



The Greensboro Amateur Radio Association

# Feed Line

Providing Amateur Radio news for the Triad



Brian Wilson, KJ4LKY, Editor

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## CW, QRP, and DX

By Will Ravenel, AI4VE

The first QSO I made with my newly completed K2 kit was with 9A4WY in Croatia at 5 Watts. Although counter-intuitive to the uninitiated<sup>1</sup>, working DX with QRP is not as difficult as it might seem. For this short article I'll shamelessly borrow from some on-line sources to explain why this is so.

First some definitions: 1) CW stands for Continuous Wave, referring to the nature of the signal used to send Morse Code. These days the term CW is simply used to refer to operating with Morse Code. 2) QRP is the Q signal for "Please reduce power" or "Shall I reduce power?", but has come to mean operating with low power. The default for QRP is generally taken to be 5 Watts or less. There is also QRPP which means operating with 1 Watt or less (AA2U achieved DXCC operating QRPP at under 100mW).

OK, the secret to the success of QRP is the logarithmic nature of power. Logarithms might be a good

topic for another article. For now don't sweat it, just take advantage of the log button available on all scientific calculators.

Here's an equation you might want to remember:

$$\text{Gain (db)} = 10 \log (P2/P1)$$

If you take Power 2 and divide by Power 1, then calculate the log of that number, then multiply by 10, you get the gain from Power 1 to Power 2. Let's try it:

Say you operate with 100 W

### NEXT MEETING Monday, November 22

The next meeting of the Greensboro Amateur Radio Association will be Monday, November 22nd, at the Golden Corral Steak House, 4404 Landview Dr, Greensboro, NC 27407, off Wendover Ave. near Sam's Club. This month's meeting will be focused on the election of new officers.

output and I operate with 5 W output, the gain of your signal over my signal is:  
 $10 \log (100W/5W); 100/5=20$   
 (a 20 to 1 difference); the log of 20  
 $= 1.3; 10 \times 1.3 = 13$

So your 100W signal has 13db

see CW, page 9

## Mt. Mitchell Excursion, pt 2

By Todd Smith, AK4TS

Photos courtesy of Todd Smith, AK4TS and Will, AI4VE

[Part 1 of this article was printed in last month's issue. This is the continuing account of the GARA sponsored trip to Mt. Mitchell on Saturday, October 16.

The first part of the article discussed Will, AI4VE and John,

W4DX, and there adventures with Will's Elecraft K2 and an end fed wire dipole.

Now we will hear about Todd, AK4TS & Patrick, KB2RAC, and their experience with a 2 meter HT.]

Patrick and Todd worked together, borrowing Will's portable 2 meter directional Yagi beam antenna with elements made from sections of measuring tape. The antenna was connected to a Wouxun KG-UVD1P handy talkie. With the power level set to one watt, Patrick and Todd were able to carry on conversations on both the K4ITL repeater in Level Cross and the W4GSO repeater. Even at

see Mitchell, page 3

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## GARA Meeting Minutes

### Regular Meeting Minutes October 25, 2010

The Greensboro Amateur Radio Association held their monthly meeting on October 25, 2010, at the Golden Corral restaurant located near I-40 and Wendover Avenue. Will Ravenel, AI4VE, called the meeting to order at 7:15pm. Will asked every one to identify themselves.

Will asked for approval of the minutes as published; Chris Thompson, K4HC, made a motion to approve which was seconded and the minutes were approved.

Ernie Wall, NC4EW, gave the treasury report stating that all bills are paid, checkbook is balanced and we have money in the bank.

Al Allred, K4ZKQ, reported on the finances stating that the money in the bank is just slightly less than last year.

Roy Smith, N4BYU, asked if anyone heard the message that he put on the repeater about the meeting tonight, and he also talked about the noise we are having on the repeater.

Bob Mays, KE4MOW, spoke about the weather station proposal for the city's justice communication center where GARA will purchase a weather station and donate it to the city of Greensboro as a show of gratitude for Greensboro allowing GARA to use their tower at no charge to us.

Allen Bradley, KD4IUN, spoke about a soccer tournament coming up on November 20th and 21st. Contact Allen if you would like to help.

Will spoke about the open house that GARA had hosted the previous weekend, and he called it a great success with 64 people attending this year.

Richard Howell, AE4RH, Skywarn EC said that there will be more Skywarn classes coming in February.

