of 6m contacts and even a couple of longer haul 2m contacts over the weekend. We really enjoy it when the going is good. We ended up with a little over 80,000 points. We tried to manage our contacts between the two rovers to be under a hundred Qs and to maximize our multipliers. This worked out well for us and was probably a good strategy to go with. We will have to wait and see how we did when the results come out.

We also just got finished with Field Day 2009. We operated class 2F from the EmComm trailer while

located at the Nacogdoches Airport. The antennas went up fairly smooth although the ground out there is pretty hard. We did have some problems with the air conditioning and had to resort to using some fans to help stay somewhat cool. We were also able to use the Pilot Passenger Lounge to relax and cool off in. Operating from the airport seemed to go fairly well and although the bands weren't quite cooperating fully we ended up with a fair amount of contacts. We had a good turnout from our city and county elected officials and representatives. Thanks to all who helped out.

See you all at the meeting.

73, this is AE5BN Lon.

email: ae5bn@arrl.net

VP's CORNER

The next meeting of the Nacogdoches Amateur Club is on Wednesday, July 1, at 7:00 p.m. at Christ's Episcopal Church. Mark Lacy, W5TXR, has a program entitled "Effective Sensitivity" that he will provide at the meeting.

We should have a good discussion about our Field Day activities. I know there will be stories to be shared. Also, if you have 'Show and Tell' items, please bring them to the meeting. Folks are always interested in what is new around the club.

73, Tom W5TV

email: w5tv@arrl.net

VE TESTING

Our next VE testing is scheduled for Wednesday, July 15th at 7:00 p.m. in the Parish Hall of Christ Episcopal Church. 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. 73 de AE5P

email: ae5p@arrl.net

CLUB NETS

Remember to join us each week for the 2-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 Net on the 147.32 repeater (PL 141.3). Please join us for one or both. We are always looking for folks who would like to become net control operators. If

you are interested, please contact any of the existing net controls. We will be pleased to help you in any way we can.

NEXT MEETING

The next meeting will be on Wednesday July 1st at 7:00 p.m. in the Parish Hall of Christ Episcopal Church. The church is at the corner of Starr and Mound Streets in Nacogdoches. If you have items for show and tell, please bring them. Hope to see y'all there.

FIELD DAY REPORT

We had a great time at Field Day once again, thanks to the help of many folks. At the risk of forgetting someone, we want to mention

Lon - AE5BN
 Kent - KD5SHM
 Bill - WK5F
 Janet - KD5USH
 Wesley - KD5RQX
 Rusty - KD5GEN
 David - KF5BID
 Robert - KD5FEE
 Jonathan - KE5PQI

Mark - W5TXR
 James - KE5ZNJ
 Christopher - KE5YQP
 Robert - KC4LUY
 John - N5AIU
 B.B. - KE5JER
 Richard - KE5TCU
 K.J. - KK5BE

And a special thanks to our young folks who came out, Christian Faulkner and Ruth Watkins. Ruth is awaiting her new callsign, and hopefully Christian will be taking his test soon. They and Wesley, KE5RQX, gave us 3 people under 18 years old who operated, and hopefully caught the HF bug.

A special thanks also to County Judge Joe English, County Commissioner Reggie Cotton, Emergency Manger Tommy Wheeler, and visitors from the Nacogdoches Fire Dept. and Sheriff's Office who stopped by during the weekend.

It was hot, hot, hot, but our folks stuck with it and overcame several unexpected problems. A couple of guys stayed right through the night and kept the radios busy.

Many thanks to all who helped make this one of the best Field Day's ever.

We made a total of 203 phone Q's, and 55 CW Q's. Winlink was used to send a message to our SM, and to 10 club members as well. And we even made 2 Q's on 6 meters, and 2 more on 2 meters, using the White Rover as our VHF station.

While we did not manage to work all ARRL sections, we made a pretty good dent on them, and most importantly, everyone seemed to have a good time of it. I'm sure there were a lot of good lessons learned, and it definitely improves our skills in communications. We gave the City/County EMCOMM trailer a good workout, and discovered a few short comings with it. We have been asked to provide them a report on our findings, and hopefully it will be used to make further improvements.

An excellent Field Day!

BASIC ANTENNAS

PART 8

by

Thomas Atchison W5TV

Now let's take the half-wave dipole that we discussed in Part 7 and turn it so the wire is vertical. If we make the bottom end of this vertical dipole $\frac{1}{2}$ wavelength or 35.13 feet above the ground the radiation pattern is given in Fig. 1

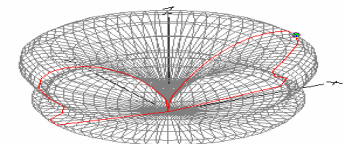


Fig 1

A slice of the radiation pattern in a plane perpendicular to the ground is shown in red. If we view this slice in a plane we get Fig. 2

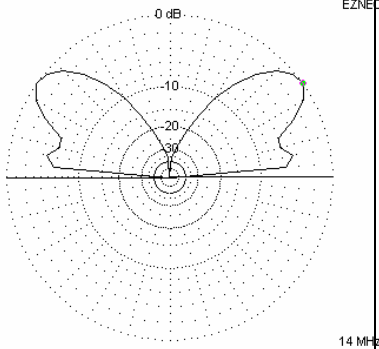


Fig. 2

In this case the main lobe is at an angle of about 35 degrees.

