

Potpourri

➤ Saturday, November 9, 1996, is Cary Bandday. As many of you know, CARC has supported this event for the past 16 years by providing communications for the parade officials, parade marshals, and medical teams. In the morning, we assist them with the check-in and staging of the parade units. We need several bicycle mobiles. Call Glynn, K4RKI, at 467-8416 to sign up, or sign up at the October meeting.

➤ For Sale: Kenwood TS-830S - Contact Ray Demers, W2KVP, 919 929-0516, demers@email.unc.edu or via speed dial on 147.225 - * 65.

➤ Wanted: hunter's tree-climbing stand - for use in an experiment....KM4LB

➤ Field Day Results are in! Your Field Day Czar is please to report that we placed fifth in 4A which is a really outstanding finish considering the late start and unmanned stations during the night. There is talk about going to 3A next year to consolidate the operators who seem to be willing to participate around a smaller number of stations. Here are the four clubs who stayed awake....

Scottsdale ARC	14854
Cherryville RPTR Assoc.	14790
WECA	10098
Albany ARA	8780
Cary ARC	8486
Providence RA	8024

➤ Don't miss the October meeting! It's election time and historically, those that do not show up get elected to varied and sometimes unpleasant offices. Come to defend yourself against untrue and insincere praises.

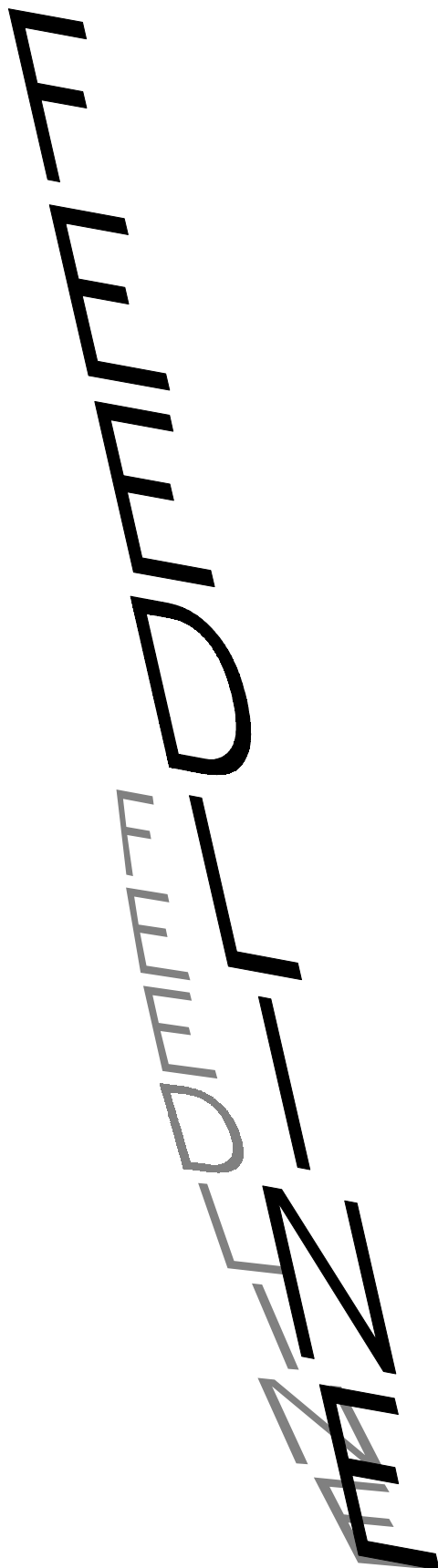
➤ Now here's the *real* reason you want to attend the October meeting: Two words: Jack's program. Jack, W4OOD, will present *Merging Emerging and Proven EMI / RFI Suppression Technologies in Contemporary Radio Facilities* - the very same presentation he gave at the World Radio Conference in Geneva last spring. **Do not miss this.**

➤ I need the use of your garden tiller to finish my Fran cleanup. Front or rear tine will do. I'll pick it up, and may even bring it back. 100% insured (If I break it in half, you will get both pieces back.)
KM4LB, 469 5129.

➤ We need a member to volunteer to purchase some gifts for the "12 and under" crowd that will attend the holiday dinner. Volunteer yourself or your spouse.

➤ Oh yeah...and we'll need a portly and jolly type volunteer for that night too.

