



The Greensboro Amateur Radio Association

Feed Line

Providing Amateur Radio news for the Triad



Brian Wilson, KJ4LKY, Editor

www.w4gso.org

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Building The Elecraft K1

by Will Ravenell, AI4VE

I've been getting interested in QRP operation and have been eyeing the Elecraft kits. After Rob Wittner, WG5Q, gave his presentation on building the K2 at the August GARA meeting I decided to take the plunge. I've built small kits before but the K2 looked like more than I wanted to tackle right now from both a cost and effort point of view so I ordered the K1. This little 0.1 to 7 watt CW-only QRP rig comes with either a two or four band filter board and I

chose the four band option making it a K1-4. The bands included are 40m, 30m, 20m, and either 17m or 15m (parts for both are included and the choice is made during construction). In addition to the fourth band selection there is a choice to be made for band coverage. By changing a capacitor and a crystal filter you can select between about 80 KHz or 170 KHz coverage on each band. The 170 KHz coverage comes at the expense of a faster tuning rate. I chose the 15m band and the 80 KHz coverage on each band (I ended up with closer to 90 KHz). The kit cost \$390 plus shipping.

This is a single conversion radio but has lots of capabilities not normally found in a QRP kit, including:

RIT/XIT

A three digit LCD display that can be selected to show frequency, power out, voltage, or AGC

A memory keyer adjustable in one wpm steps

A 17db attenuator

A choice of three band pass filters which are user selectable from 850 Hz to 200 Hz

The rig draws only 55 mA in receive and about 1 W when

transmitting so it's a natural for battery power operation.

The kit consists of three boards, the Filter Board, the Front Panel Board, and the RF Board. Connections between the boards are made with in-line plugs and there

is virtually no point to point wiring. Commands are passed between the boards under the control of a PIC processor on the Front Panel Board. The pictures show what you see when you first open the box and after unpacking.



Elecraft does a great job of making life easy for the builder. The components are packaged separately for each board and the resistors are

see K1, page 3

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Building a K1 Kit

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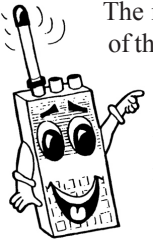
Open House

NEXT MEETING October 26, 2009

The next meeting of the Greensboro Amateur Radio Association will be on Monday, October 26th, at the Golden Corral Steak House, 4404 Landview Dr, Greensboro, NC 27407, off Wendover Ave. near Sam's Club.

GARA Meeting Minutes

Regular Meeting Minutes, September 28, 2009



The regular monthly meeting of the Greensboro amateur radio association was held on September 28, 2009 at the Golden Corral restaurant near Wendover Ave. and I-40.

The Meeting was called to order at 7:15PM by Chris Thompson, K4HC.

We had our usual round of every one identifying themselves.

Chris said that we need volunteers for a nominating committee.

Ernie Wall, NC4EW, said the club is in good shape.

Al Allred, K4ZKQ, said he did not

have a report due to computer problems.

Tom Forrest, N4GVK, said the website is doing good.

Will Ravenell, AI4VE, said he needs ideas for programs for future club meetings.

Old business

The D-STAR gateway is fully operational. The previous problems have been resolved.

Chris explained the function of the D-STAR gateway and used the Southeast weather net as an example of linking several repeaters together. Tom will put a link to the S.E weather net on the GARA website so people can listen to it on a PC without a D-Star radio.

Brian Wilson, KJ4LKY, needs newsletter ideas and stories.

Alan Bradley, KD4IUN, thanked all volunteers who worked the soccer tournament. Alan gave Bob Mays, KE4MOW, a certificate for his multi-faceted work at soccer tournaments over the years.

Alan said there is one more tournament coming up Nov. 21&22. Please contact Alan at kd4iun@arrl.net if you are able to help.

Will gave a great presentation on the upcoming open house.

Roy Smith, N4BYU, made a motion to adjourn.

Respectfully submitted by Greg Spencer, KG4UQV, GARA Secretary.

Board Meeting Minutes, September 14, 2009

The monthly meeting of the GARA board of directors was held on September 14, 2009, at Hinshaw Memorial Methodist Church on High Point Road. Those present were; Chris Thompson, K4HC, Will Ravenell, AI4VE, Ernie Wall, NC4EW, Al Allred, K4ZKQ, Jesse Lind-

ley, N4BFD, Roy Smith, N4BYU, and Greg Spencer, KG4UQV. We also had three visitors; Tom Forest, N4GVK, John Strandberg, AJ4BT and Jim Waynick, N4GLW.

