

The Greensboro Urban Ministry & Ham Radio

K4ZKQ tells the story on Page 4 ...



WHAT'S THIS ?



Find out about it on page 5...

The Greensboro Amateur Radio Association

Feed Line

Providing Amateur Radio news for the Triad



Volume 16, No 8

Editor: Tom Forrest, N4GVK

Web Site: www.w4gso.org

August, 2007

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GARA Members Honored For Outstanding Service



MEMBERS HONORED – J.B. “Arch” Archinard, right in left photo is presented with a plaque, by Carlton O’Rork, N4DFA, Engineering Chairman of GARA. Arch was honored for his many years of service, of building components, tuning equipment and perfecting the GARA repeaters. In the right photo, Roy Smith, N4BYU, right, presents a plaque of appreciation to Madeline, KD4SVJ and Allen Bradley, KD4IUN, for their many years of service coordinatiing the soccer tournaments. (GARA Photo | N4BYU)

Update on Final Installation of New Duplexers At “15” Site

by Carlton O’Rork, N4DFA
GARA Engineering Chairman

This report will be substantially a repeat of what I gave at the July 23rd Club Meeting, with a few other topics covered. Unfortunately, very few members attended that meeting and it was a very good one at which Arch, Allen and Madeline Bradley were honored by awards for their dedication and service to the Club. I am sure you will see more about that in another area of this News Letter.

All members should be reading our news letter as it has very informative articles that Tom inserts which includes

those from Arch on Repairs & Replacements as well as my engineering reports in which I try to go into great detail for your benefit. If you are not getting a mailed hard copy, then you should be going to the web site. More than once I have heard someone say that they were not aware that a certain situation existed or was being dealt with? Well, fellow members, this is your club and if you can't attend the meetings, then please go to the web site and read the news netter. Some of you receive hard copies and others get reminders from Roy with the site location. As I indicated in the first part of this paragraph, many people go to a great deal of effort to be sure that you

are kept informed in all matters regarding the activities of our club.

On Tuesday July 17th, Charles Lyons and myself went to the Site and removed the upper Master II, which had the new finals installed and I carried it back to Arch for him to install the new receive preamp. This he did and on Thursday July 19th, I met Arch at the tower site and we reinstalled that machine. Both VHF repeaters currently have the new Receive preamps in place. This means we have substantially better receive coverage. Arch tuned both Master II Repeaters for

Please turn to page 5 -->

GARA Meeting Minutes



Regular Meeting Minutes July 23, 2007

The meeting was called to order at 7:15 PM.

A motion was made to accept the minutes of the last meeting and it was approved. Al Allred, K4ZKQ, gave the financial report stating that everything is "OK." Ernie Wall NC4EW gave the treasury report stating that all major bills have been paid and we are in good shape.

Carlton "O"Rork, N4DFA, gave the engineering report. He stated that he has written an article for the Feed line about the new preamps that Arch, KT4AT, has designed and built for our repeaters. He went on to tell about the work on the repeaters done by Arch and the engineering committee. There have been new receive preamps built and installed on both repeaters and both master 2 radios were tuned for maximum receive sensitivity. The new duplexer was fastened to the box for stability.

Alan Bradley KD4IUN needs volunteers for soccer games on Labor Day weekend. He also asked for Science center operators, Especially on the weekends.

John Doggett KI4BMS invited everyone

to the big metropolis of Doggetville on September 22 at 6:00 PM for the annual barbecue.

Carlton spoke about Arch's hard work on our repeaters and said that our antenna is mounted on top of a 300 foot tower and we have the same or better coverage as some repeaters with antennas that are much higher. This is due to Arch's hard work and meticulous attention to every last detail. Al stated that our repeaters are used by several different organizations in either a primary or backup capacity and must be ready to go at all times. Al also said, "Arch makes a Hot Rod out of a regular car." Allen spoke about the benefits that the soccer tournaments have gotten out of our repeaters and how Arch has gone out of his way to help get the scores through. "He deserves lots of praise".

Bob Mays KE4MOW said that we all depend on a lot of volunteers to keep everything running correctly, and how Arch has "taken us under his wing."

Arch was presented with a plaque to show our appreciation of his hard work. Arch then spoke about his involvement with our repeaters in the future and his work on the

D-Star digital repeaters from Icom.

