



THE AARC BEACON

A monthly publication of the Albemarle Amateur Radio Club

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NOVEMBER 2011

Selected as 2011 Dayton Hamvention "Ham Club of the Year"

If you missed it — you missed an exciting one



The October AARC club meeting featured a presentation by the Charlottesville High's Science Club. Sponsor Matt Shields and his students Ryan Bouabid, Jessie Press-Williams and Dania Jazouli brought their balloon launch payload to the club and explained how they won a NASA Award for their high-flying experimental balloon launch.



The balloon payload carried an APRS transmitter for tracking, a very loud siren for detection after landing, a still camera and a motion camera to record the rise and fall of the balloon. The club appealed to our club for assistance with increasing the transmitter power for tracking. They offered thanks to the AARC for our assistance which amounted to the discovery that they were trying to use a cardboard container as a ground plane for their APRS transmitter. Our Technical Director Jim Owen (K4CGY) pointed out that they needed a ground plane and suggested a way to incorporate ground radials to push the signal off the radiator. Some stiff copper wire from Lowes filled the bill and they constructed a quarter-wave antenna attached to the bottom of their payload container. This not only made the difference but made such a difference that the APRS was being picked up all over the east coast. However, it all worked out and through the tracking of Dennis Mennerich (K4THE) on his

The > 90,000 Feet "High Flying" Payload



computer from home, they were directed to within a 100 yards of its actual landing where the siren brought them to the tree from which the payload was hanging. They expressed their sincere appreciation to the club for our assistance and announced that they are already planning another launch next year. They promised to keep the club posted on the planned launch and invited all members to be present.

Amateur Radio Licenses
reach an all-time record
high in September

For the 1st time there are more than 700,000 radio amateurs in the US as of the end of September according to an ARRL spokesperson.

December 1971—285,000

December 1991—494,000

December 2011—700,221

Realizing that not all licensed hams are active, the numbers are still impressive. And we are still asked, "Amateur Radio, do they still do that anymore?" Yes, even today, when disaster strikes, amateurs still jump to the need and save lives all over the world.



November AARC Meeting
will be held on November 8th, 2011 at 7:30
PM at the NRAO.

Dennis Mennerich, K4THE, will give a presentation of his "Variable Off-Center Fed Folded Dipole" aka the VA2ERY Clothesline Antenna, along with a discussion of JT-65 weak signal digital mode for HF...Don't miss it !!!

AARC October 10, 2011 Meeting Minutes

BOARD MEETING

Call to Order – Meeting called to order by President **Jim, K4JEC** at 7:07 p.m. The following members were present:

K4JEC, N4PGS, K4PMC, K4DND, N4UVA, K4BAV, AD6JV and K4CGY.

Secretary's Board Report

Patsy, K4PMC, reported the minutes of the September Board Meeting were published in the Beacon. K4PMC asked for corrections or amendments, Nothing was offered so the minutes stand as published.

I have posted a new roster on the website of 124 members as of today.

Treasurer's Report- N4UVA stated that he was prepared to give the figures at the general membership meeting.

N4UVA stated that everything was looking good with a current balance of \$5143.70.

Vice Presidents Report –

Greg, N4PGS – Nothing.

President's Report – K4JEC stated that he had two pieces of business for the board.

We need to set the price of the tickets for our Annual Awards Banquet.

The AARC Annual Awards Banquet will be held on December 13 at the Elks Lodge on Elks Drive in Charlottesville. We have charged \$16 for the tickets for several years now and the price has risen a little each year on the charge from the Elks Lodge. The club has been subsidizing the difference and paying the cost of the guests meals. This year, as a convenience to our members,

we will offer dinner tickets online from our website via credit card charges. This will add about 50 cents for the fee charged by PayPal. The other 50 cents will be used to help reduce the club's subsidy of the charge from the Elks Lodge over the money collected from member ticket sales. I ask that the board approve \$17 as the ticket charge for this year's banquet. The board unanimously approved the price of \$17 for tickets for the upcoming banquet.

