



# Pearl River County Amateur Radio Club

Promoting Amateur Radio and Public Safety in South Mississippi

Pearl River County  
Amateur Radio Club is  
dedicated to promoting  
Amateur Radio in south  
Mississippi.

Tim Helgerson  
President  
Larry Wagoner  
Vice-President  
Roger Aubert  
Treasurer  
Jim Searcy  
Acting Secretary

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# Transmitter Class Planned

POPLARVILLE - Following the success of the antenna class held a few months back, another class has been planned - this one on the design and construction of a transmitter. The class will be held January 24th at the Emergency Operations Center, located on Highway 26 just east of Poplarville.

Like the previous class, this one will be taught by local ham Jim Searcy (WA5WRE). During the class, class members will build a transmitter that they can keep and operate from home.

"Unlike the antenna class, this one will involve some cost," Searcy said. "All the materials that you will need will cost you \$35.00. This may seem a little high, but consider the education you will receive and how many transmitters can you build once you have taken the class."

"I would like to give everything free, but since I'm not rich, the only thing that I can give for free is the training," he added.

Anyone wishing to attend the class should contact Searcy at [world@datasync.com](mailto:world@datasync.com) and send the money to the following address:

James W. Searcy  
10 Wesley Drive  
Poplarville, Miss. 39470

**Continued ...**

## A Few More Looks From The Hamfest



Visitors at the Hamfest look through some of the offerings available from vendors and flea-marketers.



Lots of goodies were available at the fest - something for everyone!



These beauties were available at the fest as well. A real "blast from the past"!

## Transmitter Class ...

Continued Searcy, "I guarantee that it will be informative and we will have a lot of fun. If the class is a success, then we will have a class soon to follow on a receiver that you can use in conjunction with your transmitter."

"I haven't come up with a cost on this one, but will let all know before hand."

For more information on the class, please contact Jim at the above address or at 601-795-6583.

## *From The VP's Desk...*

A few thoughts as we reach the end of the year 2008.

This has been an active and eventful year for the Pearl River County Amateur Radio Club. We are a remarkably diverse bunch.

We have held events as different as Field Day and the Red Bluff Expedition, classes for want-to-be technician-level hams and classes for those who want to build antennas.

We went to the Street Fair and the Blueberry Festival to promote our hobby. We held our Hamfest and we assisted with potential disasters like Hurricane Gustav.

As we reach the end of 2008, I hope each of you spends a few minutes to consider our growth during the year passed, and how we can continue that growth in 2009.

May the blessing and possibilities of the New Year come true for you all.

– Larry Wagoner (N5WLW)

# TECH TALK

Tech Talk, is a creation by WA5WRE, that we hope will help develop some interest in the "hands on" end of Amateur Radio. It will consist of daily happenings in the shack, and in all of the Amateur community in Pearl River County. It will relate to construction projects, and helpful hints pertaining to the hobby.



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After a long pause, I'm back. Several projects are behind me, numerous repairs made, and the Hamfest for 2008 has come and gone. I'm sorry that I haven't published anything in this period of time, but from the above, you can see what I have been up to.

I would first like to take a few seconds and mention the upcoming class I plan on teaching. If you missed my first "Antenna" class, you missed a good one. This class will be on transmitters, and you will actually build one in class to keep. Unlike the antenna class, this one will involve some cost.

All the materials that you will need will cost you \$35.00. This may seem a little high, but consider the education you will receive, and how many transmitters can you build after the class. I would like to give everything free, but since I'm not rich, the only thing that I can give for free is the training.

The class will be held January 24th at the E.O.C. in Poplarville. If you plan to attend, please contact me (Jim) at [world@datasync.com](mailto:world@datasync.com) and send your money to the following address:

James W. Searcy  
10 Wesley Drive  
Poplarville, Miss. 39470  
601-795-6583

I guarantee that it will be informative, and we will have a lot of fun. If the class is a success, then we will have a class soon to follow on a receiver that you can use in conjunction with your transmitter. I haven't come up with a cost on this one, but will let you all know before hand.

Now, on to the Newsletter

While sitting at your operating system, running your 1500 watts of power into a five element mono-bander, have you ever wondered why with so much power, and so much ERP (effective radiated power - something we will cover in another newsletter) and your buddy only 20 miles (as the crow flies) away from you, that you can't talk to each other?

Well, the graduates from my first class know the answer, but if you are wondering why, let's see if we can figure it out. Ever heard of something called NVIS? It

is an abbreviation for Near Vertical Incidence Skywave.

What is NVIS?

NVIS, or Near Vertical Incidence Skywave, refers to a radio propagation mode which involves the use of antennas with a very high radiation angle, approaching or reaching 90 degrees (straight up), along with selection of an appropriate frequency below the critical frequency, to establish reliable communications over a radius of 0-200 miles or so, give or take 100 miles.

Although not all radio amateurs have heard the term NVIS, many have used that mode when making nearby contacts on 160 meters or 80 meters at night, or 80 meters or 40 meters during the day. They may have thought of these nearby contacts as necessarily involving the use of groundwave propagation, but many such contacts involve no groundwave signal at all, or, if the groundwave signal is involved, it may hinder, instead of help.

Deliberate exploitation of NVIS is best achieved using antenna installations which achieve some balance between minimizing groundwave (low takeoff angle) radiation, and maximizing near vertical incidence skywave (very high takeoff angle) radiation.

