The Greensboro Amateur Radio Association

Feed Line

Providing Amateur Radio news for the Triad

Volume 16, No 3 | March, 2007

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ARRL: Application Avalanche Under Way

NEWINGTON, CT, -- The avalanche of Amateur Radio license and license upgrade applications prompted by the FCC's elimination of Morse code as a licensing requirement is well under way with no end in sight. ARRL VEC Manager Maria Somma, AB1FM, reports that paperwork from upward of 450 Amateur Radio exam sessions held since the new rules went into effect February 23 has arrived so far this week. The ARRL VEC, which typically receives paperwork from about 70 sessions each day, has had to add personnel and schedule extended hours to keep up with the workload.

"We've been seeing some of the largest brand-new Technician sessions ever," Somma said. "These examination sessions are huge, and a ton of new Technician license applications has been coming in -- sometimes 60 or 70 at a clip." Somma says license upgrade traffic also has been brisk, and, with some 650 examination sessions already on the calendar for March and more arriving daily, it doesn't look like the pace will slacken anytime soon.

New Rules Driving the Demand

New Amateur Radio rules are driving the demand for new licenses and upgrades. Effective February 23, the FCC no longer requires Amateur Radio applicants to pass a Morse code test to earn operating privileges below 30 MHz. As of the same date, Technician licensees who never passed a Morse code test gained new CW privileges on 80, 40 and 15 meters and new CW, RTTY, data and SSB privileges on 10 meters. Since the Technician ticket has not required a Morse code test since 1991, most current Technician license holders will face a learning curve to take advantage of their new CW privileges. As of February 25, there were approximately 324,200 Technician licensees in the US -- more than any other license class.

Technicians may begin using their new privileges without having to apply for them. No other license class acquired new privileges as a result of the new rules that went into effect February 23, however. All license upgraders must first apply at an examination session, pay any application fee and either successfully pass the appropriate written test or present valid exam element credit.

Details, Details

ARRL VEC personnel must go through "every single piece of paper" that arrives from an examination session, Somma explained. Before keying application data directly to the FCC's licensee database, the staff must make sure that session paperwork is in order, each application is filled out correctly and signed and any element credit is attached. If an applicant took an exam element, ARRL VEC must ensure that the test questions came from the correct question pool and that the applicant indeed passed. She said it typically takes up to 90 seconds for staff members to key in an application for a new licensee, but only about 30 seconds in the case of a license upgrade.

ARRL VEC Manager Maria Somma, AB1FM, with several US Postal Service bins of Amateur Radio exam session packets. Paperwork for some 250 sessions arrived February 28.

Among the growing stack of incoming paperwork February 28 was a package from a session held in the Bahamas for 56 US citizens -- more than likely retirees and members of the cruising and sailing communities in the Caribbean. Somma said it included applications for 12 new Technician licensees. The rest were upgrades.

Handling the Rush

Normally with a staff complement of six, ARRL VEC now has as many as eight full-timers plus three part-timers to handle the rush. Somma says her team by and large has been able to review each application and transmit license and upgrade application data to the FCC within three or four days of receipt. She also had words of praise for the Volunteer Examiner (VE) teams.

"I want to thank the VEs," Somma said. "Most of the paperwork is neat and orderly, and this makes it easy for us to just key it to the FCC." She did caution VEs to make sure they include any proof of prior element credit -- usually a Certificate of Successful Completion of Examination or CSCE -- when submitting applications.

Some VE teams have been sharing observations and photos from their examination sessions. "We're enjoying those," Somma said. "Keep 'em coming."

NEXT MEETING

The next meeting of the Greensboro Amateur Radio Assoc. will be March 26, at the Golden Corral Steak House off Wendover Ave, near Sam's Club. The program will be information about the Software Defined Radio receiver project. The meeting will begin at 7:15

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New Guilford ARES Coordinator Named

John Doggett, KI4BMS, GARA President, has been named Emergency Coordinator for Guilford County Amateur Radio Emergency Service (ARES), effective April 1, 2007.

John replaces Dave Collins, KE4IAF, who is moving to Forsyth County and is no longer eligible, living outside Guilford County.

The appointment was confirmed by State ARES Coordinator, Bernie Nobles, WA4MOK, of Winterville.

Dave as outgoing coordinator, indicated he still had a few projects he will be assisting with, including the upcoming 2007 ARRL Field Day. Best wishes to Dave and his family on the move....and congratulations John!