The meeting started with Jim, N4GLW, giving us a tour of the church facilities that are available for our upcoming open house.

Chris thanked Jim for showing us the church and for making it available to us.

Will gave an update on the D-STAR repeater. Will met Arch, KT4AT, at the repeater site to do some testing to determine the cause of some gateway problems. Will said that they found the router for the Internet connection was the cause. Will and Greg Cohoon, KJ4AED, will get together and set up a registration page to be linked to the GARA website.

Ernie said that we are doing good, the phone bill showed the increase of adding the DSL service.

Al said, "We are on forecast same as last meeting."

Jesse had nothing to report.

John, AJ4BT, said the church will be a good venue for the open house, adding that it has a lot of options. We then discussed the different possibilities for the open house and the number of tables required for the exhibits. We discussed the invitation and how many to send out and to what areas.

Chris made a motion to use the church's bulk rate mailing offer and the motion passed.

Jim asked that any club member who has or can borrow an easel please contact the GARA board.

Will added that we will need as many volunteers as we can get to staff the event, and Jim offered to cook lunch for all who are working the open house.

Set up will start on Friday afternoon on Oct. 30th and the church will be open at 7:00am on Saturday Oct 31st.

Will made a motion to adjourn; Chris seconded; and the meeting ended at 8:40pm.

Respectfully submitted by Greg Spencer, KG4UQV, GARA Secretary

The Greensboro Amateur Radio Association

President Chris Thompson, K4HC
Vice-President Will Ravenell, AI4VE
Treasurer Ernie Wall, NC4EW
Secretary Greg Spencer, KG4UQV
Financial Al Allred, K4ZKQ

Engineering Chairman Jesse Lindley, N4BFD
Operations Roy Smith, N4BYU
Member at Large Clark Doggett, KG4HOM
Member at Large Dave Touvell, KN4ZO

Appointed Positions:

Webmaster Tom Forrest, N4GVK
Newsletter Editor Brian Wilson, KJ4LKY

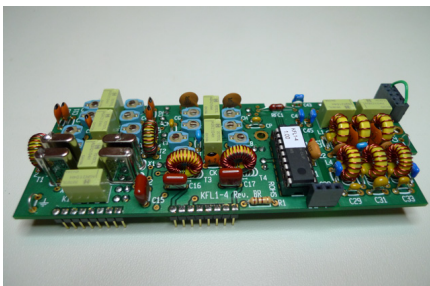
"The Feed Line" is ©2009 by the Greensboro Amateur Radio Association and published monthly. Our address is P.O. Box 7054, Greensboro, NC 27417. The purpose of the newsletter is to provide the club and prospective members information about the club and amateur radio in general. Material and information 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.

K1 (continued from page 1)

taped in strips and arranged in the order that they will be installed. The manual is very detailed and includes illustrations and parts photographs to help identify everything. There's even a tutorial on soldering technique for those without much experience. If you get in trouble there is an on-line forum where Elecraft engineers and expert builders provide diagnostics and trouble shooting advice.

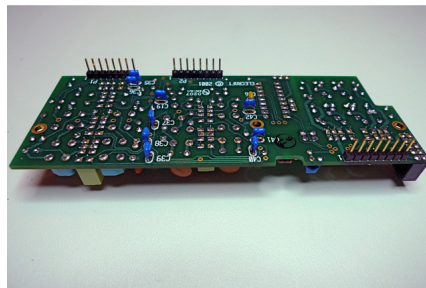
The first step was to inventory every part. I probably could have skipped this since there was nothing missing but it did help familiarize me with the components, some of which are very similar but not interchangeable. I used egg cartons and muffin tins to sort all the small parts so they'd be easy to find. This job was made much easier with the help of a fluorescent magnifying lamp clamped to the work table. There are no surface mount components in the K-1 but some of the caps and diodes are tiny. The inventory took me 4 hours to complete.