Now suppose we lower the antenna so the bottom end is at ground level. We get Fig. 3

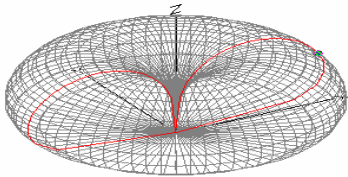


Fig. 3

Again, a slice of this radiation pattern in a plane perpendicular to the ground is shown in red. If we look at that plane separately we have Fig. 4

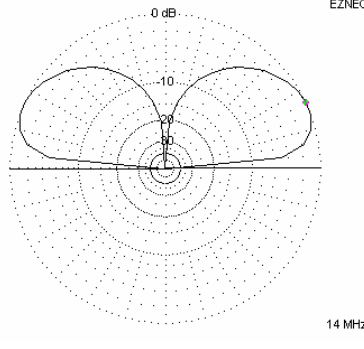


Fig. 4

Here the angle of elevation of the major lobe is about 25 degrees.

Now suppose we take the upper half of the antenna so the wire is 17.57 feet long and the signal is fed into the wire at the base. The radiation pattern is shown in Fig. 5.

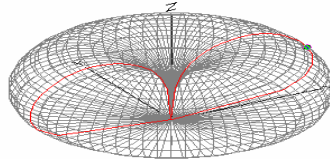


Fig. 5

As before a slice of the radiation pattern in a plane perpendicular to the ground is shown in red. If we look at this plane we have Fig. 6

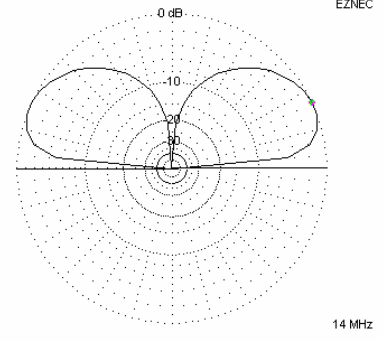


Fig. 6

The major lobe is at an angle of about 25 degrees, which is the same as the previous one. We are only using half as much antenna wire in this case so there is something going on. How can this give a similar pattern?

We see that we actually have a physical quarter-wave vertical wire above the ground level. The missing quarter-wavelength is supplied by a quarter-wave mirror image in a ground of good conductivity. The current along a grounded quarter-wave vertical wire varies almost like a sine wave as it did in a half-wave wire. The maximum current is at the ground connection as shown in Fig. 7 below

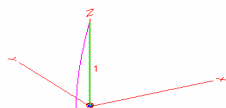


Fig. 7

Here the green line represents the vertical wire and the pink curve represents the current. The r.f. voltage is highest at the top of the wire and minimum at the ground.

Using a grounded vertical antenna provides a low angle of radiation so the antenna is good for distant contacts depending on the band. For 40 meters, a quarter-wavelength antenna is approximately 33 feet long. This is a practical length for use and makes a good DX antenna. It can be fed at the base with 50-ohm coax, but you need a **GOOD GROUND SYSTEM!**

GROUND SYSTEMS

BY

ARMY CURTIS - AE5P

As Dr. Tom pointed out, you need a good ground system with most vertical antennas. But just what is a good ground system? Let's look at some of the issues.

There are actually two different types of ground systems: Electrical grounds and RF grounds. Electrical grounds are normally done for safety; the safety of persons or the safety of property. RF grounds are done for radio systems, including antennas.

At Field Day and other club events, we often use my Butternut Vertical as an HF antenna, and we stretch out a number of insulated wires across the surface of the ground and attach them to the base of the Butternut vertical. This is an example of an RF ground. There probably isn't much electrical contact between the wires and "earth ground", and I certainly would not want to

use it as an electrical "safety ground", but it works very well as an RF ground, giving the vertical antenna what it needs to work efficiently.

An example of an electrical ground is your familiar ground rod. The primary idea of an electrical ground is to make a solid, low resistance contact with the earth. One or more ground rods can be used, or there are other methods commonly used also.

Note that an RF ground is probably not a very good electrical ground. Equally, an electrical ground is probably not a very good RF ground. The two types of grounds serve two different purposes, and have different requirements.

It is often desirable to connect the two types of ground systems together, and this is called "bonding". It is not unusual to have more than one electrical ground in a building, and normally you

want to have them all connected solidly together. Again, this is called "bonding", and simply refers to the connection of different grounds to each other.

In laying out a "Radio Room", it is important that all equipment be solidly connected to a common ground, and that ALL wires entering the room be referenced to that common ground. This can be accomplished with a "ground plane", usually a sheet of copper to which all electrical systems in the room are bonded.

A common question that is asked is whether or not to use ground rods for your antenna. The usual answer is "absolutely", but understand that the ground rod is giving you an electrical ground, not an RF ground. If your antenna is struck by lightning, the ground rod(s) will help to dissipate the lightning's energy and protect any equipment you have connected to it from damage.

Antennas such as yagi's and dipoles normally do not require an RF ground. Vertical antennas almost always will require an RF ground. But ALL equipment requires an electrical ground, for the safety of the equipment and the safety of the operators using the equipment.

The ARRL Antenna Book, among others, has a lot of very good information on RF grounds, and you are invited to refer to it for more information.

There are a number of electrical handbooks that speak to electrical grounding requirements and methods, but you should keep in mind that there are so many different situations that it is very difficult to come up with a single set of recommendations that will cover everyone.

I hope this may have answered a few questions you might have had concerning grounding. Feel free to contact me with any questions you might have regarding this.