Hams Honored

Ken, WB2RFK and Mary, WA3RFN along with Harry Faust, WW4HF, were recognized as outstanding volunteers of the American Red Cross in a full page ad in the *High Point Enterprise* March 14. The local Hams have been very active during recent disasters for the Red Cross.

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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

Testing, Testing . . .

Hams gathered February 24th for a special testing session to take advantage of the no code ruling now in effect. Hams taking their upgrade test without having code as a requirement.

Photos | Rick Mainhart, WB3EXR

Those who upgraded were: Susan Kirkman, KI4EZY - upgrade to General; John C Doggett, KI4BMS - upgrade to General; Walter G Bridges, KG4UFB - upgrade to General; Mark L Robertson, KG4STP - upgrade to General; Jesse F. Allred, KD4DRN - upgrade to General; Daniel Eberli, AI4TP - upgrade to Extra (formerlly KI4TAI); John G. Spencer, KG4UQV - upgrade to General; Norman L Parrish, W4NLP - upgrade to General and Bruce P Twiss, KI4NFA - upgrade to General.

Attention New/Upgrade Amateurs: *If you need assistance or just have questions about getting on the air, contact a GARA member. Our members are here to assist you in any way we can. GARA also has a free radio loaner program for members. To learn more about getting a loaner rig, check the web site at: www.w4gso.org.* ***Get on the air today and have fun!***

Thoughts on the 1/4 Wavelength Transmission Line

Text and Photos by Roger Stout, N4RWS

Every once in a while you run across something in electronics that borders on pure magic. At least that's the way I've always looked at the 1/4 wave transmission line since my introduction to it in a UHF-Microwave course in tech school many, many years ago.

What is a 1/4 wave transmission line? Well, to satisfy the definition of transmission line we are referring to any form of cable or medium for transferring radio frequency energy from one place to another. We define it further by restricting our cable to a length that corresponds to a certain frequency since wavelength is related to frequency.

Ok, what's so magical about a coax cable that just happens to be a 1/4 wavelength at a particular frequency? Well basically nothing as long as the load it's supplying power to (an antenna, dummy load, or another piece of equipment) is the same impedance as the characteristic impedance of the cable and the output impedance of the source. That impedance for the most of us hams would be 50 ohms since that is the standard output impedance of our radios and the coax we use so much. The magic starts happening when any of these impedances begins to have values other than this expected 50 ohms.

Lets take the most drastic of situations by considering the case when our 1/4 wave transmission line is connected to a short circuit. Abbra-kadab-ra, the short circuit that is present at the end of the cable is transformed at the other end into an open circuit. The same kind of reversal would also occur if our 1/4 wavelength cable were connected to an open circuit. It would in turn, transform the open into a short circuit at the other end. Just remember, this holds true only for the frequency for which the cable length happens to be a 1/4 wavelength and at odd multiples of 1/4 wavelength.

Another key word to remember here was the word "transform" for that is exactly what happens when the loads happen to be impedances other than shorts and opens. Perhaps you have seen articles where a 1/4 wave transmission line is used as a matching device. This is a popular technique for stacking antennas and maintaining a 50 ohm load impedance. In the photo of the stacked 2 meter loop antennas, two 1/4 wavelength sections of RG-59 (75ohm) (see figure 1) coax are used to maintain a 50 ohm match at the "tee" feed point. When used as matching devices the 1/4 wave transmission line is sometimes forced to become a non-standard impedance and may have to be custom built.

This is necessitated by the fact that the required characteristic impedance for the 1/4 wave transmission line to match impedance "A" to impedance "B" is the geometric mean of the two (square-root of A times B). Keep in mind that custom made 1/4 wave transmission lines would typically be used for frequencies above 100 MHz due to fabrication and size constraints. An example of two of these devices is shown in the other photo (see figure 2). These are homemade power splitters for 70cm and 2 meters made from 1" square tubing and a silver plated brass center conductor producing a 35 ohm characteristic impedance. These devices allow driving two loads and still presenting a 50 ohm impedance to the source.