Then comes the Filter Board assembly. Ten of the sixteen toroids to be wound are on this board. Winding the toroids is not so hard and the manual provides very good instructions. For me the winding was



much easier than stripping the leads. The wire provided is heat strippable

using a blob of solder on the iron to burn the insulation off. I found that tedious but got through it. If I did another I think I'd do all the toroids at once or pay the nominal fee to buy pre-wound toroids. Things get a little congested on this board. This is where a good temperature controlled soldering iron with a very small tip helps. Using very small diameter solder also helps avoid excessive blobs that could short between adjacent pads. I used 0.015" 65/35 Lead/Tin solder. Construction goes faster if up to ten or so resistors or capacitors are inserted into the board before soldering. I bent the leads so they stayed in place and then laid the

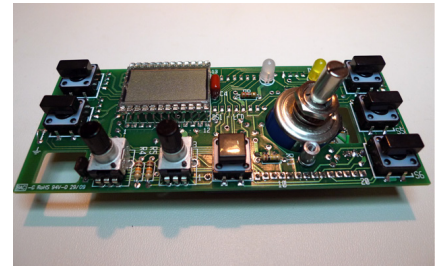


component side of the board on a dish sponge to keep the components close to the board while soldering.

The Front Panel Board is built next. This board went together faster than the Filter Board but care must be taken when handling and soldering the PIC microprocessor. I used an anti-static mat throughout construction for peace of mind. It's white surface helped me keep track of loose components (and made a nice background for photos). Here is the completed board installed in the front cabinet piece. It's beginning to look like the finished product!

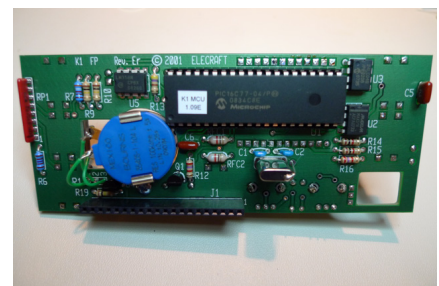
The RF Board is the largest of the three boards and is built in two stages. First the VFO and Receiver section and then the Transmitter section. I made my first mistake

while building the first stage of the RF Board. There are three 8 pin receptacles on this board that



the Filter Board will plug into and before I realized that there are more than three places where these can go I had soldered all eight pins into the wrong set of holes. I was able to recover with a little solder wick and a suction solder extractor with nothing lost except some time, but I was a little more careful after that. There are three toroids to build in the receiver stage and three more in the transmitter stage.

After completing resistance measurements on the receiver section the RF Board was connected to the Front Panel and side panels and powered up. It's very reassuring to see the LED display come to life and to step through some of the menu settings. The keyer was checked out by using the menu options to set the side-tone level and the VFO range is calibrated using a menu readout



while adjusting the winding spacings on one of the toroid inductors. Things were looking great until I powered

see K1, page 6

From the President's Shack

by Chris Thompson, K4HC
GARA President

Fall is certainly upon us, and the temperatures have dropped to where I've had the heater on for the last few days. Now it's time to put a little heat to you, the membership.

For the past several meetings and columns, I've sought volunteers for the Nominating Committee. The purpose of this committee is to seek out and nominate to the club membership people interested in serving on the Board of Directors. So far, a deafening silence is the only response I've heard.

While many members of the board are long-serving, and normally agree to continuing in their roles, there are normally a few vacancies that need to be filled. In particular this year, the spot of Club President will be vacated by yours truly, as I've done this for two years now, and feel it's someone else's turn.

This is a great club, with a

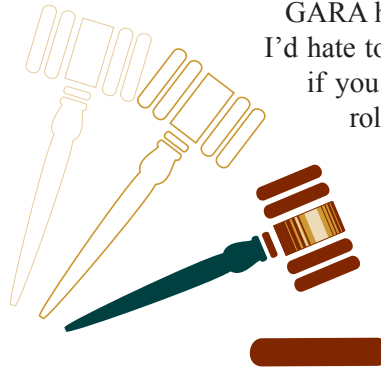
wealth of experience amongst the membership, but in order to make it work, EVERYONE needs to take a shift in making the wheels turn. That way, the club is truly a reflection of its membership.

This month's meeting is supposed to be the time the nominating committee reports to the club their slate

of officers for nomination. That obviously isn't going to happen, since there IS no nominating committee.

GARA has been a great club. I'd hate to see it fall apart, but if you don't take an active role in it, that's what will happen.