I propose the following policy statement:

The Board of Directors has established the policy that the Club will reimburse instructors for the purchase of teaching materials that ultimately become the club's property. If one purchases text, instructor's manuals, etc. and expects to add them to their personal library, they must bear the expense personally. For all teaching materials purchased by the club, the Education Director must take custody and re-circulate them to meet current teaching responsibilities and list them as inventory in the director's annual report. Entry license students and upgrade students must purchase or obtain their own text -- many can be passed on until they become obsolete. The lead instructor can take prepaid orders from prospective students and order the text in bulk, however, if they order text without prepayment they take the risk of not collecting for the books and that should be a personal liability. The Club will not stock textbooks in advance due to the fact that they have such a short shelf life that they can become obsolete before passing on to

a student for recovery of the investment.

After much discussion, the policy was approved on a motion made by Don (N4UVA) and seconded by Jim (K4BAV).

Committee Reports – No reports for the board.

Old Business -- Nothing reported

New Business -- Nothing reported

Adjournment – Meeting adjourned at 7:28 p.m.

GENERAL MEMBERSHIP MEETING

Call to Order -- The Business Meeting was called to order by President, K4JEC at 8:06 p.m. following the program presentation of the Charlottesville High School Science Club Balloon Launch. The program was well received and stimulated a number of questions.

After the program, K4JEC welcomed everyone and ask that all members state their name and call. There were 24 members present. The sign-in sheet is to be attached to file copy in minutes book.

Secretary's Report –

Patsy, K4PMC, reported the minutes of the September Meeting were published in the Beacon. K4PMC asked for corrections or amendments. Nothing was offered so they stand as published. She stated, I have a new application that was handed to me at the end of the last meeting from Suzanne Zimmermann. She is one of the most recent Technician

Class members. We need a vote to approve her membership. Her dues are paid. The club voted unanimously to accept the application.

Treasurer's Report – Reported by Don (N4UVA)

Opening Balance	+\$5873.45
Deposits	+\$ 870.83
Expenses	-\$ 141.08
Closing Balance	+\$5143.70

President's Report – I am very pleased to recognize that this has been the year of public service events for our club. We have set a new record for the total number of public service events served by our club and we need to thank Dave Damon (K4DND) for his leadership in coping with all the details to cover these events for the club. There was a round of applause for Dave's efforts.

WE have set the date, time and place of the Annual Awards Banquet. Tickets will be \$17 this year. We are going back to the Elks Lodge adjacent to Towe Park on Elks Drive in Charlottesville. The date is December 13, that is the second Tuesday in December. We will gather at 6:30 pm for a social ½ hour and dinner will be served at 7 p.m. We have placed this note on our website and this year you can purchase your tickets on the website and have them charged to your credit card through PayPal. PayPal will email our Treasurer and Secretary upon receipt of your order so we will have a roster of those who have prepaid. If you plan to pay at the door, please send in your reservation by Friday, December 9, so we can give the venue a head count for seating and sufficient food.

AARC Meeting Cont:

We will gather for a social half-hour at 6:30 pm with a cash bar. Dinner will be served at 7 pm. Please put this date on your calendar now and plan to be with us. This is one of the highlights of the club's year and you really won't want to miss the fellowship and honor those who have served the club above and beyond this past year.

Vice President's Report – Greg reported all is well.

Committee Reports

Technical Committee – Jim (K4CGY) stated he

really appreciated the efforts put in by Elmer (KH4UCI) and Dave (K4DND) in getting our repeaters up and running through updates and repairs.

Fund Raising Committee – Michael, KE4JJD – Michael has enlisted Dave's assistance to take care of the raffle tonight because he had to be out of town. Dave reported he had a current Handbook and a multi-meter for the raffle tonight.

Public Service Committee – Dave (K4DND) reported that the club had a record number

of public service events this year and he expressed his appreciation for those members who supported the effort. He also reported Elmer (KF4UCI) had repaired the 76 machine and had expenses of \$25.88 to be reimbursed. He reported he had personal expenses from the Bucks Elbow site that totaled \$959.09. All total the personal expenses to be reimbursed was \$984.97. He moved that the club authorize this reimbursement and it was seconded by Greg (N4PGS). Jim Owen stated he felt the expenses were necessary and

that the club should support the members incurring them with thanks. The club approved the motion unanimously.

