



# Scuttlebutt

No. 63 May 1986

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## Captain's Cabin Bill Santelmann, N1AU

The old Clipper will never be the same! She has been overhauled, refitted, and rigged for more fun through contesting. Gone is the old format of four meetings per year, who knows where or when, but probably crowded and/or dingy! Gone is the long break between April and October when we lose touch with each other and our continuity as a Club. Gone is our old structure built primarily to conform to the ARRL DX Contest rules.

With our next meeting, SUNDAY, JUNE 8, we launch a new schedule of meetings on the first full weekend of every even month, year-round. We will always meet at the Sturbridge Sheraton Hotel and Conference Center, within 10 miles of the Club's geographic center, except for events like the Boxboro ARRL Convention this October. It is on route 20 and not far from the Mass Turnpike and I-84. We have reservations at the Sheraton through the end of 1987! I hope that non-YCCC contesters will consider themselves invited too, even if they are just passing through. All this has been made possible by the diligent efforts of Bill, KM1C, a member who has a vision of a better YCCC. Bill, many, many thanks from all of us!

We hope the Sheraton will become our Club "home", complete with an annual August "Lakeside Bar-B-Que". And we can get it for free if only a dozen of

us show up for a catered lunch before the meeting! Look for further details in this 'Butt.

With six meetings a year will come six Scuttlebutts also, which many have said are the best feature of the Club. In the past, it has been the best medium for keeping in touch with the rest of the Club, a function it will continue to provide if its editor can get 50 % more copy than before.

We are also finding an exciting new medium for keeping in touch with each other, the brand-new YCCC Packet net, now active from Boston through eastern Massachusetts and southern New Hampshire, and reaching occasionally out to the Berkshires and even down to K1KI. A Packet spotting net was improvised in this area for the ARRL DX Contests this year, and proved to be immensely useful and popular. We used the UNPROTO mode on an ad-hoc frequency, resulting in occasional reception errors.

Just a few weeks ago, Dick, AK1A, inaugurated "Dick's Den, where computers do the work", the first YCCC PBBS (Packet Bulletin Board Station) on 144.95 MHz. He has used most of the customary PBBS commands, but he has also programmed some additional functions. For instance, he can connect with as many as 26 other stations simultaneously, who can communicate with each other using the CONFERENCE command. The "T" command permits short private messages between any two. So during the next contest we will have error-free "connected" packet spot-

ting through AK1A. The plan is to eventually link this PBBS to others in the YCCC area on another band so that all members can join in.

Copying AK1A packet on May 18, I copied nine YCCC calls, with K1XM, K1GQ, and K1VR newly-arrived. K1XM intends to offer some innovative contest/DX packet functions in the future, to complement the PBBS. Also copied were KY1H and WA1ZAM from the Berkshires.

What does all this mean for the YCCC? I think that our new six-meeting plan at a central location will enhance Club continuity, friendships, cohesion, and contesting fun! And with a full Packet network now forming, we will be able to communicate between meetings in a very efficient and convenient manner. I hope we will use it to promote the fine art of contesting in many more contests than just the ARRL and CQWW which have been our entire focus in the recent past. Operators and stations will be coordinated on the PBBS before contests, spotting data will be exchanged error-free (well, except for spelling), and scores will be posted after the battle.

Sounds like a lot of fun to me! Maybe it will be so much fun that we will start winning some contests.

Let's start our planning for the October Boxboro ARRL Convention now. The YCCC has always done an excellent job, but it requires advance planning, input from members, and booking of program space and speakers. Any ideas?

## Meeting Place Update

Bill Pedersen, KM1C

The new meeting place for the YCCC is the Sheraton Sturbridge Resort and Conference Center located on Route 20 in Sturbridge, Massachusetts,  $\frac{1}{2}$  mile West of I-84 (first exit off I-84 when coming South from the Mass. Turnpike). Directions to the Sheraton are easy: Exit I-84 on to Route 20 West. You will pass through two sets of stoplights while noticing several motels on your right. Make a right turn just prior to the Burger King sign. This is the entrance to the Sheraton, and there is plenty of parking in front of the hotel. Our primary meeting room is located just off the main lobby.

The meeting dates have been set for the rest of 1986/1987 and are as follows:

DATE	DAY	DELI-LUNCH
June 8, 1986	Sunday	11:30 AM
August 2, 1986	Saturday	Lakeside Bar-B-Que
October, 1986	(Meeting to be at Boxboro)	
December 7, 1986	Sunday	11:30 AM
February 7, 1987	Saturday	11:30 AM
April 5, 1987	Sunday	11:30 AM
June 6, 1987	Saturday	11:30 AM
August 2, 1987	Sunday	Lakeside Bar-B-Que
October 3, 1987	Saturday	11:30 AM
December 6, 1987	Sunday	11:30 AM

Note that the official meeting time for all meetings is the traditional 1:00 to 4:00 PM with the exception of the Lakeside Bar-B-Que dates in August, when the meeting is tentatively set from 1:00 to 2:00 PM with the cookout to follow.