73,
Chris,
K4HC



Silent Key

Gwyn Dewet Stewart, W4AKU GIBSONVILLE — Gwyn Dewet Stewart, 91, of 506 Pebble Drive, Gibsonville, died Monday, October 12, 2009, at the Hospice Home.

He was born September 25, 1918, in Burlington, North Carolina. A U.S. Navy Veteran of World War II, he retired from Western Union Telegraph Company & Guilford County Social Services. For many years he was an amateur radio operator, W4AKU.

He was preceded in death by his parents, Dewet and Leona Wells Stewart; daughter, Carla Stewart Marley; sister, Hyacinth Bulla, and brother, Glenard Stewart.

Survivors include his wife, Nightingale Preston Stewart, of the home; sons, Duane Stewart and wife, Trish, of Durham and

Donald Stewart of Greensboro; son-in-law, Ken Marley of Gibsonville; sister, Patricia Fogleman and Bob Alverson of Burlington; sister-in-law, Elizabeth Stewart; brothers-in-law, John Bulla, and Canton Preston and wife, Ruby; four grandchildren and three great-grandchildren.

Graveside services will be held at 3 p.m. on Wednesday, October 14, at Bethlehem United Methodist Church Cemetery, 5410 Pine Hall Road, Walnut Cove, NC 27052, with minister, Rev. Karen Branch.

Memorials may be made to Hospice & Palliative Care of Alamance-Caswell, 914 Chapel Hill Road, Burlington, NC 27215, or to Gibsonville Christian Church, 325 Burke Street, Gibsonville, NC 27249.

Published in News Record on October 13, 2009

Congrats!

The October test session results are as follows:

Fred Brown, WB4IFO

- Upgraded to Extra

David Macchiarolo, AJ4TF

- Extra (David came in as a non-ham and left an Extra. He passed all three elements.

Charles H Robbins II, KJ4PRQ

- Technician

News Briefs That Effect the Ham Community

Three People Killed While Erecting Antenna

From ARRL

At approximately 8:40 PM on Monday, October 12, a man, woman and their 15 year old son were killed while trying to erect a 50 foot vertical antenna at the home of the man's mother, Barbara Tenn, KJ4KFF, in Palm Bay, Florida. The deceased were not licensed amateurs.

"It happened in an instant," Palm Bay Fire Marshal Mike Couture said in a statement. "It is an unfortunate set of circumstances that led to the most tragic result."

According to police reports, Melville Braham, 55, Anna Braham, 49, and their 15 year old son Anthony were putting up an antenna -- Tenn's second -- at night when they lost control of the antenna and it crashed into nearby overhead power lines. The impact sent 13,000 volts

of electricity through the pole the three were holding. A family friend, a 17 year old boy, was on the roof at the time of the accident. He and the couple's daughter, who was in the house at the time, were not injured.

The mother was pronounced dead at the scene. When paramedics arrived, the father and son were not breathing; rescue crews immediately tried to resuscitate them. They were transported to a hospital where they later died.

Neighbor Jim Vallindingham told television station WFTV that he called 911 when he saw the fire in the back yard and then he ran over: "I had no idea it was electrical until we got over there and saw the three people laying on the ground. So I called 911 a second time to tell them

there were casualties. You know, there were people on the ground. So [the 911 operator] told me that's electric, you back away don't touch anything."

Couture said that night was not the best time to be attempting to put up an antenna. "It wasn't the best time, meaning it was night time. Obviously, in darkness, and trying to do something like this and not being keenly aware of where the power line is in the backyard, [was not a good idea]," he said.

Neighbors said that Tenn, an ARRL member, used Amateur Radio to talk with her family in Jamaica.

-- Thanks to WFTV and Central Florida News 13 for the information

Ham Provides Rescue Support at Utah Marathon

From ARRL

While not as well known as the Boston and New York City Marathons, Utah's St George Marathon draws more than 7000 runners to the town of St George -- located 300 miles south of Salt Lake City, near the Utah-Arizona-Nevada border -- each year. The race, now in its 33rd year, uses shuttle vans equipped with Amateur Radio operators and medical personnel to provide any help and support needed along its course. On October 3 -- race day -- Brian Plumb, KE7HNW, was driving Shuttle #3, with Kathy Hutchinson, a cardiac nurse at a local hospital, by his side.