Roy Smith, N4BYU, then gave a short history of GARA'S involvement with soccer and presented Allen and Madeline Bradley with a plaque for there support of GARA and GYSA. He also thanked Arch and said that "Arch has made our repeaters work better than GE."

Allen thanked all volunteers for their help. Al spoke about our benefit from working with soccer.

Roy Smith, N4BYU, said that his computer that he uses for GARA member e-mails is almost back up and running. He requested that anyone not receiving e-mail from him to contact him.

Bob Mays, KE4MOW, said that we all need to appreciate all those who volunteer their time for the club and remember to say thank you.

The Meeting closed at 8:30 PM
Respectfully submitted by
Greg Spencer KG4UQV

The Greensboro Amateur Radio Association

President: John Doggett, KI4BMS
Vice-President: Chris Thompson, K4HC
Treasurer: Ernie Wall, NC4EW
Secretary: Greg Spencer, KG4UQV
Financial: Al Allred, K4ZKQ
Engineering Chairman: Carlton O'Rork, N4DFA
Operations: Roy Smith, N4BYU
Members at Large: Clark Doggett, KG4HOM
Tom Forrest, N4GVK
Appointed Positions:
News letter editor and Webmaster:
Tom Forrest, N4GVK

"The Feed Line" is ©2007 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.

ANNUAL BAR-B-Q PICNIC AT THE DOGGETT'S

Mmmmm.....gooooood !!!!

September 22, 2007, starting at 6 PM.

All local amateurs are invited.

FUN, FOOD & FELLOWSHIP

E-mail John Doggett and let him know how many will be attending: ki4bms@arrl.net



NEXT MEETING

The next meeting of the Greensboro Amateur Radio Assoc. will be August 27, at the Golden Corral Steak House, 4404 Landview Dr, Greensboro, NC 27407, off Wendover Ave, near Sam's Club.

New Preamplifiers installed on 145.15

By Arch, KT4AT

Back in 2001, when I refurbished the two VHF Mastr2 used on 145.15, I decided to go with modified original GE Mastr2 preamps. Those preamps, designed in the early 70's, used Silicon MOSFET transistors, which were available at the time. After modification of the bias point to enhance dynamic range, they provided reasonable all around performance, including a 12 dB gain, less than 1.5 to 1 input match, and most importantly good dynamic range (+20 dBm IP3). The only marginal item was Noise Figure (2.5 dB).

In my involvement with the D-Star system, I had to select a new preamp, for both UHF and VHF, suitable for repeater use. This new preamp is based on the industry standard developed by AR2 (Advanced Receiver Research). Those preamps come with BNC connectors, so I exchange those for SMA's. The original GaAsFET (a Mitsubishi MGF-1302), has poor dynamic range, so I exchange this transistor to an Heterojunction GaAsFET, the NEC NE34018 (a cell phone workhorse up to 2.4 GHz, used both in handsets and base stations around the world). The last modification is to redo the input match to accommodate the input of the NEC device.