As hams, we often faithfully follow the adage: "Get your antenna up as high as you can get it!" We do this, and other things (like choosing antennas that have a low angle of radiation) in order to maximize the distance over which we can communicate. An antenna with a particularly high angle of radiation is often somewhat disparagingly referred to as a "cloudwarmer", the implication being that if the signal isn't radiated at a low enough angle, it's being wasted.

For NVIS, we ignore all this traditional advice, and select instead techniques which will maximize not our DX, but our ability to reliably communicate with other stations within a radius of 0-300 miles.

Not any old frequency will work for NVIS. Successful NVIS work depends on being able to select, or find (through trial and error), a frequency which will be reflected from the ionosphere even when the angle of radiation is nearly vertical. These frequencies usually are in the range of 2-10 Mhz., though sometimes the limit is higher. The trick is to select a frequency which is below the current critical frequency (the highest frequency which the F layer will reflect at a maximum-90 degree—angle of incidence) but not so far below the critical frequency that the D and/or E layers mess things up to much.

There is also an advantage inherent in the use of NVIS style antennas which applies only to receiving. The frequencies which are useful for NVIS (usually 2-10 Mhz.) are the same frequencies which are most susceptible to atmospheric noise.

A major source of atmospheric noise is distant thunderstorms. Nearby thunderstorms are the worst, of course, but the noise from all possible sources adds together. Unless there is a nearby thunderstorm, most noise will be the sum of the noise from distant sources which are all propagated to the receiving antenna. Since an antenna optimized for NVIS is listening mostly to signals propagated from relatively nearby areas, and does not favor the reception of signals, static crashes, and other sources of noise and interference from more distant sources, it will not hear as much noise or interference as an antenna optimized for DX operation. The result is a better

signal/noise ratio.

So, selecting a frequency below the critical frequency, but not too far below it, and selecting an antenna which will radiate skywaves at a high angle, and minimize groundwaves and the reception of noise, are the essential tricks of establishing reliable communication in the 0-200 mile radius which is so often a challenge for HF operation.

What kind of antenna works well for NVIS?

### **Dipole**

Once again, the dependable dipole antenna proves useful. One of the most effective antennas for NVIS is a dipole positioned from .1 to .25 wavelengths (or lower) above ground. When a dipole is brought very close to ground, some interesting things happen. The most interesting thing, from an NVIS perspective, is that the angle of radiation goes up.

In the range of .1 to .25 wavelengths above ground, vertical and nearly vertical radiation reaches a maximum - at the expense of lower angle radiation (which we'd like to minimize, anyway, for NVIS). A dipole can be used at even lower heights, resulting in some loss of vertical gain, but often, a more substantial reduction in noise and interference from distant regions.

Heights of 5 to 10 feet above ground are not unusual for NVIS setups, and some people use dipoles as low as two feet high with good results (relatively weak signals, but a very low noise floor).

Another interesting thing that happens with very low dipoles is that their feedpoint impedance goes down. An acceptable SWR with 50 ohm coax is likely. Plan to bring your tuner along just in case, but you may get by just fine without it.

What does all this mean???

### **Work:**

If you are interested in doing your own research, then what I suggest, is grab up some coax, copper wire, your radio, and maybe your tuner, and learn by doing. Getting back to that buddy that you wanted to work on 80 meters that lives 20 miles away, this would be a good start.

First, bring the coax from your existing 80 meter dipole to the same location that you plan to work from. Now, cut a new 80 meter dipole for the frequency of operation, and use pieces of PVC pipe cut to about two feet. Space them along at five feet apart, now suspend your dipole onto these pieces of PVC. Take an SWR reading, and make adjustments as necessary.

Once you are happy with the match, call up your buddy and have him meet on a frequency. Make contact (if possible) on your existing dipole, have him give you a report. Now, switch over to the new antenna, and get a report. He will notice two things.

- 1) The noise floor is almost like FM.
- 2) The signal to noise ration is down by as much as 20db. If you aren't happy with these results, then raise the antenna to 10 feet, and check the results again. If you have done everything correct, then you will be amazed at your results, and you will be telling yourself, higher is not necessarily better.

As always, I hope this has been enlightening, and hopefully, some are all may

have learned something, I know I did!

So, take care, and don't forget about the Transmitter class. As an added note, my Christmas wish, is that Santa brings all the LIDS out there, a dummy load. Just remember, "It was the night before Christmas, and all were making Merry, but she got tired, and they all jumped for Joy... Merry HO HO.

Jim WA5WRE

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## A Ham's Christmas Wish

May Santa bring you what you want.

May your antenna stay tall and straight, and your coax not kink.

May your key not stick, and your power supply not surge.

May you always be RADIO-ACTIVE!



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# Full Agenda For January Meeting

POPLARVILLE - The January meeting of the Pearl River County Amateur Radio Club will be a busy one, with several important items on the agenda, including nominations of new club officers, setting a schedule for events for 2009 and discussions about the recent Hamfest.

Each of the people who worked at the Hamfest was asked to prepare a list of all the tasks they had to perform for the fest, as well as a list of suggested changes. The information will be used to streamline the hamfest preparations for 2009 and improve the fest for future years.

Nominations for club officers for 2009 will be accepted. If you know of someone you believe would be a good officer, or perhaps you are willing to serve, please let your ideas help our club.

The club will also be setting the schedule for events for 2009. This year, we have had numerous activities - and we want to remain active with events that appeal to everyone. If you have ideas - come share!