Will read the list of candidates of officers for next year; for President, Chris Thompson, K4HC; for Vice President, Gerald Donnelly, N4PAX; for Treasurer, Ernie Wall, NC4EW; for Financial, Al Allred, K4ZKQ; for Secretary, Greg Spencer, KG4UQV; for Engineering, David Macchiarolo, KJ4TF; for Operations, Bob Mays, KE4MOW; for Member-At-Large,



Betty Williams, KC2BFN; and Will Ravenel, AI4VE. Elections will take place at the November meeting.

Roy told about some of the features of the repeater and introduced our speaker Gaither Fry, KD4CTY, who gave a program on CERT - Community Emergency Response Team.

The meeting ended at 8.07pm.

*Respectfully submitted  
by Greg Spencer,  
KG4UQV, GARA  
Secretary.*



#### The Greensboro Amateur Radio Association

President Will Ravenel, AI4VE  
Vice-President Roy Smith, N4BYU  
Treasurer Ernie Wall, NC4EW  
Secretary Greg Spencer, KG4UQV  
Financial Al Allred, K4ZKQ  
Engineering Chairman Jesse Lindley, N4BFD  
Operations Bob Mays, KE4MOW  
Member-at-Large Rob Erikson, KG4OPX  
Member-at-Large Betty Williams, KC2BFN  
*Appointed Positions:*  
Webmaster Tom Forrest, N4GVK  
Newsletter Editor Brian Wilson, KJ4LKY

The Feed Line is ©2010 by the Greensboro Amateur Radio Association and published monthly. Our address is P.O. Box 7054, Greensboro, NC 27417. The purpose of the newsletter is to provide the club and prospective members information about the club and amateur radio in general. Material and information should reach the editor by the first Friday of the month for the next edition of the newsletter. Opinions expressed in "The Feed Line" do not necessarily represent the views of the officers, directors, editor or members of the Greensboro Amateur Radio Association. Material may be reproduced, provided proper credit is given to GARA.

## For Sale

**Power-Pole Connectors** - Available from Tom Forrest, N4GVK n4gvk@bellsouth.net, 336-202-8650, in packages of 10 pair for \$10. A few sets still left.

## Board Meeting Minutes November 8, 2010

The GARA board of directors held their monthly meeting on November 8, 2010, at the Benjamin Branch of the Greensboro Public Library. The meeting started at 7:04pm, with Will Ravenel, AI4VE; Al Allred, K4ZKQ; Ernie Wall, NC4EW; Bob Mays, KE4MOW; Betty Williams, KC2BFN; and Greg Spencer, KG4UQV, present.

Will said that since this is the last board meeting of the year and he will not be president any longer he wanted to thank the board for their help and support this past year. The board members all thanked Will for his leadership this year.

Ernie gave the treasury report stating that "we are good and everything is taken care of."

Al gave the financial report stating that the phone bill is still higher than normal and Roy said that he would call and see what he can do to lower it.

Roy made a motion to get a plaque made for the weather

station that would show that it was a donation to the city from GARA. Will seconded the motion. Bob said that he received a letter from Steve Marks, N4SCM, thanking GARA for the donation of the weather station.

Will said that it has come to his attention the High Point club that runs the 146.685 repeater is having financial problems and may have to take their repeater down because they can't pay the phone bill due to declining membership. After a lengthy discussion where the board discussed whether to offer help and what kind of help. We decided that GARA offer to pay their phone bill for six months not to exceed \$200.00. Roy made a motion that the board approves the expenditure of up to \$200.00 to go toward their phone bill for six months, Bob seconded the motion. This is contingent on if their leadership feels that they can bring their membership back up.



The board feels that it would be a good gesture to help keep the repeater on the air if possible.

Roy said that Jesse Lindley, N4BFD, swapped the repeaters and checked all connections in an effort to stop the noise that we are having on the 145.150 repeater. Roy also said that some one has checked the connections on the tower, also.

Bob made the motion to end the meeting; Betty seconded, and the meeting ended at 7:51pm.

*Respectfully submitted by Greg Spencer, KG4UQV, GARA Secretary.*

### Mitchell

**continued from page 1**

one watt, the conversations were full quieting on both ends! The repeater contacts included Weldon (W4AJT), Rick (WB3EXR), David (KD4EQW), and Larry (KJ4WKB). Continuing to point the Yagi beam east towards Greensboro, they also made several simplex QSOs on 146.52 with hams in Mars Hill (16 miles), Lenoir (41 miles), Hickory (52 miles), Catawba (67 miles), and Lawndale (46 miles).