So what can you do with this feature of converting an open circuit into a short circuit and vice-versa. Take for example an amplifier which is supposed amplify a 144 MHz signal and suppress the second and third harmonics to a sufficient level to be pleasing to the scrutiny of the FCC. The second harmonic frequency of the amplifier is 288 MHz and the third harmonic is 432 MHz. If two short pieces of coax are cut to the electrical 1/4 wavelengths of these two frequencies and attached to the output of the amplifier with their outputs un-terminated (there's that open circuit again) then there would effectively appear at the output of the amplifier a short circuit to ground for the two bothersome frequencies we were trying to suppress and the good frequency of 144 MHz would go right on to the antenna unaffected. You probably noticed I said "electrical" 1/4 wavelength. That's right, we still have to consider the correction for the actual length of the cable due to its velocity factor. This can be generally on the order of .66 to .78

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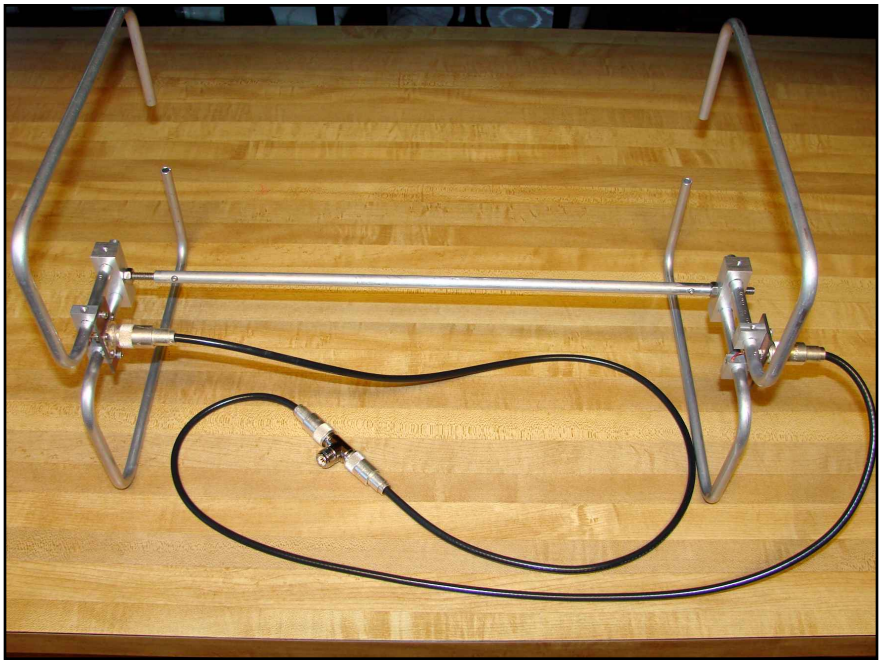


FIGURE 1 - In this photo of the stacked 2 meter loop antennas, two 1/4 wavelength sections of RG-59 (75ohm) (see figure 1) coax are used to maintain a 50 ohm match at the "tee" feed point.

!/4 Wavelength Thoughts from page 3

depending on the type of coax being used.

So far we've only talked about the _ wave transmission line, how about the 1/4 wavelength transmission line. The unique feature of this line length is that for the frequency of which it is a 1/4 wave the exact impedance seen at the end of the cable is also replicated at the other end regardless of the impedance of the line. This unfortunately has been the source for much confusion over the years. For example, where you are advised to use exactly a 1/4 wavelength or multiple thereof to feed an antenna and that you will have a perfect SWR by doing so. In either case the antenna impedance may be reflected at the other end but the line will still have SWR due to any mis-match between the cable impedance and the antenna impedance.

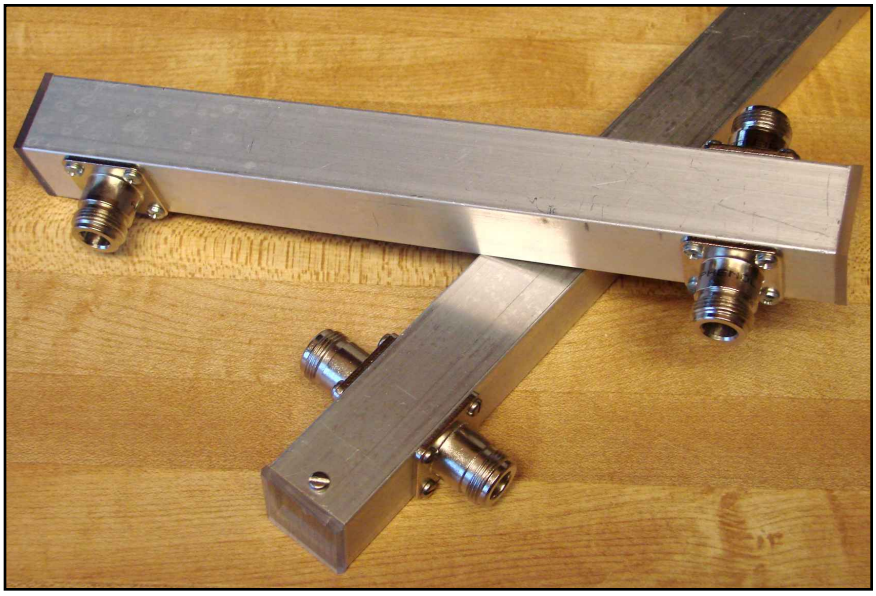


FIGURE 2 - This is an example of homemade power splitters for 70cm and 2 meters made from 1" square tubing and a silver plated brass center conductor producing a 35 ohm characteristic impedance.