➤ The 3KVA Topaz UPS is still available. Don't wait until the auction. Act now!



Feedline

Feedline is a member-supported publication of the Cary Amateur Radio Club and is published monthly. Deadline for submissions is the second Thursday of the month.

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Cary Amateur Radio Club

The Cary Amateur Radio Club meets on the fourth Thursday of the month, **7:00 p.m.** in the lower level of the Christian Life Center of White Plains United Methodist Church. The June, November, and December meetings are held off-site. Call for location of those meetings.

Next Meeting: October 24.

1996 Officers

KB9MS	Bob Lukaszewski	833-0199
	President	
N9CGD	Tom Doligalski	481-1236
	Vice-President	
K4IWW	Will Harper	467-0224
	Treasurer	
N4UE	Herb Lacey	467-9608
	Secretary	

CARC Minutes for September

Meeting called to order at 7:34 p.m., by Pres., Bob, KB9MS. Introductions.

Treasurer's Report

Will, K4IWW,

Savings:	\$3,130.32
Checking:	1,284.20
Cash	21.00
Total:	4,435.52

Dues still being received (\$9/yr.). CARC caps still available (\$4).

Old Business

The Christmas Dinner is scheduled for Thursday, Dec. 5, at Glenaire, again.

TICKETS WILL BE PRE-SOLD!!!

13 years old and above	\$7.00
12 and under	3.00

\$20 maximum per family. Informal attire is requested - if not required.

Please plan to attend! You must have a pre-paid ticket - no exceptions!

The Christmas Traffic Project needs a show of support for this year. The best dates appear to be: Dec. 16-20, Mon.-Fri., 7:30-9:30 p.m. The mode will be CW on 80 meters. The Project needs about four people - minimum - at all times to talk about Amateur Radio to the folks who stop by the display. You don't have to know all about AR. We will bring you up to speed in short time. Sign up at the October meeting.

Jerry, KE4TTS, reported that Amateur Radio covered the State EOC (FRAN) Thurs., 9/05, noon through Mon. evening, 9/09. Good coverage around Wake County, too. Assisted the Red Cross in a feeding operation in Garner. The NWS was covered for a couple of days as well. A special network was set up by Jerry, KE4QBG, and Charles, KE4CDI, to service the Town of Cary when a portion of their system was damaged. Great work, guys. We need to formalize that process to the benefit of both the Town of Cary and CARC.

Reed Whitten, AB4W, NC SM, gave an overview of AR's response to FRAN. It was a good report. All EOCs had AR coverage.

Oct. 12-13 Simulated Emergency Test: many NC counties may elect to credit FRAN activity as SET activity.

Lee, N4AJF, reported that WDCG (Wake Digital Communications Group) has had little activity. RNC is down; RNCLAN is shaky; the backbone is off the air. WDCG may lose its site downtown. WDCG should have a meeting - or something - to stir up activity. (A victim of Internet Supplantation Syndrome? ed.)

Steve, AA1BK, mentioned a QRP Field Day on Feb. 22. You QRPers in CARC should get in this low-key event. See Steve, 881-3168.

Hors d'oeuvres and socialization...then...

The program was presented by Tom, N9CGD, on various digital modes like packet, AMTOR, and many other TORs. Great program, Tom.

QRP Gains in Popularity

by Glenn Williams, AF8C

Despite the demise of Heatkit some years ago, many hams from that era, as well as today's new hams, continue to enjoy the challenge of building, experimenting with, and operating QRP equipment. Others enjoy the easy-to-take-it-with-you aspect of a QRP Field Day. As a result, both the number and size of QRP organizations have grown rapidly.

QRP contests

Most contests have a QRP entry class or category, but there are also contests for QRP only - including the following:

AGCW-DL QRP Winter Contest, CW Activity Group CW-DL (Germany), CW only, 3rd weekend in January.

Michigan QRP Club Contest, CW only, 3rd weekend in January.

Amateur Radio Club International (ARCI) QRP Winter Fireside Chat, SSB only, 3rd Sunday in January.

ARCI QRP Spring QSO Party, CW only, 2nd weekend in April.

QRP To-The-Field, CW only, Northern California QRP Club, 4th weekend in April.

ARCI QRP Hoot Owl Sprint, on both CW and SSB, 4th Monday in May.