All of the simplex contacts were full quieting on both ends, and were made with the radio operating at one watt of radiated power.

Patrick also made simplex and repeater contacts on 2 meters using only the stock rubber duck antenna installed on his Wouxun KG-UV2D, while operating at one watt of power! Todd was also able to reach the K4ITL repeater in Level Cross using the stock rubber duck on his Wouxun, as well as an Alinco DJ-580T, although not at

full quieting.

The group opted to make 2 meter simplex contacts using the national calling frequency 146.52 MHz. Most of the stations worked were mobile, and expressed surprise at hearing an unfamiliar call sign on 146.52. Many remarked that they only heard the call because their mobile radios were in scan mode, with the national calling frequency included

see **Tourists**, page 3

## From the President's Shack

2010 is accelerating toward its conclusion and this month's meeting will be GARA's annual meeting with elections for the 2011 slate of officers and board members. There will be no meeting in December due to the holidays.

My life has also been accelerating toward what I hope is not a conclusion, but a new beginning. Monday three weeks ago I made the decision to retire from my job after a 30 year run that began at Western Electric and passed through AT&T and Lucent Technologies before finishing at General Dynamics. I'll be off role (and out of work for now) on 30 November. It's been a fun and interesting career - wish I could talk about some of the things we've done. On Thursday three weeks ago a friend I hadn't seen since I started work a little over 30 years ago came into Greensboro for a business meeting. She contacted me about

new romance had been born. Vicki lives in Roswell, GA, just north of Atlanta so we've both been on the road the last couple of weekends to be together and have made plans for most of the available time before the end of the year.

Although I'll still participate in club activities as much as possible, as a result of my new relationship I won't be in Greensboro much in the foreseeable future. I've greatly enjoyed the three years I've been active with GARA and would like to thank everyone for their friendship and support. Greensboro has a reputation for a very open and friendly Amateur Radio Community and GARA has played a large role in creating and maintaining that reputation. The club has thrived over the past three years and the average age of our members is beginning to drop. This is a good thing.

I'm a firm believer that for a club to retain members and attract new ones it has to be active. Good programs, training classes,



fun activities, service projects and outreach to the general public are all important in order to maintain and grow interest. In the past year I've tried to follow the examples of Chris, K4HC, and other GARA leaders to preserve the club's

reputation as a fun, friendly and interesting way to enjoy this great hobby. If there's one thing I've learned that I'd like to pass on to you, it's that it takes a lot of energy to achieve these goals and that this energy needs to come from more than a handful of people. GARA is your club and will be what you make it. Offer the board your ideas, your time and your energy. Volunteer to provide a program in an area you're interested in, write an article for the Feedline, take charge of an outside activity and be good Elmers to new less experienced Hams. In short, be an active participant and the club will continue to grow.

73 - Will



**GREENSBORO AMATEUR  
RADIO ASSOCIATION**

getting together to catch up and, like something out of Hollywood, by the end of the weekend a

## Congratulations! You Passed!

*Photos courtesy of Rick, WB3EXR*

Every month on the second Saturday, except in March when it is the third Saturday, W4VEC holds a testing session for those who live in the area. This provides an opportunity for individuals to be able to test for their amateur radio license or upgrade. Thanks to Glenda Nicholson, AG4NC, and a group of volunteers, each month there are new or upgraded hams in our area. There are three (3) new VEs

pictured below.

In November, we had 4 individuals who passed their test(s) and earn either their Technician, General or Extra class license.

Next month's testing session will be on December 11th at #3 Centerview Dr, Hickory Building, Greensboro, NC 27407 at 9:00am. While walk-ins are welcome contacting the lead VE is preferred. Please contact

Glenda Nicholson at (336) 674-3810 or by email at [ag4nc@bellsouth.net](mailto:ag4nc@bellsouth.net)



**Daniel R Schipman, III - KJ4ODS,  
Passed General**



**James C Yester, Jr. - KJ4WKD,  
Passed General**



**New VE, Craig Bondy, N8STA**



**New VE, John Ferrell, W8CCW**



**Brian A Baxter - KJ4ZEH,  
Passed Tech & General**



**Patrick J Moore - KB2RAC,  
Passed General**



**New VE, Todd Smith, AK4TS**

## Tourist continued from page 3

in the channels being scanned. It is a reasonable conclusion that more simplex contacts would have been made during the group's brief time on Mount Mitchell if more hams monitored 146.52. This should serve as a reminder to all hams to monitor the designated national and regional calling frequencies – you never know what type of special contact may result.