A member of the Dixie Amateur Radio Club (DARC) and the Washington County (Utah) ARES®, Plumb got his Amateur Radio license in 2006. According to his friend, Hal Whiting, KI2U, Plumb has been involved with Boy Scouts for more than 25 years, but desired to "give back" a bit more to his community, and so became a licensed

radio amateur.

On Friday, October 2, Plumb went to go pick up the van, getting it ready and making sure he had his radio and everything else he might need during the race. As he was leaving, he realized he had not



received an automated external defibrillator (AED), so race officials went back and got him one. "We were the only van -- and there were six vans -- that ended up with an AED," Plumb told the ARRL.

Plumb and Hutchinson had never met prior to the marathon, and this was the first marathon for both of them.

"We started driving up and down the highway," Plumb said, "stopping to help anyone in need and helping those that thought they had the desire to even try running, for some reason couldn't finish the race. Kathy and I had just dropped off a van load of runners at the transition area at mile marker 24, turned around and were getting ready to go up the highway again when everything happened -- a lady ran up to us and said there was a runner who had collapsed just up the road and he needed our help."

"As we approached the runner, we saw that he was down," Plumb recounted. "Kathy grabbed the oxygen and I grabbed the AED machine. When we got there, the runner wasn't doing well. With the help of another runner (who happened to be a fire fighter), Kathy gave him oxygen and we started doing CPR. The police were on the scene and they called 911 for an ambulance."

see **Marathon**, page 7

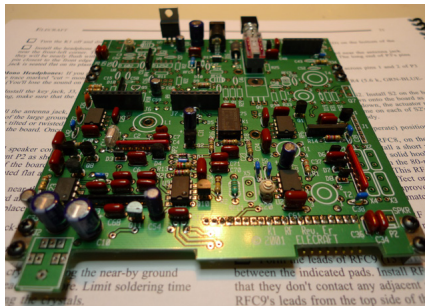
K1 (continued from page 3)

down for a phone call. When I came back and powered up the LCD was



blank and the VFO LED stayed on constantly. I re-checked some voltages and saw nothing wrong so I disassembled the Front Panel Board and heated up all the solder joints on the 20 pin connector to the RF Board as well as many other points that I could reach. After re-assembling the Front Panel, plugging in the RF Board, and powering up everything worked as it should. I don't know which solder joint was bad, they all looked good to me, but apparently one was a cold joint that just needed a touch-up.

Receiver alignment is also done at this time after plugging the Filter Board into the sockets above the Receiver Board. There are four trimmer capacitors on the Filter Board for each band. The two



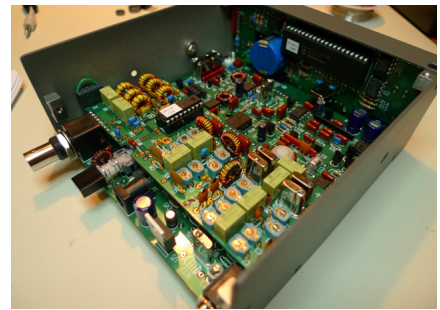
Premix Filter capacitors and two RF Filter capacitors are adjusted to peak the noise on each band in a specific sequence. This can also be done using a signal from a second

transceiver using a dummy load. Then the BFO alignment procedure is followed to set the desired side-tone frequency when a signal is centered in the filter bandwidth. Finally the receiver frequency is calibrated using an external signal of known frequency with the help of another menu function to adjust the readout to the correct frequency.

After completing the receiver tests, the Filter Board is unplugged



and the sides removed to provide access to install the Transmitter components. The transmitter section was completed without mishap and after some resistance tests the Filter Board and sides were re-attached for Transmitter alignment. This requires placing a dummy load on the K1 and tweaking the same 16 variable capacitors adjusted for the receiver calibration, but this time for maximum power output while keying the K1. Although you can use the power out reading on the K1 LCD, I chose to use a QRP power meter I had built a while back. The transmit offset is adjusted after calibration. Using the external power meter resulted in some unnecessary work. With the output set at 5 W using the menu, each band peaked at 5 W except for 20m. This band wouldn't exceed 3 W. I accepted this at this point but later went through the calibration procedure again and even tried re-heating some



more solder joints before realizing that the problem was not the K1 but the external QRP power meter. If I'd paid attention, the K1 LCD display was indicating 5 Watts all along.