"Build" Project On The Bench

by Chris Thompson, K4HC
Vice President, GARA

Chris, K4HC

The Software Defined Radio receiver project as announced in the last newsletter is getting ready to have our build session next weekend. The response was even better than I hoped for – 16 people expressed an active interest in this project, and several others mentioned that if it weren't for other commitments right now, they would have participated. I believe that we may end up with some new members as a direct result of this project.

The program for the March meeting will be a review of the project, and show off some of the completed receivers, along with operating impressions from those who built them.

All of this tells me that there is a strong interest within the club for "hands on" radio. I want to see continuing projects that everyone can participate in. So…what do you want to build? Antennas? Shack accessories? QRP Transceivers? Do a little digging in your QST's, Handbooks, and online, and find what interests you for a project. Chances are, others will be interested too. Then let us know, and warm up your soldering irons.

In Asheville, the Southern Appalachian Radio Museum's nostalgic collection strikes a chord with visitors.

Echos from the Past

Story by Marla Hardee Milling

Photography by Thomas Forrest

At first glance, the Southern Appalachian Radio Museum seems miniscule — a time capsule of sorts packed into a slender room in the Elm Building on the campus of Asheville-Buncombe Technical Community College. But it expands greatly as volunteers detail the history of the assortment of transmitters, receivers, converters, code keys, ham radios, and other vintage items on display.

John Travis, who serves as secretary-treasurer for the museum, greets me at the door and leads me on a journey through radio history. "Radio is really young," says Travis. "In 1923, the first transatlantic contact was made."

A few years earlier, in 1915, amateurs could typically communicate across only a few hundred miles.

But that changed in 1916 when 200 amateur stations — all members of the American Radio Relay League — participated in the first nationwide relay. They sent a message coast-to-coast in less than an hour.

As we talk, music drifts from the speakers of one receiver. "You're listening to a 1922 Crosley," explains Travis. "[Powel Crosley] also made refrigerators, stoves, and automobiles. And he ran a radio station in Cincinnati [Ohio]."

Crosley began building a radio after he shopped for one for his son and found the $130 price tag too expensive. He sold his first creations for $35 and soon became the world's largest radio manufacturer.

Travis opens the Crosley model to point out the one-tube receiver. On a nearby shelf, there's a stash of transmitter tubes ranging in size and appearance.

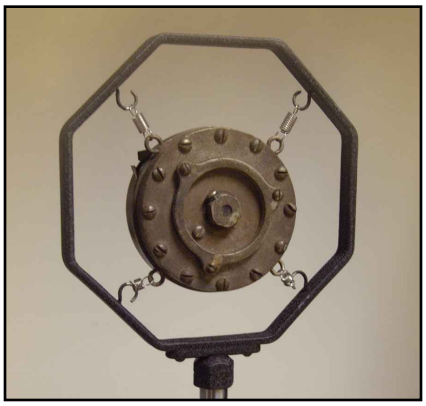
"Kids will come in and say, 'What are those?'" Travis says with a chuckle. "People who tour the museum usually fall into three groups. First, there are collectors, and then the ham radio operators. The third group are the grandmothers and grandfathers who bring in their grandkids to show them what they used to listen to."

Travis gets a kick out of letting kids see a spark jump from a spark gap transmitter, showing them how to tap a code key to get a feel for sending Morse code, and pointing out homemade radios constructed from a kit. One of the popular brands was called a "Heathkit."

"The Heath Company produced tons of different kits. You could order a radio already made or build it yourself, which is what most people did," says Travis. "People still like to build things with their hands. Some people will come in and say they wish these companies were still in business so they could get a kit. I tell them there are still kits available on the Internet — go to Google and type in 'radio kits,' and you'll find there are still a lot out there."

Reaching the world

A fascination for radio technology sparked in Travis when he was growing up on a farm in Virginia. In 1943, he spotted a book in his high school library on how to build a radio; the pages included step-by-step diagrams. "It said you could build a one-tube receiver and hear stations all over the country," says Travis.