Because it was a prime weekend for sightseers to observe the fall foliage change in colors, the peak of Mount Mitchell was covered with tourists. Numerous onlookers were curious and interested in our mountain-top operations, and asked questions. This was especially the case for Will's HF station with his use of Morse code and the CW tones being emitted from his rig's speaker. The GARA group had a unique opportunity to showcase the amateur radio hobby to the general public. Everyone on the trip felt a real sense of pride and satisfaction to be able to serve as ambassadors for the amateur radio service. There is little doubt that at least one or two new hams will result from the GARA team's introduction of the hobby to numerous onlookers.

There was only one problem that the group experienced: not enough time to stay and make more contacts. Everyone on the trip wished for more time to experiment with antennas, antenna orientation and frequencies, but time did not allow it. In the case of the directional antenna used by

Patrick and Todd, it was pointed east in the direction of Greensboro for the duration of the two hours that they spent at the peak of Mount Mitchell. Given more time, they would have liked to have pointed the antenna in other directions, particularly toward the western side of the Blue Ridge Mountains in order to potentially achieve contacts in West Virginia, Kentucky, Tennessee and Georgia.

However, there is an upside to the problem of running out of time. The participants now have a burning desire to return to Mount Mitchell for a follow up trip. There was a great deal of discussion during the return trip home about establishing an outing to Mount Mitchell as a regular annual GARA event. We are fortunate that the highest peak east of the Mississippi is close enough to Greensboro to allow for a day-trip. When one thinks about all of the benefits to be gained from a Mount Mitchell outing, it should not require much persuasion to make it an annual GARA tradition.

The return drive home was filled with discussion on the many lessons learned and how to improve future outings to Mount Mitchell. Here is a list of a few of our observations:

- We could reach several repeaters on the same frequency simultaneously, which illustrates

the importance of CTCSS tones and repeater coordination.

- We saw the importance of listening to the national and regional calling frequencies (such as 146.52 MHz). We thank the hams that heard and answered us on 146.52!

- Before leaving home, consult the ARRL or SERA repeater guide, and pre-program radios in advance for the repeaters that you intend to try. Programming the radio before leaving home will leave more time for fun on the mountaintop.

- Bring a supply of hand-out literature explaining and promoting the Amateur Radio hobby that can be given to interested and curious onlookers.

- Before the trip, make arrangements with hams located at select distant locations and ask them to listen for your simplex contact.

- Most important of all, encourage more participants to come with us on future trips so they can also share in the fun!

In conclusion, anytime you get the chance to make a trip to Mount Mitchell; don't forget to take some portable ham gear! You'll have lots of fun with your mountaintop operation, and you'll never forget the experience.



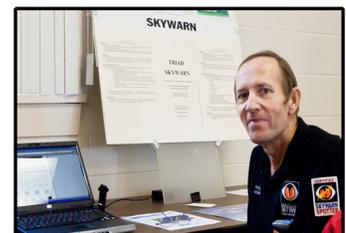
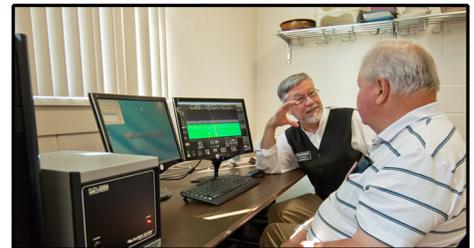


## GARA Open House 2010

Hinshaw United Methodist Church  
fellowship hall, October 23, 2010

Thanks to Jim Waynick, N4JLW for providing  
the facility along with snacks and lunch for GARA members

Photos by Tom Forrest, N4GVK



## The Rightness of Ham Radio

By Betty Williams, KC2BFN

Fall is the time of year when most organizations schedule their fundraising walks. The Williams family, Dan N2LGH, David NX2N and yours truly KC2BFN, have done quite a number of walks in the many years we've been in ham radio. One such walk sticks out in my mind.