Education Committee – Bill, AD6JV reported that the Extra Class was proceeding along very nicely.

Estate Committee – KI5LLB No report.

Old Business – Nothing.

New Business – Nothing.

Adjournment -- The meeting was adjourned at 8:45 p.m.

DX NOTES - NOVEMBER 2011**DX Notes article for November Beacon**

As you heard at the last AARC Meeting and have no doubt observed on the HF Bands, propagation has been outstanding the past month or so. The higher bands – 15, 12, & 10 Meters – have been open to many parts of the world from early morning until well after sunset. I have worked a lot of great DX on 12 and 10, and have observed propagation to Asia at the same time European stations are booming in. On these bands, a dipole and 100 watts will work very well – give it a try!! Also, as the days get shorter and periods of darkness get longer, the Low Bands (160, 80 and 40M) also improve for DX work. The recent T32C Dxpeditio to East Kiribati demonstrated low band success and provided a “New one” on these bands for many of us. DX'ing

should be super the next few months with the improved propagation.

Here are a few upcoming DX-peditions that may be of interest:

Temotu: H40FK (DG1FK) and H40FN (DK9FN) will be on 160-6M, with a focus on CW and Digital, Feb 7-20, 2012. QSL to home calls

Bhutan: A52DL (LA9DL) and A52VM (LA6VM) will be on Nov 3-13 with a focus on CW and Digital. QSL to home calls.

Burundi: 9U3TMM will be on by IV3TMM Dec 28-Jan4 – HF SSB and RTTY. More info to follow.
Christmas and Cocos-Keeling Islands: OH2YY will put VK9XM (Christmas) on 4 and 8-11 Nov, and VK9CM (Cocos) on 5-7 Nov. He will be on 7-

28 MHZ on SSB. QSL Direct.

Good DX'ing!

73, Alan K9MBQ

AARC Members - For those of you with an interest in DX-ing, here is the cover note from the latest QRZ DX weekly newsletter to perhaps wet your appetite. I cannot fwd the actual weekly 4 pg letter since it is a "Members-Only" proprietary item . . . but there is good info below, some of which I broadcast after the Mon Night net re T32C. Feel free to contact me re DX questions/info beyond the Beacon monthly DX note at aws-winger@earthlink.net 73, Alan K9MBQ

H e l l o D X e r s :

I'm sure most of you have

been chasing 3D2R and T32C for the past several days. An unexpected turn of events for 3D2R yesterday as they announced they were shutting down at 1200Z on October 5th. This was a few days earlier than had been expected so I hope you managed to work them where you needed to do so...As for T32C well the latest bulletin reports that after four days, they passed the 50,000 Q point, and still have three weeks to go. Everyone should have ample time to work them no matter what band/mode.

They have not been on RTTY for a variety of reason, but indicate that RTTY is now well under way on several bands. The ClubLog on-line log search is getting a very high hit rate. The internet service is better than expected and they are able to upload logs twice a day at 7-AM & 7-PM local time. Don, G3XTT

DX NOTES - NOVEMBER 2011; CONT.

notes there is a feedback facility on the website at t32c.com for comments you might wish to pass along to the team on the island.

Mio, JR3MVF/XV2YL and Chae Do Sook, HL1KDW/XV2KDW will be on the air Oct 7-12 from Ho Chi Min City. Most of their operation will be on 20 & 15 meters.

Randy, N0TG tells me that he, K8LEE and N1SNB will be going to SABLE ISLAND (CY0) again in July 2012. He says they just felt they didn't do a good enough job in working the areas that need CY0 the most, so they will try again.

Trond, LA9VDA and Bjorn, LA5UKA will be on the air from Spjaeroy Island (EU-061) as LA6Q October 7-9 working 40-10 + 6M MS using SSB/CW/Digital. QSL via LA9VDA.

OJ0X MARKET REEF will get a new team consisting of OH1ND, OH2BH, SM0W and SM6U. This team will have three complete stations with a target of 50,000 Qs and have stated they will not leave until that goal is satisfied.