Western Electric model 600-A carbon microphone which was manufactured in 1928-1930.

Code machine circa 1940's

A collection of antique broadcast radios line the shelves.

Shelves display equipment housed in the museum.

That was pretty exciting news for Travis, whose family's farm didn't yet have electricity. His mother took note of his enthusiasm and rented a Morse code training device called an Instructograph for one month at a cost of five dollars.

"I knew there wouldn't be another month to practice," says Travis, recalling how he dedicated himself to learning the new skill. "By the end of that month, I had about 10 words a minute."

He moved up to 25 words a minute when he entered the Signal Corps around 1948. He then went to work running the budget division for the Civil Aeronautics Authority, which later changed its name to the Federal Aviation Administration. "I didn't do any serious building of radios until 1949 or '50," says Travis. "I was building literally from the power supply on the bottom all the way up. Many were five feet high. Today, everything is all contained in a small set."

Entertainment and encouragement

Memories bubble to the surface for many visitors to the museum as they recall family time sitting around a radio and listening to shows like "The Lone Ranger," "Lum and Abner," "Amos 'n' Andy," and "Ma Perkins," along with symphony concerts and play-by-play action of sporting events.

In addition to entertainment, radio also provided comfort to families in the 1930s when tuned into President Roosevelt's fireside chats. Travis says those talks made people feel the President was speaking directly to them, giving hope during the difficult years of the Great Depression and World War II.

One radio in the museum immediately stands out because of its color. The yellow-orange hued "Gibson Girl" transmitter saved untold numbers of downed airmen during WWII. "If you were shot down in the South Pacific, you better have had one of these in your lifeboat," says Travis. "It's battery powered. You send out an antenna on a balloon and then crank out an automatic SOS. No one knows how many lives were saved by this radio."

The Hammarlund Manufacturing Company produced tens of thousands of radios, many of which were used in remote outposts and communication centers in WWII. The company, started by Oscar Hammarlund of Stockholm, Sweden, was originally in New York and New Jersey before it moved to Mars Hill. Many people in the region were employed there, Travis says, and today the museum holds several Hammarlund models.

Not exactly portable

It's amazing to see just how big and heavy some radio sets are. One example: a 1936 Police Mobile Radio Transmitter. Travis bends down and attempts to lift the radio. It doesn't budge an inch. "I can't lift it — not even one end of it," says Travis. "It's hard to imagine that it was carried in the back of a police cruiser." This particular model has a W-9 label, which Travis says means it was probably used in Illinois. "The country is divided into districts. Here, we are in a W-4 district."

On another shelf sits the RCA AR-812, the first commercial superheterodyne (a type of receiver), along with a photo of its creator, Edwin H. Armstrong. "You and I are still using this technology in our car radios," explains Travis. "Armstrong also invented FM in the mid-'30s. This was to get rid of static."

Growing a museum

A variety of cards featuring the call letters of ham radio operators are arranged in plastic sheaths and hang on the side of one shelf. "These are called QSL Cards," says Travis. "If you're a ham radio operator, I might send you

my card, and you'd send me yours." Some of the notable cards that Travis has collected include one from late Senator Barry Goldwater and one from late King Hussein I of Jordan.

In the back of the museum, a row of ham radios are positioned on a table. Volunteers operate the radios for visitors to hear, since most guests are not licensed as ham operators.

Norman Harrill, a retired engineer from WLOS-TV in Asheville and president of the museum, teaches ham radio licensing classes at A-B Tech. It was Harrill who first approached the school with the idea of locating the museum there.

Harrill, along with most of the other museum creators, belongs to the Quarter Century Wireless Association (QCWA). Several people in the group had radio collections and began talking in the late '90s about the possibility of establishing a museum to showcase the vintage equipment and to preserve history. The museum, a nonprofit organization, opened five years ago.

"We're on a fund-raising mission now," says Travis. "We hope to wind up with a free-standing museum of our own."

The museum's fans hear that message loud and clear.

Top left, a "Gibson Girl", transmitter which was used in WWII, bottom, the operating station of the museum, W4AFM. All of the equipment in the museum was donated from estates and individduals.

This story, which was originally published in Our State magazine, November 2006, is reprinted with permission of the author and of the publisher. The author is freelance writer Marla Hardee Milling, who can be reached at marlahm@charter.net.