ARCI QRP Fall Contest, CW only, 3rd weekend in October.

ARCI QRP Holiday Homebrew Sprint, CW only, 2nd Dec Sunday

QRP Nets

Many QRP clubs hold regular nets on HF. You may have to adjust some of the following for Daylight Saving Time.

NEN: Saturday, 1300 UTC, 7.040

WSN: Saturday, 1600 UTC, 7.040

Oklahoma QRP Club: Sunday, 14.30 UTC, 7.060

VE-QRP: Sunday, 1900 UTC, 14.060

TCN: Sunday, 2300 UTC, 14.060

Northwest (USA) QRP Club: Tuesday, 0400 UTC (Monday local) 7.040 and 10.123, and Saturday, 1530 UTC, 7.035

QRP

n4ue

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Did your tower survive Fran?

Or is it time to replace your roof mounted masts?

Here is the expert advice you need to do the job right.

It is a genuine pleasure to respond to the challenge to create an article for the Feedline. I don't create enough material for the local ham community. That is sad from the perspective that I am a writer by trade (at least that I manage a group of writers). Writing is both a pleasure and a past time of mine. With that having been said, I wish to present some critically important information related to amateur radio, made more urgent in the light of Fran: the care of and safety related to that single piece of equipment that, if faulty, could kill you, a member of your family and/or your neighbor. (Any one of which could ruin your day. - ed)

In researching for this, I found information in a publication that referenced a MARCO Antenna Workshop session. My understanding is that Mr. John Haerle, WB5IIR is primarily responsible for the content of that workshop session. I credit Mr. Haerle for the presentation of these reminders, hints and warnings.

It's no joke to wake up some morning after a bad storm, walk outside, and find all or part of your tower in a horizontal position. Even less humorous is the sight of your antenna in the yard next door. Seriously, people can be hurt, even lose their lives because the tower wasn't big enough for the job, wasn't erected properly, or both.

This article will present the factors which will insure you against disaster and contribute to your peace of mind:

1. Tower type/size vs the load on top
2. Adequate tower bases
3. Proper guy systems
4. Safe guy anchors
5. Proper tower maintenance.

First, The Tower:

When choosing a tower, your first concern should be wind. The wind can do unbelievable things to a tower, and it is of prime importance that you have the greatest respect for that fact. A basic rule-of-thumb is: If there is the slightest doubt, make your tower even stronger than the situation seems to merit. A little extra money spent on your tower may be the cheapest insurance you'll ever buy.

The force that the wind exerts against your tower depends on the number of square feet of surface presented to the wind by the tower plus the antennas, masts, rotors etc. on top. The tower manufacturer gives you a specification which tells you the maximum load, in square feet of antennas etc. which you can put on top of that tower. This specification means, of course, that you do not have to add the square footage of the tower to the antenna load. In

other words, it means that the tower is strong enough to handle the specified antenna load whatever square footage is presented by the tower.

In turn, the antenna manufacturer gives you the square footage presented to the wind by his antenna. What this all means is: If the tower manufacturer says his tower will handle a 16 square foot load and the antenna specification is 12 square feet, you're on safe ground, even after adding the mast and rotor. If, however, antenna, mast and rotor come to just 16 square feet, that might be a little close for comfort. That brings up an important consideration when choosing the correct tower for maximum safety, that factor is where you live. The Electronic Industries Association had done quite a bit of research, assembling meteorological data, county by county, throughout the US. That data specifies the typical maximum wind to be encountered in any given county in the country. In Wake county, we are in a Zone A area, meaning typical maximum winds are said not to exceed 87 mph.

If the tower has been manufactured to meet standards established by the Electronic Industries Association, the manufacturer will specify, along with the windload the tower will handle, the maximum wind velocity at which such load can be handled. Of course, such specification will also be predicated on following the tower manufacturer's rules for installation, including base and guy system.

It is a good idea to ask questions of the supplier and/or manufacturer. Reputable manufacturers will back their tower if you pick the correct one and install it following their recommended procedure. If you want to learn a lot about tower selection, installation and maintenance, I suggest that you contact either a dealer or Rohn directly and obtain one of their catalogs. I am not recommending Rohn over other brands, but their catalog is unique, containing a wealth of valuable information applying not only to Rohn towers but to towers in general. My latest information is that Rohn will charge a fee (about \$5.00) for the book, but a dealer will often give you a copy.