CQ magazine is pleased to announce a significant expansion in the number of DX Marathon plaques to be awarded each year. Presently, the Northern Illinois DX Association sponsors the only two plaques - one for the top Unlimited Class score and one for the top Formula Class score. Starting with the announcement of the 2011 Marathon results in the June 2012 issue, DX Marathon Administrator John Sweeney, K9EL, says additional plaques will be awarded for the following top scores. Top CW score - Plaque sponsored by Bencher, Inc. Top SSB score - Plaque sponsored by the Collins

Amateur Radio Club in Memory of Art Collins, W0CXX

Top Single band scores (10,12,15,17,20,30,40,80) - Plaque sponsor wishes to remain anonymous

Top Continental scores - Plaque sponsor wishes to remain anonymous.

An additional sponsor for top Digital Mode score is desired. Please contact the DX Marathon Administrator, K9EL, at k9el@dxmarathon.com if you wish to sponsor this plaque.

Please check the DX Marathon website (www.dxmarathon.com) for details on the new plaques and qualifying scores. With the addition of the Republic of South Sudan to the DXCC list, CQ has also added the Republic of South

Sudan as a qualifying entity for the 2011 DX Marathon. An updated score sheet (2011.4) and updated CQ Country Lists are now available on the DX Marathon web site.

The CQ DX Marathon is a year-long activity encouraging DXing on the HF bands. Competition begins anew each January 1st. Details are available on the CQ magazine website (www.cq-amateur-radio.com) and on the DX Marathon website.

Until next time, enjoy the chase, but HAVE FUN

73, Carl, N4AA

PRESIDENTS LETTER

As I have said many times before, if you adopt amateur radio as your hobby, there is always something else to learn and challenge you and that is what I love about this pastime. I have several different radios that I have only the barest knowledge thereof to operate them. I am making a commitment to myself to spend some time and really get to know my equipment because it is embarrassing to get out into the field and realize that you can't program a new operating frequency or

tone encode into your rig without the radio in one hand and the manual in the other.

I have to confess I really admire someone who can grab another's radio and program it from memory as casual as if it were their own. To have that much knowledge about various radios and related equipment as to be able to counsel others on solving their problems is certainly admirable. I want to gain enough knowledge about my own equipment to at least

clearly establish my independence.

This is not an easy task. Some of the manuals that come with our equipment look more like a two-pound manual for establishing a democracy in a third world country than an operating guide for your newest radio. A further complication is a manual written in a foreign language that has been interpreted into an American version of English by the same foreigners. These range from

a tough challenge to an impossible mission.

Sometimes I can get better results by just repeatedly pressing buttons until I get the desired results instead of struggling with the manual. Once I establish the pattern of button pushing to obtain a particular result, I add that sequence to a "Cheat Sheet."

A cheat sheet can go along ways toward making programming a particular radio much easier

PRESIDENTS LETTER, CONT.

than resorting to manual thumbing of the pages in the manual. My cheat sheets are usually small enough to fit a 3 X 5 inch card folded in half that one can carry in their accessory pouch along with spare batteries or battery packs, adapters, etc.

I read a letter in the most recent issue of QST complaining about not having any luck in finding amateurs to talk with on the road as he traveled around the country. He was pointing out that no one seems to be monitoring 146.520 (National simplex call channel on 2-meters) any more and too many repeaters are using tone encode. Of course it can be very difficult to program a tone encode while driving down the road making it tough to check into the local repeater for conversation, directions or help.

Of course, tone encode is

more and more required to eliminate interference because of the proliferation of repeaters especially in high density population centers and there just seems to be no answer to that problem. However, there is an answer to the other problem. How many of us are riding around with our 2-meter rigs tuned to our favorite local repeater with no monitor on 146.520? I always have it on monitor in my shack and have taken a lot of calls from amateurs traveling along Route 250, I-64, the Blue Ridge Parkway and the Skyline Drive – some are only looking for conversation but others are looking for directions or in need of assistance. I certainly have it programmed into all of my 2-meter rigs and just forget to monitor it while motoring around the countryside – a

bad habit that I am going to work on changing. Remembering that national simplex frequency has been used to solicit aid on the road for myself should be enough but from time-to-time my memory seems to come up short. I remember passing a car coming out of Baltimore on I-95 and noticing his call in the back window along with a 2-meter antenna on top. I pulled up beside him and waved my full open hand to him followed by two fingers signaling 52. He caught on right away and we talked for more than 30 miles traveling down that boring interstate late at night. It was like having a passenger in my care with whom I could chat. That same adventure has been repeated from time-to-time but far less in recent time

than it used to. I am guessing that far too many amateurs like me forget to monitor “52” and that in many cases we could be visiting on “52” instead of tying up a repeater and broadcasting our conversations to the whole area.