Although Thomas Forrest is a contributing photo-journalsit for Our State magazine, these photos for the "Feed Line" were exclusively shot by Forrest and were not the photos used in the orignial published article by Our State.

Below, Clint Gorman, K4KRB, a volunteer with the museum, listens to a RME-69 receiver. Such a receiver was used by the Dutch underground during WWII.

GARA Meeting Minutes

REGULAR MEETING
February 26, 2007

The regular meeting of the Greensboro Amateur Radio Association was held Monday evening February 26, 2007. The meeting opened at 7:20 p.m.

The minutes of the last meeting were approved.

John Doggett KI4BMS congratulated all new generals and reported that Rick Mainhart WB3EXR had taken pictures at the test session last weekend and will write an article about the test session.

Chris Thompson K4HC spoke about the software defined radio kits by Tony Parks. He showed the kit he had just received and made a list of anyone wanting to order them and to which he then e-mailed the ordering information.

Al Allred, K4ZKQ, gave the financial and forecast reports and stated that all bills were paid and that membership renewals were a little slow in coming in. The forecast looks good.

Tom Forrest spoke about the web site and said he has received good comments about it.

Tom has put a "welcome Package" for upgraded Hams on the web site. He also asked for articles for the feed line.

Alan Bradley, KD4IUN, talked about the Natural Science center having an event on March 31 and that we need to staff the Ham station there. There was also talk of moving the monthly meeting to the natural science center. He also mentioned the need for soccer tournament volunteers. Volunteers are also needed for the Highland games.

Roy Smith, N4BYU, made a Motion that the club vote on moving the meeting to the science center. The motion was seconded and approved.

Bill Mauldin WG4R gave a great presentation about airline safety with some humorous. Pictures and stories from his career as an airline pilot.

The meeting closed at 8:30 PM

Board of Directors Meeting
March 12, 2007

Those present were John Doggett-KI4BMS; Clark Doggett, KG4HOM; Al Allred, K4ZKQ; Roy Smith, N4BYU; Ernie Wall, NC4EW; Chris Thompson, K4HC and Greg Spencer, KG4UQV.

The meeting was called to order at 7:30 PM. John said he had been asked about the club participating in the Summerfield Founders Day Festival on Saturday May 19.

After a brief discussion the board voted to bring it up to the club at the next regular meeting for a vote. This was passed.

John also spoke about moving the monthly meeting to the natural science center. It was decided that the club would vote on this at the next meeting. The G.A.R.A. board supports this change.

Ernie stated that the club now has 74 members with several new members and a few old members that have not yet renewed.

Al said that the expenses thus far are in line with the forecast.

Chris said that there has been good interest in the software defined radio project with 16 people so far.

There will be some investigation into more hands on projects in the future. The meeting closed at 8:30 PM

Respectfully submitted by
Greg Spencer, KG4UQV, Secretary

Down East Hamfest Location Change

At the last minute, organizers of the The 17th Annual Down East Hamfest held in Kinston, NC, March 25, had to change the hamfest location. The new location will be in the Lenoir Community College gymnasium, on Highway 70 at the intersection of Highway 58. Talk-in will be on 145.47 with a tone of 88. 5 Hz. Ticket prices will remain the same.

Snap Shots

Homebrew anyone?

Say, WHAT??!! *A store dedicated to the "homebrew" amateur enthusiast? Not quite...unless you're enthused about running you own personal microbrewery. It was a good wish anyway! The store is located in Greensboro.*

Photo by Tom Forrest, N4GVK-
(Submitted to QST magazine & used with permission of the store)

Field Day 2007 Offers a Learning Opportunity for Newcomers

NEWINGTON, CT, Mar 12, 2007
Although Field Day 2007 is still more than three months away, many ham radio clubs and groups already have begun making plans for this year's event, Saturday and Sunday, June 23-24. Field Day has always been an ideal time for new hams to become more proficient operators and for prospective licensees to get "bitten by the Amateur Radio bug." That may be even more the case during Field Day 2007, as many radio amateurs gain new HF operating privileges because of the rule changes that went into effect February 23.

"This is an opportunity to get new or upgraded licensees on the air for some active mentoring and active learning," says ARRL Regulatory Information Specialist Dan Henderson, N1ND. "Field Day 2007 will be a chance to learn and grow, but above all, it will be a lot of fun -- and for many there is perhaps nothing more fun in ham radio than ARRL Field Day."