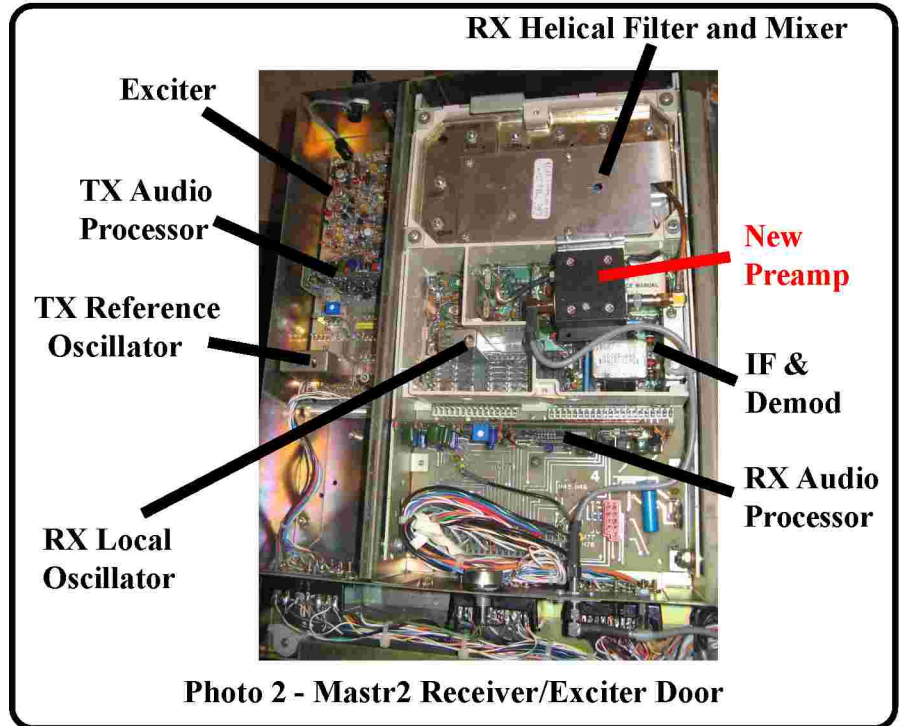


Photo 2 - Mastr2 Receiver/Exciter Door

Now that there is a clean duplexer on 145.15, time had come to install better performing preamps on it. One of those modified AR2 preamps was installed, and observed for approximately two weeks, while Carlton got necessary Club approval for the upgrade (\$149 per unit). Two preamps were necessary to guaran-

tee backup of operation in the case one would be destroyed by a lightning strike. Both VHF Mastr2's have been retrofitted by now.

The new preamp provides 12 dB of gain, has a Noise Figure of 0.8 dB, an input match better than 1.5 to 1, and excellent dynamic range (IP3 at +25 dBm). When adapted on the Mastr2, the 12 dB SINAD performance was enhanced by 3 dB (now -123 dBm, versus -120 dBm before, measured through duplexer and pre-selecting cavity). No intermodulation distortion was noticed. The increase in performance is quite impressive, and will be mostly noticeable by HT users. This is important for ARES and Soccer Tournament operations. A long range test was also performed yesterday during the ARES net, with KA4YMY, Steve (another D-Star buff), from Gastonia. Steve was using a mobile antenna in his attic with 50 W. Although he had only about 10% noise in 145.15, he could barely hear the repeater in Gastonia.

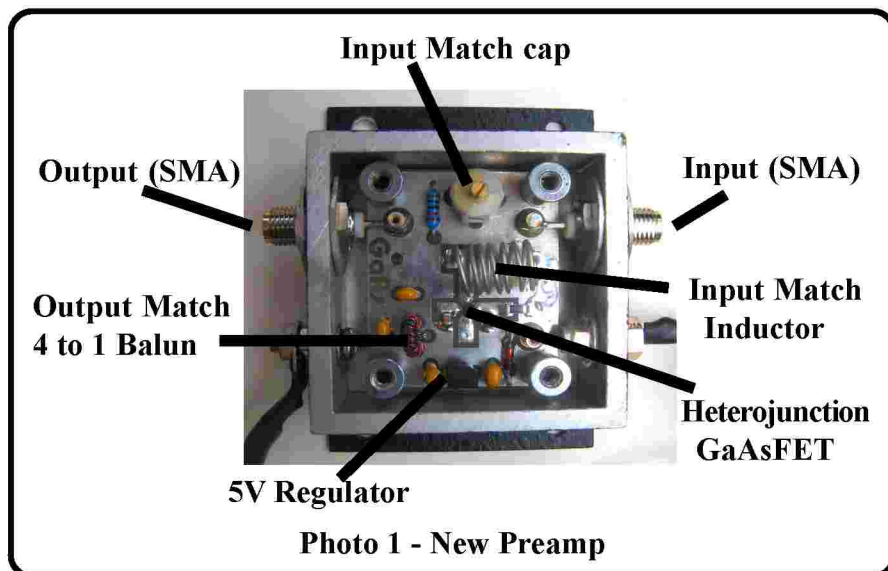
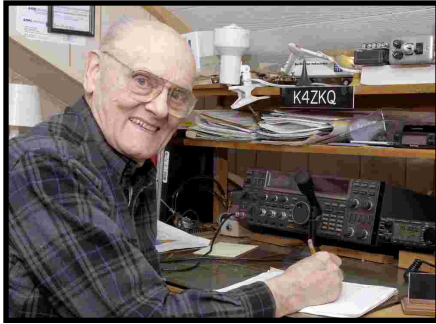