Lets all make a renewed commitment to monitor “52” because it is a reciprocal service that could find at any time one of us on the needy end of the call. After all, we are a two million strong international fellowship and we need to act like it. Next time you and I are on the road, flip me the five and two finger sign and let’s discuss it.

HAMS HELPING HAMS, BY JIM (K4JEC)



Hams helping hams

By Jim (K4JEC)

Hams helping hams with a hand is a long-lived tradition that is very much alive among AARC members. When Jim Owen (K4CGY) first announced he was going to install an antenna tower some 19 months ago and later asked for

few helping hands, six or so showed up the day the concrete base was to be poured – one of whom turned out to be a retired concrete contractor/finisher of many years experience in the person of Jack (WA4V) from Blue Ridge – a long drive to help a fellow ham friend.

Jim said, “I had no idea that it was going to take 19 months to see the tower in the upright position with two beams on top. It seems that every time I tried to order something, it was out of stock or delayed for some one or another

unpredictable reason.”

One day about a year ago, another six or so showed up to help Jim walk the tower up into the standing position. At about the 20 degree position, the load proved to be too much for the crew and that idea had to be abandoned. It was decided that a crane was going to have to be employed and with a crane on site, the beams would have to be assembled and ready to install on the top as well. That proved to be another delay until Wednesday, October 5, when all the pieces fell into place and the crane arrived from Hightech Signs.

Weather delays put the crane arrival off for a week from the original schedule so promises of help from fellow hams had been reduced considerably and on the day of crane arrival, Jim really didn’t know if he had any help coming or not. When I showed-up, he said, “I didn’t think I was going to have any help aside from the crane operator and myself. I am sure glad to see you.” Well, my arrival was followed by Mike Richardson (KJ4MFN) and he was followed by Dave Damon (K4DND) bringing the

HAMS HELPING HAMS CONT:

number to five including the crane operator.

That five-man crew proved sufficient for the job. The first move was to raise the 70-foot tower into the upright position and that seemed to be an uncomplicated project. Two of the three legs of the tower were already bolted to the concrete base (six cubic yards more or less) so the task required lining up the third leg and getting it bolted into place. Once the tower was secured in the upright position, some one had to climb up about two-thirds of the way to release the strap used to hook into the crane. Jim was all hooked into his harness and climbing while the rest of the crew was still deciding to volunteer to climb, or not.

The next step of putting the 6-meter beam on the very top of the tower required two people in the crane's basket, one on the ground to communicate directions to the crane operator and myself to place an eagle eye on



the north/south alignment of the beam. This task was completed pretty efficiently. It was the installation of the huge Mosely HF beam that tested the ability of the entire crew. It took four of us to carry the beam to the crane's crew basket due to the length and delicate nature of its elements. We rotated the

mounting clamps which later proved wrong and had to be returned to their original position while up in the air. Swinging the beam on the crane to permit it to approach the tower mounting pole proved to be quite an exercise in mental and physical logistics. This had to be accomplished while balancing the whole assembly on the edge of the crane's basket by the two crew members aboard. Jim O and Mike proved to be very agile working in such a confined space to control such a big beam so far off the ground. I developed a pain in the neck just trying to watch from the ground.

Once the big beam was securely mounted in place and aligned to a north/south heading, the work began to connect the feed lines to both beams. This also proved to be a daunting task and took another hour to allow swing room so they didn't bind on the tower, waterproof the connections and secure them to the tower to take the strain of the feed line's weight hanging from 70-feet off the ground.