The numbers support that claim. Last June, more than 32,500 operators took part in ARRL Field Day -- some as individuals but many more as part of a club or group. The League saw some 2200 Field Day log submissions for the 2006 event, during which nearly 1.24 million completed contacts went into the log -- not a record but up a little from the previous year.

While no longer a licensing requirement, Morse code (CW) remains a very popular Field Day operating mode, perhaps because CW QSOs are worth twice as much as phone contacts. Last year some 56 percent of Field Day contacts took place on SSB, while nearly 42 percent were on CW (the rest were digital contacts).

Henderson points out two small changes in the Field Day rules starting this year. First, participating stations may only complete one satellite contact for bonus points via a single-channel FM-mode spacecraft (Rule 7.3.7.1), and it must be an Earth-satellite-Earth contact. "This will allow more stations to access this very limited resource," he says.

Tom Forrest, N4GVK | GARA

Field Day 2006 visitors John Fulough and his son Matt, 9, of Pleasant Garden get a tour by GARA member Bob Schwer, K3ZGA. Matt got a chance to listen in on the HF bands.

Second, an individual Get-On-The-Air (GOTA) station operators will earn 20 points for each 20 contacts, up to a maximum of 100 per GOTA operator. Henderson notes that no partial point credit is available, and GOTA operators may not "pool" contacts toward any 20-QSO GOTA station bonus.

"Amateur Radio stands at a juncture where we can embrace both the old and new," Henderson says. He notes, too, that the variety of available operating modes -- traditional and experimental -- contributes toward Field Day's status as the most popular annual operating event.

"Field Day is truly the time where we bring Amateur Radio to Main Street USA -- a great time for 'the Bug' to bite as many people as it can," Henderson says. "Use Field Day 2007 to open up Amateur Radio to the next generation of radio amateurs on your Main Street! It's up to us to make it happen."

Ham Happenings *NEWS* briefs *Continued from page 2*

In the Hospital

Ray Ballance, KI4BVD, was recently hospitalized. He is the father of **Gary Ballance, KF4DWV** and grandfather of **Matthew Ballance, KG4WCU**.

Rusty Hughes, WA4SAD, has recently been in the hospital according to his wife Sue. Rusty was undergoing IVIG therapy at Moses Cone hospital. The doctors are hopeful this treatment will boost his immune system and help him regain strength.

Ernie Wall, NC4EW is up and moving around again after knee replacement surgery recently.

Thursday "Lunch Bunch" field trip ...

WGHP FOX 8 Transmitter Site Visit

By Don Harris, W4BUZ

The group of seven who visited the WGHP Fox8 transmitter site February 22, after the luncheon about 12:30 PM. The first of the group arrived at the old transmitter building on Plainfield Rd.as did Charles Layno, W4CL, WGHP Fox8 Transmitter Supervisor.

There are two towers and two buildings located on the 38 acre transmitter site. Charles took us to the original tower first and gave us the history of the WGHP beginning and original construction work. The first tower has the original analog Ch. 8 antenna atop it and an ATSC digital TV antenna some 900' up side mounted which served when the ATSC low power original transmitter was started up. The tower is 1255' high. We toured the original transmitter building which is of brick structure and smaller than the new building.

Charles illustrated, when inside, how the original transmitter equipment was placed and where the control desk was located when FCC required that a licensed operator be present at all times the station was on the air. Of course, the old Harris analog Ch. 8 transmitter has been removed, the inside refurbished and only backup transmitter equipment remains connected to the antennas on the old tower. Also, there are several racks therein that houses microwave and signal processing equipment that is still operational. After a thorough tour and description of everything there, we drove around the block to the other side of the property and entered the side the that new building is located on.

Upon entering the beautiful new 4500 square feet building, the first large room on the left is the Transmitter Supervisor's office where Charles enjoys all the amenities therein, including a TV receiver that receives both NTSC and ATSC signals. It is one nice office. There is a very nice rest room area and kitchen on the left side of the building.

We then passed through the rear doors of the building and walked to the base of the new tower. According to Charles Layno, the two towers are the same height but, visually, it doesn't look that way as one approaches the transmitter site. Depending on which side you approach from, the towers appear to be different in height. I believe Charles said the towers were 585' apart.

We received a detailed description of the assembly and erection of the tower, as well as info on the feed lines and ice protection. There are 4 antennas on this tower, a primary and backup antenna for both the Ch. 8 and Ch. 35 systems. The wind was blowing outside at gusts to 35 MPH but the temperature was in the sixties, so it was a good day for this portion of the visit.