The remaining assembly went quickly and mainly consisted of installing the speaker beneath the top cover and attaching the rest of the case. Including inventory and re-work I spent a total of 33.5 hours on the project.



One week after beginning construction I connected the K1 to my 96' doublet and worked stations in Ohio and Louisiana on 40m then switched to 20m and worked Hungary, Scotland, and Ukraine, all with 5 Watts. What a fun little radio!

Marathon (continued from page 5)

Plumb told the ARRL that the 48 year old man "had no pulse. He was gone. So I got the AED set up and I 'shocked' him and his heart began beating again. He was then transported to the hospital via ambulance. The EMTs told us that if we had not been there when we were there and with an AED, he would have been gone, he was so out of it totally and could not have been revived."

Later, Plumb learned from Hutchinson -- the runner had been taken to her hospital -- that the man and his family wanted to meet him. "I went there on the Monday after the race," he told the ARRL, "and said 'Hi, I'm Brian.' I didn't give my last name or call sign or anything like that, and they all asked, 'Are you the

radio ham guy?'" They knew that Amateur Radio had helped save their family member." Plumb said that the man is out of the hospital and seems to be doing fine.

Plumb said that just before the woman called for their help, he and Hutchinson had been discussing how they needed to be prepared for anything that could happen on the course. He is grateful to have fully prepared at the marathon: "I had the right equipment, the right nurse and the right training to have been able to help. Learning to be an Amateur Radio operator, giving service and the ideals of Scouting to 'be prepared' has helped myself and many others in giving service to our community at large."

For Sale

Yaesu FT-450AT, this is the one with the built in antenna tuner. Also, a G5RV and the Data Link cable that connects the radio to a computer. All the paperwork and manuals for the radio included. All items sold as a package deal. Anyone interested can call Marcus Johnson, N4MFJ at 336-476-3790 or email at n4mfj@northstate.net.

THE GREENSBORO AMATEUR RADIO ASSOCIATION

invites you to our 2009 Open House

FREE!



If you have any questions
please e-mail us at:
info@w4gso.org

Our web site is:
www.w4gso.org

Talk-in:
145.150 Mhz. 100 KHz tone
D-Star - 442.8625 Mhz.

**Saturday
October 31, 2009
10 a.m. - 4 p.m.**

at
**Hinshaw United Methodist Church
4501 High Point Rd.
Greensboro, NC 27407**



GREENSBORO AMATEUR
RADIO ASSOCIATION



- Displays of Amateur (Ham) Radio
- Amateur Radio Emergency Service
- Skywarn - Storm Spotting for the National Weather Service
- On-air demonstrations
- New and modern radio technology
- Information about obtaining/renewing your license
- Representatives from various amateur radio organizations

Whether you're a formerly or presently licensed amateur, or a complete newcomer to the hobby, this will be a chance for you to catch up on technology and what's going on in the Amateur Radio hobby.



Area Happenings

FOURTH MONDAY – at 6:30 PM, 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 6:30 PM for dinner. The meeting is scheduled to start at 7:15 PM

CLUB NETS:

SUNDAYS – weekly at 9 PM, the **GARA News and Information Net**. This net features News-Line 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.

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

TUESDAYS – at 8 PM, the **2 Meter SSB Net** meets on 144.225 Mhz. USB. Chris Thompson, K4HC is the net control station. (Not operational present time)

WEDNESDAYS – The **Guilford Amateur Society** holds their weekly net on the 145.250, W4GG repeater with an 88.5 Hz. tone. Jim Hightower, W4JLH is the net control.

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

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 7 PM.

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

THURSDAY – at 11:15 AM, 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 8 PM (approximately) Greensboro Hams get together for coffee.

GARA REPEATERS

145.150 Mhz - minus offset

100 Hz. Tone

442.8625 Mhz. + offset

Digital D-STAR

The W4VEC Testing Schedule

Nov. 2009 to Mar. 2010

November 14, 2009

December 12, 2009

January 9, 2010

February 13, 2010

March 20, 2010

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

Time: 9:00am

Contact: Glenda Nicholson

Phone: (336) 674-3810

E-mail: ag4nc@bellsouth.net

Technical Forum Sundays at 7:30
145.15 repeater



Greensboro Amateur Radio Association

P.O. Box 7054

Greensboro, NC 27417

www.w4gso.org

FIRST CLASS MAIL

The Official Publication of GARA