It took roughly four hours to accomplish the mission and a great feeling of relief and joy spread throughout the crew when the crane finally retracted its stabilizer arms and prepared to leave at around noon. This was a very hazardous operation with many possibilities for personal injury however; the whole mission was accomplished in complete safety and a full awareness of the risks involved.



AARC Club Nets

Monday-Night Information Net:

The Information net is held every Monday night at 7:00 PM local time on the 146.760 repeater. Your regular net control, W2HD, brings you news from the ARRL Bulletin and W2PVY provides the Amateur Radio newsline in real audio format.

Northern-Piedmont Emergency Net:

The Northern-Piedmont Emergency Net meets every Thursday evening at 8:00 PM on the 146.76 repeater. The NPEN is a directed net with rotating net-control intended to assist local amateurs with building emergency operating capabilities.

Northern-Piedmont Emergency Digital Net:

A net digital format Emergency Net session is being tried on Tuesday evenings at 7:00 PM on the 146.895 repeater. Lots of fun and we are learning

THE PROFESSOR SAYS.....

The Professor says . . .

What is the most common violation of the FCC Rules committed by hams?

Kerchunking repeaters! Kerchunking a repeater is ham slang for bringing up a repeater by transmitting on its input frequency without identification. It is so common, it is heard all over the country – yes, even in central Virginia – yes even on our club repeaters daily becoming the most flagrant violation among hams.

The FCC requires identification of every transmission and that includes the transmission of a carrier without audio which is usually the case when we hear someone kerchunking a repeater.

What are the specific rules for identification for amateur radio operators? Specifically, FCC rules [97.119(a)] state: “Each amateur station, except a space station or telecommand station, must transmit its assigned call sign on its transmitting channel at the end of each communication, and at least every ten minutes during a communication, for the purpose of clearly making the source of the transmissions from the station known to those receiving the transmissions. No station may transmit unidentified communica-



tions or signals, or transmit as the station call sign, any call sign not authorized to the station.”

Except when exchanging international third-party communications there is no requirement to identify the other stations with which you are communicating. You will note that is a very common practice when communicating mobile to mobile on vhf and uhf and perfectly acceptable.

What about a directed net in which tacti-

cal call signs are being used? The FCC rules still apply. Tactical call signs are very practical and efficient when they are used to identify a specific location from which different operators maybe on duty at different times. For example, if you are functioning as Rest Stop 1, you can respond to calls to Rest Stop 1 and complete a series of transmissions as Rest Stop 1 as long as you close that transmission or series of transmissions with Rest Stop 1 (your call) clear. Of course, if the series of transmissions run to ten minutes, you must identify with your FCC issued call at least once during the ten minute period. It is not only legal but the proper way to function in a directed net where tactical calls are being used. In these situations, tactical calls are very practical and functional and eliminate the need for the net control station to keep track of who is staffing a particular location as shifts change.

Build a good habit of offering your call every time you hit that transmit button to test your accessibility to a repeater. You could be preserving your license at the most and a nasty citation at the least!

HELP FILL THE WELL....BY HARRY, W2HD

There's another of his crazy, confusing titles! Not necessarily folks... in fact this one is very easy to figure out. The well is the source of knowledge and assistance which most of us have needed during our Ham Radio lifetime. At the beginning, it takes the form of our instructional classes and “Elmers” (those people who have assisted us in our Ham Radio progress.) Perhaps some of you studied strictly solo for your examinations, but most of us have had the help of others. My Elmer was my Father, the late W2GG.

At any rate, most of us have gone to “The Well” many times. It doesn't end with the formal training in the class room. How about the questions we hear so frequently about antennas and equipment? There are frequent requests on

the air on these subjects. A response is usually obtained from someone whose experience or training provides the necessary answer. “Elmer” has come forth once again.

OK, Harry, what has that got to do with me? Simply, the answer is that you may now be in a position to help fill the well from which you have made many withdrawals. Perhaps you have completed formal training or have had experiences which answer questions. Do not remain silent, but offer your encouragement and response.

Better yet, volunteer to be an instructor.

73, Harry, W2HD

PROBLEM SOLVERS FOR WIRE ANTENNA INSTALLATIONS

Submitted by Alan, K9MBQ, with permission from Don, W8AD, Alpha Delta Communications, Inc.