Photo 1 - New Preamp

Back When

DX Contact Spawns Urban Ministry In Greensboro



Al in a present day photo in his attic shack. (GARA Photo | N4GVK)

by "Al" Allred, K4ZKQ

Early one morning, in 1961, while tuning across the twenty-meter band, K4ZKQ, "Al," heard a strong radio signal – later identified as VK9NT in New Guinea. The first complete sentence was "We think the Methodists ought to be in charge of it." That aroused his curiosity.

The "it" being discussed was a school being built by a U. S. aviator (Lt. Fred Hargesheimer) as a gift to a native village in appreciation for having saved his life in 1943. "Al" was told that of all the non-native residents in New Guinea, the Reverend Wesley Lutton, Superintendent of the Methodist Mission, was held in the highest esteem. Later, "Al" had numerous QSOs with Norm, VK9NT, whose station was being used for contacts back to the states. Al also began corresponding with the Reverend Wesley Lutton. Wes wrote that he was from Ireland, and had sisters in St. Catherine's just across from Niagara Falls. He hoped to visit them in the near future. "Al" responded to the effect that if you get that close, come on down to visit us.

In late 1962 after arriving in Brisbane for his next ministerial appointment, Wes sent "Al" the book *We Offer Christ*, the story of the West End Methodist Mission. "Al" shared with the Reverend Charles E. Shannon, pastor at Grace UMC, the book *We Offer Christ*. When returning the book, Pastor Shannon remarked "Grace Church needs to do something like that in Greensboro." He appointed an ad hoc committee to study Greensboro's demographics, analyze local needs, and compare Grace Church's resources for meeting those needs."

In 1967, on a combination of faith and hope that other congregations would eventually join to support this effort, Grace UMC pledged \$15,000 for the first year's operations. The Conference appointed the Reverend O. Ray Moss the initial Director, with his Conference connection through Grace UMC.

Until "Al" recently gave an expanded version of this account to the current director, Reverend Mike Aiken, those minutes were the earliest record that Greensboro Urban Ministry had regarding its founding.

As far as the Urban Ministry is concerned, the rest is history. The account of Fred's parachuting into the



Al in his 1971 shack. (Photo courtesy, K4ZKQ)

Fast forward - Minutes in the files at Greensboro Urban Ministries report a meeting at Grace Church on July 27, 1967.

jungle and his rescue by a U. S. submarine about six months later is an intriguing story for another time.



Greensboro Urban Ministry Today

(GARA Photo | N4GVK)

Engineering Report from Page 1

maximum performance and efficiency as well as the bandpass cavity. We used a metal band and secured the bandpass cavity to the side of the duplexer box up off the floor.

Our repeaters are both performing outstanding and at the moment there are no further repairs or adjustments planned. However, I will need to make an updated inventory list of all GARA's equipment for Insurance purposes as well as our records.

We are also working on replacing the computer laptop with one that has a working audio chip or sound board. This is required for using Arch's software to enable us to upload data to our controller.

I have taken pictures of our new duplexer in the wooden box or frame that I modified to accommodate it. These pictures show the wooden box with the top in place that protects the duplexer. Several others show how the duplexer is located inside, jumper cables, the antenna hard line connection and transmit/receive cables running to the Master II

cabinets. In several of these pictures you can see how the bandpass filter has been attached to the side of the box up off the floor and also the metal angle strip that supports the weight of the hard line to relieve stress.

All members should have received in the mail an official club welcome / information letter in which I tried to convey that it was intended to be both an acknowledgment of your membership as well as an information document that would address all the general operating practices of our club and the equipment in use. These will be given to all new members upon joining. The operating recommendations have evolved over the years during the operation of our repeaters. Many are in general use nationwide. You may share most of the information contained therein regarding the VHF repeater. However, the specifics on the Autopatch and DVR operation should be retained for club members only. Two exceptions would be that it is an open Autopatch and may be accessed by * up and # down, with proper identification. Additionally, the emergency dialing of 911

requires a *911 and then # down when the traffic is completed with proper identification.