Next, The Tower Base:

First, it is important to determine whether the base will be used for a guyed tower or a self supporting tower and there is a difference. In the case of the guyed tower, the force of the wind against the tower translated, by the guys, from a lateral force into a downward compression, putting that force plus the dead weight of the tower on the base and the initial tension of the, guys must also, be in-

cluded in arriving at the total which must be supported by the base.

The self-supporting tower is a totally different problem as far as the base requirement is concerned. Here, with no guys to help, the chunk of concrete on which the tower stands must be a lot bigger, just to keep the wind from uprooting the tower as it would a tree.

Added to this is another requirement: Without the help of guys, the wind force against the tower exerts tremendous pressure on the legs of the tower opposite the side from which the wind is coming, that pressure is downward. Equally important is a strong upward lifting force on the legs nearest the source of the wind. All of this means that the manner in which the tower is anchored into the base is very important, bringing up frequent reason for tower disaster, trying to use a tower designed as a guyed tower instead of a real self-supporting tower.

Somehow, the reasoning seems to be that, since Rohn 45G sections are quite strong, it should be okay to put up 40 or 50 feet without guys and put a triband beam up there... well, the base arrangement was simply not designed for that. Oh, you can challenge that. You might say, "That's what I am doing". My answer is, I hope you're supporting only a 2-meter antenna, you are in Wake county, and the fates are kind (refer to NA4Gs luck). I have seen people get away with tower setups that would give a good mechanical or civil engineer nightmares, but only for a certain length of time. Always ask for advice from a good tower man as to the soundness of your plan.. It doesn't cost you anything and it may save you a lot.

Follow the manufacturer's recommendations for your base. Use steel reinforcement bars or "rebar", as it is known, to make the base stronger. Keep the steel all sealed inside the concrete and this will minimize rust problems. This is extremely important: keep all ground rods outside and at least 4-inches from the base. Bond the rods directly to the steel tower itself. If a ground rod goes through the concrete base, lightning can split the base while trying to find a path to ground.

Now, Guy Systems

Most guy systems consist of three guys at each of several levels, equally spaced around the tower and of equal length. The guys must be spaced up the tower at intervals no greater than 30 feet, closer if the tower is heavily loaded. For a three-guy system, the guys should be anchored (ideally) at a distance equal to 80 percent of the tower height. For a light load, such as a small tribander, this distance can be reduced to 65 percent of the tower height. Where you cannot extend the guys this far, you can reduce the distance from

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the tower to the anchor to as little as 40 percent of the tower height by using four guys at each level. However, as with three guys, their lengths and the spacing between them must be perfectly symmetrical.

Poor choice of guy wire often contributes to tower failure. The correct guy wire for most ham towers is 3/16-inch. For the really big towers, 1/4-inch EHS wire should be used.

It is important, too, that these guys be tensioned properly. A good rule of thumb is to tension the wire to about 10-percent of its breaking strength. It goes without saying that the tension must be equal on all guys at a given level. The reason for non-stretching steel wire at the proper tension is that the tower must be prevented from twisting when the beam is buffeted by high winds. More towers are destroyed by twisting torque forces than in any other way ... they just twist and collapse. For this reason, when you are using long-boom antennas or stacked monobanders, it is advisable to use special guy assemblies on the tower, providing stiff steel arms to improve the leverage the guys can exert in preventing the tower from twisting.

Be sure to use good galvanized hardware for your guys. This is no place to save money, and the difference between the cheap kind and the rustproof kind is not worth the gamble. Use three clamps at each junction, and put the "U" of each clamp over the short, ("dead") end side of the cable. Use thimbles, those horseshoe-shaped pieces, to prevent the cable from kinking when it goes through the eye of a turnbuckle or a hold in a steel plate. Be sure to use the correct turnbuckle for the size of the guy wire you're using, and don't scrimp on the turnbuckles. Be sure to use the rustproof type and that the eyes are forged. Finally, when you have tightened the turnbuckles, put a piece of guy wire through the body and both eyes of the turnbuckle, in a figure '8' shape, to prevent the cable from working loose.