This article is for those who are new (and not so new) to HF and need good HF wire antenna installation information, for best performance and lowest SWR across the HF bands

Problem Solvers for Wire Antenna Installations

Of the many questions we get concerning HF wire dipoles and slopers, many deal with the same common issues of antenna installations and performance problems. Indeed, many of the problems turn out not to be problems at all when we are provided with additional information about the situation, SWR "runs" across each band and the installation "site" itself. Additional information from the customer provides useful clues in helping to solve the problems.

The questions we get seem to follow a fairly consistent pattern from those new (and not so new) to HF. Proper installation and operation of VHF/UHF antennas can be VERY different from proper HF antenna installation and that's where the "rub" can come in for those new to HF.

Due to the wavelengths of the VHF/UHF bands, coupling to surrounding objects is usually minimized by placing these antennas only a few feet or so from things in the close-in environment (roof tops, attics, gutters, other antenna, etc.). Now, here's where things greatly change when installing HF wire antennas.

The wavelengths of the HF bands are MUCH longer than those of the VHF/UHF bands, and coupling (and therefore antenna de-tuning) to surrounding objects can and does occur

when HF antennas are placed close to surrounding objects that would not have affected VHF/UHF antennas. As an example, consider a 40 meter dipole (about 66 ft. Long) installed close to aluminum gutters (40-80 ft. long) along the side of your house and you'll see what we mean. Or consider this same dipole placed close to a roof top and within a few feet of attic wiring and HVAC ducting which can be "part" of the wavelength on HF. Installation SITE factors, therefore, are where most of the problems seem to lie with HF antennas, compared to VHF/UHF antennas, unless proper installation guidelines are followed.

Using fundamental antenna theory, and installation experience we have gained over many, many years of dealing with HF antennas may provide the answers you are seeking. No engineering formulas and complex theory here, just practical information gained from customers themselves, in addition to our own test results and operator knowledge as hams.

You're looking for the "how, why and what to do"! Some of the following points will be very basic for some of you, but in talking to many hams of all levels of experience, we hope you will find these points and suggestions useful and time saving.

Sloper (quarter wave) have a unique set of installation requirements compared to the typical half wave dipole. Basically, they require operation on a support/tower (35 feet or higher) with an HF size beam on top to act as a "capacity hat", sort of like an upside down vertical where the beam elements are like the radials of a ground mounted vertical. Also, there needs to be a good ground return path down the tower, and the sloper needs to be "in the clear".

Metal guy wires that are not broken up with insulators, and other wire antennas on or near the tower can cause serious problems (SWR and tuning). SWRs are most likely going to be a problem if

these precautions are not considered. Sometimes, an external wide range tuner can help. It has been written that it's a lucky thing for a sloper to work correctly at all, since the support tower, guy wires and other attached antennas are a part of the sloper circuit. And, that can be true. However, with proper installation, a quarter wave sloper can be a very effective low band 160/80 meter DX antenna for those with limited space and lower height capabilities. We have many reports of multiple DXCC awards on these bands with quarter wave slopers.

Dipoles are a relatively simple design and usually easy to install and tune with good SWR, but they too require some thought for proper operation. Dipoles operating on 20 through 10 meters should be at 30 feet, or more, in the air. Dipoles operating on 160/80/40 meters should be at least 40 feet in the air for good SWR and at least average performance. Of course, there are exceptions to these numbers based on the customer "site". Higher heights on the low bands significantly improve performance. We have many customer reports of good operation at lower heights, but that depends on how high the "site" is electrically above ground at what's under the antenna. We can't predict that. Even at decent heights, both slopers and dipoles need to be in a clear "site", electrically uncluttered. See "Location" below.

Site Location. These antennas need to be as far as possible from any surrounding metal objects. Our tests, and those of customers, show that any antenna wire should be at least 15-20 feet from gutters and metal house siding or fascia. Metal guy wires should be "broken-up" with insulators at non-resonant lengths. Odd as it may seem, attics have a certain capacity characteristic (attic wiring and HVAC ducting) and antenna wires should be no

Problem Solvers Cont:

closer than 10-15 feet from any roof top, even if it's a nonconductive roof material. Antenna wires should be at least 20 feet from other similar frequency HF antennas, even verticals.