If you still have this sheet available, please make use of it! I hear people wanting to know how their radio is making the repeater. The DVR echo/ voice playback would give you a very good idea of how strong your signal is and how your audio sounds. If you are not sure if your key pad is working correctly, the touch tone pad test would also give you the answer here also. I have purposefully not put the DVR codes in this report as the Feed Line will be on the web site. As a dues paying club member this is perhaps the only thing you have that is not readily available to non members?

Unfortunately, it cost a great deal to purchase all the supporting equipment, four Master II machines, power supplies, controllers, antennas, etc., not to mention the maintenance, repair and replacement of this very same equipment.

That is it for this month. Please use the repeaters and enjoy them as they are working very well. We should be proud of the fine work that Arch has done and how well the equipment is performing!



(GARA Photos | N4DFA)

New GARA
duplexers
installed for the
145.150 machine



The Hentenna Antenna

Some Design Constants for Optimized 50 ohm Feed-Point Impedance

by Roger Stout, N4RWS

Amateur radio operators are always looking for that magic antenna that can hear the really weak ones and radiate a 5-9 plus signal to all corners of the globe. Fortunately, antenna design is still fertile ground in which the amateur can go digging. I thought with this article I might introduce you to an antenna that doesn't get a lot of attention but I find to be a very good performer. It is called the Hentenna and is very popular in 6 meter form with Japanese radio operators. I built one of these for 6 meters a few years ago and it garnered good signal reports as far away as Ireland.

The antenna is made from wire and shaped like a tall narrow rectangle. The feedpoint is in the center of a third horizontal element located about 18% up from the bottom leg of the rectangle. Although the antenna hangs vertically the polarization is horizontal due to the feed being in the center of a horizontal element.

Dimensions I have found for this antenna vary widely and they usually define it as 1/2 wavelength tall and 1/6 wavelength wide and the feed element 1/10 wave up from the bottom. Models I have created in EZNEC and actually built show these dimensions to be far from ideal. However, the antennas winning traits of bi-directional pattern with good gain and very low take-off angle always appealed to me and makes me think the design might be a good candidate for 15 and 20 meter antennas.

Using EZNEC 3.0, a popular modeling program by Roy Lewallen W7EL, I modeled this antenna for 15 and 20 meters and optimized the dimensions for a good match to 50 ohms. The entire antenna is designed to use wire and I found even the larger 20 meter version could be built with a horizontal dimension of less than 10 feet. This allows me to use 1/2 inch PVC pipe as spreaders for the horizontal elements. It should be noted that the use of metallic tubing for the horizontal elements forces the antenna to be larger to achieve resonance and makes me

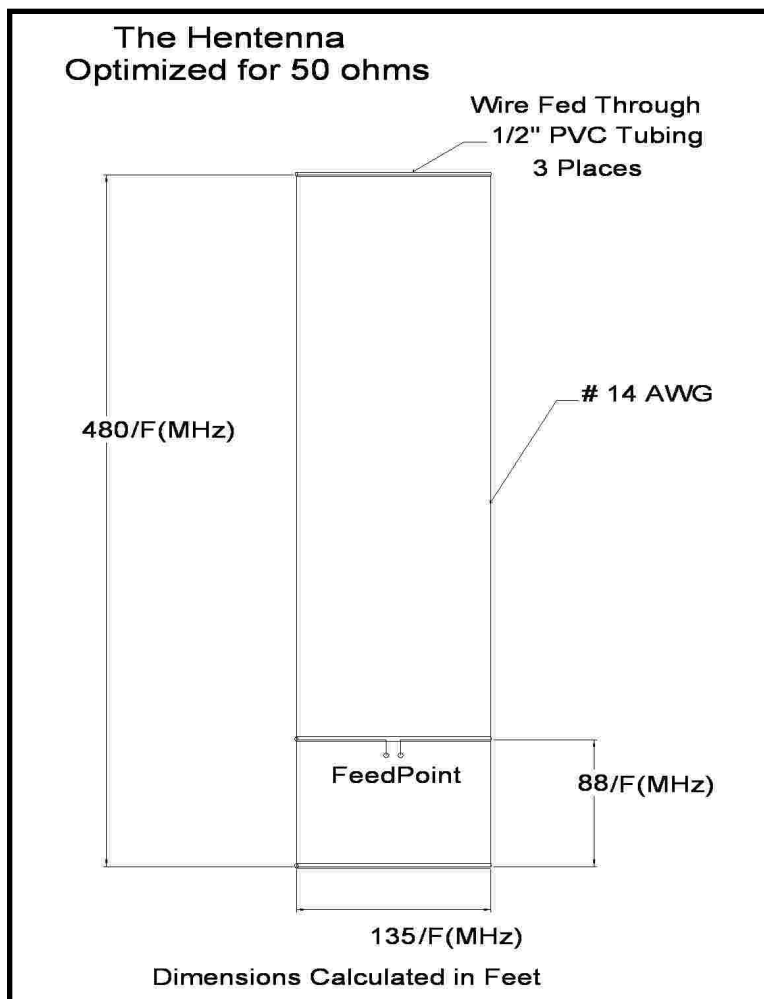
uncomfortable thinking about walking around under 3 pieces of metallic tubing hanging by a cord.