A few years ago, we were scheduled to do a March of Dimes walk. The leaves were turning into their fall coats; the weather was crisp and cool. N2LGH was stationed at the parking lot where his talents are used best. NX2N was in position at a play area along the walk. I parked my truck at a large rest stop, manned by the US Postal Service. The postal employees had set up some picnic tables and brought grills and supplies to feed their fellow participants when the walk was over.

Most of the time, as many of you know, a walk is boring for an amateur radio operator. We usually just stand at our post and watch hundreds of people walk or jog by. The funny part of watching people is that there is such a variety. I especially like the ones who bring their dogs. The bigger ones can make that long walk but the ones who drag their small dogs on a three mile walk have to be one brick short of a load. By the end of the

walk those small dogs have to be carried the rest of the way. Now I don't know about you but, after a three mile walk, I can just about make it to the finish line without carrying a wiggling, panting dog.

So, I'm standing at my post, every once in a while walking up and down the path, trying to avoid getting knocked into by the walkers. Halfway into this one particular walk, a woman came up to me and told me that her son was not with her. I asked for a description of her son and quickly broadcast that information to net control. Naturally every ham heard that information. The woman was concerned, naturally, and she wanted to call the police. Sure, I told her we'd contact the police but that the best way to get the information out on her missing son was through the ham operators who had more eyes and ears than a couple of police cruisers. She flagged down a passing police car and told him about her son. I told the officer that I had already sent the information to net control and that all our operators would be on the lookout for her son. I could see the skepticism on his face. If a person doesn't understand the capabilities of amateur radio, he will scoff and say "thanks, but we'll handle it" and leave you standing there like an idiot.



Well, within five minutes her son was located. He had gotten on one of the buses and was with his aunt at the finish line. How fast do you think one police officer could have found that child? Having to drive his car along the road, watching for walkers, watching for traffic? His mind and concentration would be on a couple different things at once, while the ham operators had one thing on their minds... find the lost boy and get him to his mother. The mother thanked me, got on the next bus and met her son at the finish line. I guess the ham community made the police officer look bad because I didn't receive a thank you from him. I really didn't need it; the ham community did what it was supposed to do...keep their eyes and ears open along with the airwaves.

This incident shows us the rightness of amateur radio...what it does, what it can do and what it is capable of in a small crisis. I'm proud to be a part of that community.

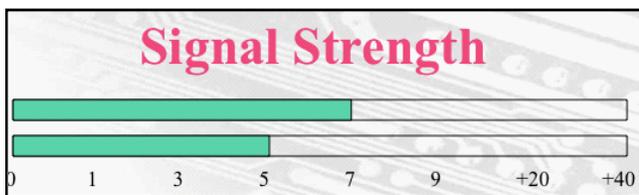
## CW

continued from page 1

of gain over my 5W signal. Sounds like a lot, huh? But here's another fact:

### One S-Unit is 6db

This means that your signal's 13 db gain will move the S-Meter on the receiving end slightly more than 2 S-Units higher than my signal will. Here's a picture:



Only when your signal is very weak at the other end will mine not be heard also. But wait ... there's more.

A CW signal has an advantage over a SSB signal based on it's bandwidth. Here's how it works:

A CW signal has a bandwidth of about 100 Hz.

A SSB signal has a bandwidth of at least 2,000Hz.

If my CW station is putting out 100W my signal has a power density of 1Watt per Hertz ( $100W/100Hz=1W/Hz$ ). If your SSB station is putting out 100W your signal has a power density of 0.05 Watts per Hertz ( $100W/2,000Hz=0.05 W/Hz$ ).

On a per Hertz basis my signal

has a 20 to 1 advantage over your signal. Sound familiar? Let's do the calculation:

$$Gain = 10 \log (1W/0.05W) =$$

13db!

This per Hertz gain somewhat offsets the overall power gain calculated earlier, making my concentrated CW signal at 5W as easy to copy as your SSB signal at 100 Watts. This power density advantage (sometimes called "punch") is especially useful when

conditions are marginal.

This is why CW will always be a popular DX operating mode. It's also why operating QRP with CW is not as hard as you might have thought.

In case it didn't occur to you this also means that, with identical antennas, operating CW at 100 W has the same punch as running SSB with an illegal 2,000W amplifier; or that operating CW at 100W with a 0db gain wire antenna has the same punch as running SSB at 100W into an antenna with 13db gain. Of course if you have a 2KW amplifier and a 13db antenna all bets are off.