Power lines must be avoided at all costs, and any antenna that may fall as a result of a storm or support failure must be positioned to NEVER fall across a power line. To reduce power line noise pick up, the antenna must be as far as possible from a line run. 30 feet, or more, is preferable.

A low frequency dipole (80/40 meters) can be put up to within 10 feet or so under a higher frequency (20/15/10 meters) beam with little if any problems. In an inverted-V configuration, the end of the wires should be about 8-10 feet, or higher, from the ground. The center feed point of an inverted-V should be offset from a metal support or tower leg by about 18 inches, on a nonconductive arm, to minimize coupling and thus higher minimum SWR. It is also IMPORTANT to note that antenna wires should not touch, or come closer than about 4-6 feet from any tree branch/limb or leaves. This may not be readily known but they can really upset resonant frequency or SWR.

If a dipole is fed with balanced line, the

balanced line itself should be at least 6 feet from any metal objects, throughout the length of its run. It should never touch any metal, like window or door frames, as it enters the property. Of course there are exceptions, but this is generally the case. Close coupling of any metal to balanced line can significantly upset the system. Also, balanced line running down along side a metal tower leg or mast can cause serious coupling problems. If the balanced line is feeding a tower mounted dipole, it should come away from the tower at about a 45 degree angle and not near any guy wires or other wire antennas.

Attic installations. We have many successful customer reports of attic installations. HOWEVER--and this is a BIG-GIE! Attic installations and performances (SWR) are unpredictable due to the fact that HF antennas in attics can be upset by attic wiring and heat/air ducting being nearby. Also, metal gutters and roof/wall material can be a factor. The height above ground (single story, multi-story) is also an important consideration as with any "site" conditions.

Depending upon your residence, RFI coupling into stereos, TVs, burglar alarms and even garage door openers can also be a problem, particularly with high power. Due to the coupling effect of attic installations, an external wide range

tuner is usually required for proper SWR tuning and operation.

These ideas are passed along to answer some of the questions we get concerning HF wire antenna installations. It is not meant to get into antenna theory and design as there are volumes and volumes of antenna books available from a variety of sources. However, it is interesting to note that in all those volumes, there is very little about antenna installation "site" information. There is information about antenna height Vs angle of radiation and patterns, but that's about it. It's probably because all the theory assumes antennas that are theoretically "in the clear" and in free space (called isotropic). The problem is, that's usually not too practical!

(There is NO commercial content here. These thoughts apply to ANYONE's HF wire antennas (good info for beams too). Pick whichever one is best for you.)

Welcome to HF, and have fun!

Don, W8AD, Alpha Delta Communications, inc.



The Beacon Mission

The official newsletter of the Albemarle Amateur Radio Club, Inc. will strive to communicate with, enlighten, and entertain the members of the club in strict compliance with the official word of the club as set forth in the Articles of Incorporation and Bylaws as administered by the officers and directors who constitute the Board of Directors. The newsletter shall be published monthly on or before the 1st day of the month of issue. The deadline for submissions shall be the 25th of the month preceding the month of publication. The primary role of the publication shall be to promote upcoming activities, report past activities and accomplishments of the club and its members, carry the minutes of the preceding month's Board Meeting and General Membership Meeting, include an official club calendar of the month, as well as, become a recorded history of the club by the archival of all past issues as paper copies contained within a single notebook for each year of publication.

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Hams Helping Hams

AARC Club Repeaters

146.760 (-) 151.4 Hz Tone

146.925 (-) 151.4 Hz Tone

146.895 (-) 151.4 Hz Tone

224.760 (-) No Tone

444.000 (+) 151.4 Hz Tone

444.250 (+) 151.4 Hz Tone

Albemarle Amateur Radio Club, Inc.

Post Office Box 6833

Charlottesville, VA 22906

www.albemarleradio.org

Marty Wangberg W4MBW.....Newsletter Editor

Bob Dorsey.....Newsletter Editor Emeritus



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