After a fair amount of time modeling different configurations on the computer I have arrived at some easy to use design constants to calculate the dimensions in feet for the rectangle. These constants are shown on the diagram and you can simply divide these design constants by the center frequency (in MHz) of the desired band (i.e. 14.25 or 21.325 MHz). For example, the 20 meter antenna which of course would be the larger of the two antennas and will be $(480/14.25) = 33.68$ feet tall and $(135/14.25) = 9.47$ feet wide with the feeder element $(88/14.25) = 6.17$ feet from the bottom of the rectangle.

Even though the antenna is relatively

insensitive to being near ground, the higher you can elevate it, the better the gain and the lower the take-off angle. In my simulations above typical piedmont North Carolina ground the 20meter Hentenna with the lower portion of the antenna at a 20 foot elevation exhibited 8.46dbi gain with a 22 deg take-off angle. In comparison, a standard dipole over the same ground and at the same elevation as the top of the Hentenna (53 feet) exhibits a gain of 7.02dbi at a take-off angle of 18 deg. The Hentenna nets a gain of nearly 1.5 db over the dipole.

Hentennas designed for higher frequency bands can provide even lower radiation angles and greater gain advantages because their proportionately smaller size makes them easy to hang at relatively higher heights in relation to their wavelengths.



Walter Knapp, KD4FNH, SK

The amateur radio community would like to extend sympathy to the family of Walter Knapp, KD4FNH, who became a silent key July 21.

His career began at Georgia Tech Research Station. He worked in the Aerospace program at Honeywell where he helped on the design of the guidance system for the Gemini Space Project. He worked more than 30 years with Western Electric/AT&T. His work in the AT&T Government Systems Division took him around the world where he made many friends. He was a volunteer with Senior Net at Shepard Center in Greensboro, and a long time AT&T Pioneer.

Amateur Radio Tech. Class Set

Guilford County Emergency Management is sponsoring an Amateur Radio Technician Class this October. The class will focus on the requirements to obtain your "Technician" class license with the FCC and allow you to operate an Amateur Radio.

The class will meet on Tuesday and Thursday evenings from 7:00 p.m. until 10:00 p.m. beginning on Tuesday, October 2. The class will conclude with a test session on Thursday, October 25. The class will be held at Guilford County Emergency Services on 1002 Meadowood Street, near the intersection with West Wendover Avenue in Greensboro.

There is no cost for the class, but registration is required so that we may get an accurate count of the number of students. There is a fee for testing (\$12.00) and students will need to purchase the text The ARRL Ham Radio License Manual (\$24.95). Contact Stephen Marks, CEM Guilford County Emergency Services Emergency Management Division: steve.marks@guilford-es.com for more information.

A PDF file can also be downloaded from the GARA web site: www.w4gso.org, so you can print it out to pass around.

Larry McLaurin, KI4UE Injured

A big Get Well to Larry McLaurin, KI4UE, of Pleasant Garden. Larry fell recently which required hospitalization. His prognosis is very positive and hopefully he can return home soon.



was experiencing technical problems and not currently on line, but after contacting officials for the site, it was stated to be back in service soon.