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Charles Layno, W4CL, WGHP Fox 8 Transmitter Supervisor, shows the group the new tower base above and in the transmitter room below.

Photographed by Charles Lyons, NT1J

WGHP Tour From page 10

We went back into the transmitter building and saw the 600 KVA diesel emergency backup power system, along with the battery backed up uninterruptable power system which maintains power on control and signal circuitry within the building, etc. If the power fails, the diesel generator cranks and applies power to the entire system in less than 20 seconds. Airtime lost would be the time from power loss to the generator taking the load, plus a small recovery amount, since the uninterruptable power system does not provide power to the RF final amps.

The group then covered the new Ch. 8 transmitter. What is unique about this transmitter is that it is all solid state and currently operates in the NTSC transmission mode with the main video in the 180 to 186 Mhz. 6 Mhz. Channel. It is modular in it's makeup. If an RF power amplifier module fails, the power output of the transmitter drops a small percentage, The module is simply removed and replaced. It is constructed so that it virtually backs up itself. It is unique in that when the transition to ATSC digital transmissions come on February 17th, 2009, a few modules will be changed and it becomes the Ch. 8 ATSC transmitter in the same 6 Mhz. frequency allocation. The analog TV signal is upper sideband transmitted and lower sideband suppressed.

The ATSC transmissions are lower sideboard transmitted and upper sideboard suppressed. If you like a transmitter spread wide and tall with lots of big meters, you would like this one. It is a beauty. Next, we toured the room that houses the UHF Ch. 35 ATSC digital TV transmitter. It is temporary and will be shut down February 17th, 2009. The high voltage on the final IOT tubes in this transmitter is only 35,000 volts.

This transmitter is built so that the power of the two tubes is meticulously phased and conbined. If one fails, the transmitter stays on the air at a reduction in power. Starting up a cold transmitter can be a slow process. This unit will restart quickly and automatically, if the primary power to the filaments and high voltage transformer is not off for more than 20 seconds. The 35 KV high voltage transformer is located outside the building, along with others.

This is one nice broadcasting plant. All of us extend a special thanks to Charles for his efforts and time in making the visit possible and to the management of the station, too.

The tower is 1255' high.

Above, the group touring the site were, left to right, Don Harris, W4BUZ; Charles Layno, W4CL, WGHP Fox 8 Transmitter Supervisor; Rusty Hughes, WA4SAD; John Link, W4HWT; Doug Johnson, K4OJP; Larry Pike, KI4PRT; and Clint Davis, W4IVY.

Right, getting a first hand look at the tower base.

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.

MONDAYS & FRIDAYS – at 11 AM, Greensboro Hams get together for lunch. On Monday they meet at Jake's Diner at Wendover and Big Tree Way and on Friday lunch 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 Starbucks on Battleground (summer location till Daylight Savings time changes)

Greensboro Amateur Radio Association
P.O. Box 7054
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Web:
www.w4gso.org

This is your last news letter if you have not renewed for 2007! If you have renewed, we appreciate your support!

The Official Publication of GARA

Ham Radio Antenna Bills in Play

NEWINGTON, CT, March 8(ARRL) -- Lawmakers in three states -- Arizona, Maryland and Oklahoma -- are considering Amateur Radio antenna bills that would put the essence of the limited federal pre-emption known as PRB-1 into each state's statutes. The Arizona and Maryland bills go a step beyond most PRB-1 legislation. They not only would require that municipal land-use or zoning regulations "reasonably accommodate" Amateur Radio communication per PRB-1, spelled out in the FCC's Amateur Radio rules in §97.15(b), they would extend the same protections to homeowners in certain private communities where deed covenants, conditions and restrictions (CC&Rs) apply. (For more information, go to web URL: www.arrl.org)

Late Breaking News !

PRB-1 Bill Introduced in North Carolina!

By Timothy B. Slay, N4IB
ARRL North Carolina Section Manager

March 17 - Thanks to the efforts of Ham Hicks, KB4BR and Bill Morine, N2COP, Senator Julia Boseman (D-New Hanover) has introduced a bill that would ease antenna restrictions for radio amateurs. The bill has been referred to the state senate's Commerce, Small Business and Entrepreneurship Committee. Ham hopes to have Representative Danny McComas (R-New Hanover) introduce a similar bill in the House. The bill isn't as broad as we would like and needs to be revised before it can receive our full support. But it's a step in the right direction to help North Carolina become the 23rd state to pass Amateur Radio antenna legislation! Stay tuned....we'll soon need you to help by asking your legislator to support this bill!