So the next time you hear someone say "Life is too short for QRP", just smile and make them wonder what you know that they don't.

<sup>1</sup> I've loved this phrase ever since I heard a Bell Labs colleague use it in a presentation on underwater acoustics - a topic that relies more heavily on logarithmic calculations.

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## Free Fest!

The GARA web site ( [www.w4gso.org](http://www.w4gso.org) ) has a new addition and a first of it's kind in the area for Hams.

It's a web page on the GARA site called a "Free-Fest" which is a place where Hams and non-Hams can list items to be given away. These items have to be "free" and no money is exchanged. This is a method of recycling your "old stuff" and magazines, etc, instead of

dumping them in the trash. Someone may need what you have. This is a free service of GARA and is open to all. You do not have to be a GARA member to list an item.

One exception, if the item you wish to give away has a transmitter, the

item should belong to a Ham and be received by a Ham.

This could include items that just aren't worth selling and collecting dust and taking up space in your shack.

Information and rules are located at the top of the page, located at [www.w4gso.org/freecycle.html](http://www.w4gso.org/freecycle.html) There is also a link in the middle of the home page. There is still a "For Sale" area on the GARA site for those wishing to sell equipment.

Send items to list to Tom Forrest, N4GVK, e-mail: [n4gvk@bellsouth.net](mailto:n4gvk@bellsouth.net)



# Area Happenings

**FOURTH MONDAY** – at 6:30pm, the Greensboro Amateur Radio Association have their regular monthly meeting at the Golden Corral, 4404 Landview Dr, Greensboro, NC 27407, off Wendover Ave, near Sam's Club. Please plan to gather at 6:30pm for dinner. The meeting is scheduled to start at 7:15pm

## CLUB NETS:

**SUNDAYS** – at 7:30pm, the **Technical Forum** on the 145.150;

- at 9pm, the **GARA News and Information Net**. This net features *NewsLine* and is on the 145.150, W4GSO repeater. Roy Smith, N4BYU is always looking for net controls. Contact him if you would like to help.

**TUESDAYS** – at 8:30pm **The Triad SkyWarn Net** meets on the 147.225, K4ITL repeater, no tone required.

**TUESDAYS** – at 9pm, the **D-STAR Net** meets on 442.8625 (W4GSO B and Reflector 17C)

**WEDNESDAYS** – at 8:30pm, **The Guilford Amateur Society Rag Chew Net** holds their weekly net on the 145.250, W4GG repeater with an 88.5 Hz. tone. Jim Hightower, W4JLH is the net control.

**THURSDAYS** – at 9pm, The **Guilford County ARES Net** meets on the 145.150 repeater (100 Hz. tone).

## OTHER ACTIVITIES :

**FIRST MONDAY** – The **Guilford County A.R.E.S.** monthly meeting is held at 1002 Meadowood St. off W. Wendover Ave, in the EMS building, beginning at 7pm.

**THIRD MONDAY** – at 6:15pm **The Guilford Amateur Society** holds their monthly meeting at Tex & Shirley's Restaurant in Friendly Shopping Center. Eat at 6:15pm and the business meeting begins at 7pm.

**THURSDAY** – at 11:15am, Greensboro Hams get together for lunch. Thursday lunch group is meeting at the K&W Cafeteria, 300 Forum VI Mall at Friendly Shopping Center. Talk-in is on the 145. 150, W4GSO repeater with a 100 Hz. tone.

**EVERY FRIDAY** – at 8pm (approximately) Greensboro Hams get together for coffee at Starbucks at Edney Ridge Rd.

## The W4VEC Testing Schedule Dec. 2010 to May 2011

**December 11, 2010**

**January 8, 2011**

**February 12, 2011**

**March 19, 2011**

**April 9, 2011**

**May 14, 2011**

**Location:** #3 Centerview Dr,  
Hickory Building,  
Greensboro, NC 27407

**Time:** 9:00am

**Contact:** Glenda Nicholson

**Phone:** (336) 674-3810

**E-mail:** ag4nc@bellsouth.net

## GARA REPEATERS

145.150 MHz - offset, 100 Hz. tone

442.8625 MHz. + offset, Digital D-Star



**Greensboro Amateur Radio Association**

P.O. Box 7054

Greensboro, NC 27417

[www.w4gso.org](http://www.w4gso.org)

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