At the other end of the guy wire, on the tower, at points where torque straps are not used, be sure to loop the cable around the vertical member at a point where the crossmember is attached. Include the crossmember in the loop. Failure to include the crossmember puts stress on the welds and may pull the tower apart.

The Anchors:

Often, screw-type anchors are used to secure guy wires. Typically, the anchors are made up of a 4-foot by 5/8-inch steel rod with a forged eye at one end and a 6-inch diameter auger on the other end. Installation: Simply screw the assembly into the ground at the same angle as the guy wire. This makes for a strong anchor, especially in the clay of central North Carolina. In sandy or swampy soil, a 5-

foot by 5/8-inch steel rod, with a forged eye on one end and a crook on the other end should be used. A 2-cubic foot block of concrete must be prepared and the steel rod must be encased in it. Bury the concrete in the ground until only the top 1/2-inch of concrete is exposed. It is not normally necessary to angle the concrete structure. In preparing the foundation for the RARS storage building, I observed that Bob Keys, NA4G constructed a mold for making concrete pilings. I suggest that the molds be borrowed and used.

In situations where your house, garage or other structure is in the way, consider using that structure. Through-the-wall anchors are available (and, in fact I am using one on the front of my house). Again, let me credit the Rohn catalog because it describes about every conceivable kind of special hardware and includes detailed instruction on how to use such items.

Finally, Tower Maintenance:

Use common sense! Use good hardware. If a component rusts excessively, replace it. If the tower itself has rust on it, wire brush the spot, then apply a cold-galvanize spray. This stuff will form a chemical bond with the good galvanizing around the rust spot and prevent further rust formation.

Yearly, check the vertical plumb of the tower. Using a level, check each tower leg at shoulder height. If it checks out okay, then sight up each tower leg to confirm that one of the guy angles is not pulling the center or top of the tower off in one direction. You can readjust guy tension to re-plumb the tower. BUT, loosen the too-tight side before you tighten the too loose side or you will pull the tower apart!

The following may raise some ire in some folks, but this is my article.... I advise that you stay away from aluminum masts, without regard to the quality of the metal. You will be safer with a good steel mast. A good aluminum-alloy mast may be lighter and just as strong, right up to the instant that it crystallizes. A tough steel mast will bend, flex, but not snap as can an aluminum-alloy mast.

Please consider all of the above when planning and enjoying your tower. Shop around for good prices on good-condition used components. Then hit the catalogs for the compliment that you need to finish the job. You can save money through wise shopping and wise planning. Please don't try to save money through skimping on quality or through substitution. Always use a good safety belt that is designed for tower climbing. I added a heavy-duty length of nylon rope and a snap-lock hook to my belt for those "move the safety belt over the guy wire" times. I attach the added rope to the tower, then move the belt. Also, having that second attachment to the tower does something for my confidence while on the tower.

Help:

Tower manufacturer's and dealers have data sheets and catalogs with a wealth of information. People with towers can typically be consulted. Did you ever know a ham who wouldn't talk about his equipment?

So ends the aggregate musings of KJ4SO, Woody; NF4P, Rollin;(SK), AB4OZ, Alan; and yours truly.

N4BYO, Jim 73

Jim's, et. al, article originally appeared in the Raleigh Amateur Radio Club's *Exciter* many moons ago, at least 60 by my calculation, since that's the last record I have of paying any dues! After Fran disheveled a good part of the county and resident antenna supports, I contacted Jim about revisiting this important subject. Thanks Jim! KM4LB

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QRP Club of New England: Tuesday, 0200 UTC (Monday local), 3.855
SEB: Wednesday, 0000 UTC (Tuesday local), 7.030
Michigan QRP Club: Wednesday, 0200 UTC (Tuesday local), 3.535
N.E. Illinois QRP Club: Wednesday, 0200z (Tuesday local), 3.560
GSN: Thursday, 0200 UTC (Wednesday local), 3.560
GLN: Thursday, 0200 UTC (Wednesday local), 3.560

Popular ORP Frequencies (MHz)

CW: 1.810, 3.560, 7.040, 10.106, 14.060, 18.080, 21.080, 24.910, 28.060

SSB: 1.910, 3.985, 7.285, 14.285, 18.130, 21.285, 24.950, 28.385

from the April/May West Park Radiops (Cleveland) "Log" AF8C Editor via the ARNS.