Hams Needed For MS Tour-to-Tanglewood, Sept. 15-16

Anyone wishing to assist with communications for this year's Tour-To-Tanglewood

are asked to contact Tom Hatley, KF4JZD, at 508-2232, e-mail: kf4jzd@bellsouth.net. The fund-raising event features hundreds of bike riders from across the nation. Hams are need at rest stops and in the "sag" wagons. Please give Tom a call if you can help.

Get Well

Get well wishes go to GARA member Patsy O'Rork, N4DFB, wife of Carlton, N4DFA. Also to Darrin Peach, WD4DLP. Darrin is under going some heart procedures in the near future. Darrin does not reside in Greensboro, but is active on the local repeaters.

Shelby Hamfest Coming

The annual "Granddaddy of them All," The Shelby Hamfest will be held at the Cleveland County Fairgrounds, August 31 and September 1 & 2. The fairground address is on US 74 Business at the intersection of NC 108, 3 1/2 miles east of Shelby, NC. Talk-in will be on 146.88. For more information, check the web site at www.shelbyhamfest.org.

Keep sending in those nice articles for the Feed Line. Thank You!

GARA Web Member Area

A member area has been established on the GARA web site. The page is accessible to GARA members only via a username and password. The page contains documents useful to members. The link to the page is on the left side of each web page, in the yellow box above the ARRL emblem. If you are a GARA member and would like sign-on information, please contact the GARA webmaster, Tom Forrest, N4GVK at n4gvk@bellsouth.net

Another Feature For Web Site

An interesting feature has been added to the GARA web site and the Guilford ARES web site. It's the Triad Haze cam. This is a really nice, well constructed web site that contains a live camera pointed toward Pilot Mountain. The site gives a visual of the air quality along with a "Levels of Health Concern" chart. The site, is sponsored by the Forsyth County Environmental Affairs Department in Winston-Salem and is being used with permission. Also for those "weather tekkies" there's a page showing all the equipment used in gathering the air quality information. At press time, the camera

Call Sign Update

	District	Group C/ Technician	Group B/ General	Group A/ Extra
The following shows	0	KDØBDT	++	ACØIU
the last call sign in each	1	KB1PGC	++	AB1HM
group to be assigned for	2	KC2RXZ	++	AB2XI
each VE region under	3	KB3PLA	++	AB3FS
the sequential call	4	KI4YAO	++	AI4AE
system as of July 12,	5	KE5PLK	++	AE5CT
2007. For more	6	KI6KVR	++	AF6DC
information see the FCC	7	KE7ODU	++	AD7PE
web site at:	8	KD8GQF	++	AB8ZI
http://wireless.fcc.gov/	9	KC9LWU	++	AB9OW
uls	N. Marianas	KHØTD	++	++
	Guam	NH2FN	++	AH2DS
	Hawaii	WH7GV	++	AH6SP
	American Samoa	KH8DS	++	AH8Y
	Alaska	KL2JE	++	AL2Z
	Virgin Island	NP2NV	++	KP2CU
	Puerto Rico	WP4NUG	++	++

++ All calls in this group have been assigned

Information courtesy World Radio Magazine

Area Activities

FOURTH MONDAY – at 6:30 PM, the **Greensboro Amateur Radio Association** have their regular monthly meeting at the Golden Corral on Landview Dr., off W. Wendover Ave. 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 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.

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.

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 6:30 PM **The Guilford Amateur Society** holds their monthly meeting at the Greensboro Police Western Sub Station at 300 Swing Rd in the community room. Refreshments at 6:30 PM and the business meeting begins at 7 PM.

SATURDAYS – at the K&W Cafeteria on Big Tree Way, hams get together for **Saturday Breakfast** at 7:30 AM. Talk-in is on the 145.150, W4GSO repeater, with 100 Hz. tone.

THURSDAY & FRIDAY – at 11 AM, Greensboro Hams get together for lunch. Thursday lunch group is meeting at the K&W Cafeteria off Big Tree Way and a Friday lunch bunch is at the K&W Cafeteria off South Holden Road. 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 at Guilford College (summer location till Daylight Savings time changes)

Greensboro Amateur Radio Association
P.O. Box 7054
Greensboro, NC 27417



Web:
www.w4gso.org

FIRST CLASS MAIL