The basic deal structured with the hotel is that the meeting room rental price is \$100.00 per meeting, offset by the catered deli-lunch. The price of the lunch is \$8.50 per person and includes the tax and gratuity. The deli-buffet will have a large bowl of fruit, sliced ham/turkey/roast beef, sliced assorted cheeses, lettuce, tomatoes, assorted breads and condiments, dessert, and beverage. It is the lowest-priced luncheon available to us. The lunch will be served buffet-style with seating set in rounds of 8 persons per table.

The only real necessity for the YCCC is to come up with an accurate headcount for the luncheon, as the club will be charged based on that number. The easiest system we came up with for getting a good headcount is this: if you are going to the luncheon, make a reservation through Charlotte, KQ1F, our dedicated/hard-working Club Secretary and Treasurer! Notify Charlotte of your intentions via the U.S. Mail, telephone, packet radio, 75 meter SSB, Oscar 10, whatever! Please make her job as easy as possible and get the word to her any way that you can. She must give the final headcount to the hotel 72 hours prior to the meeting so try to make your reservation well prior to that deadline. Remember: if enough of us attend the lunch, the actual meeting room is free. Contact Charlotte as follows:

Charlotte Richardson  
11 Michigan Drive  
Hudson, MA 01749  
(617)562-5819 (home phone with answering machine)  
(617)568-6588 (work phone)

Or via the AK1A YCCC PBBS on 144.950 - Address message to KQ1F or K1XM.

Sufficient seating will be made only for those with reservations. Note that the Club will be charged for the submitted headcount, so if you do make a reservation, please plan on attending! Those who do not make

reservations, but who show up early: Check in and see if a seat is available due to possible no-shows. Reserved seats will be held until 11:45 AM. The system will be to check-in and pay at the door (prior to heading to the buffet table!). Having the correct amount ready (\$8.50) will greatly facilitate Charlotte's efforts. Obviously, this is the Club's first attempt at something of this nature. It should work well provided each member follows through on his/her reservation.

Some additional notes on the Sheraton-Sturbridge: For Sunday meetings, our luncheon will be set up in a separate room next to the regular meeting room. For Saturday meetings, the luncheon will be set up in the indoor garden area near the swimming pool. When no conflict exists, our meetings may be set up in the amphitheater area of the hotel (This area has seating with tables, tiered, set up in a curve, all facing a center stage and podium.). Our normal meeting room is sufficiently large and will be set up with chairs facing a podium and head table. All in all, we should find the Sheraton-Sturbridge much to our liking, both due to the quality of the meeting environment and the centralized location within the Club territory.

Respectfully submitted,  
Bill, KM1C

### Parasitics

Bill Santelmann, N1AU

Heard during the commute from Route 93:

GQ: "Oh, how I hate traffic!"

DG: "Me, too, that's why I took up contesting."

### Floating

Paul Young, K1XM

The new YCCC by-law change certainly makes my life easier. I now know that I should do six issues of the *Scuttlebutt* per year. And I know when they must come out. It makes it easier for you, too. Subtract three weeks from the date of the next meeting - that's the deadline for submitting articles to the *Butt*.

There has been a lot of talk about packet lately. AK1A has generated a software package which pushes the state of the art in packet. If you are not on packet, here's what you need in order to get on:

You need a 2 meter FM rig which can transceive on 144.95. Most crystal rigs will do this. Some old synthesized rigs won't go that low, but anything else will probably work. Synthesized rigs are nice in that they can also operate on the standard packet frequencies

(145.01, 145.05, 145.07, and 145.09).

You need a TNC and a terminal or computer. TNC stands for Terminal Node Controller, and there are three designs which are popular among the YCCC group.

The first is the AEA Pakratt. This unit works only with the Commodore C-64 computer. If you already have the Commodore computer, this is a nice way to get on. N1AU and KM1C are using these.

The second is the Kantronics KPC-2, and the third is the TNC-2, manufactured by several companies. Either of these will connect to any terminal or computer with an RS-232 port. If you already own a computer other than a C-64, one of these may be your choice. K1GQ and AK1A are using the KPC-2. It has one advantage over the TNC-2, which is that allows 26 connections instead of 10. This only matters if you are planning to run multi-connect software on your computer. The TNC-2 is available built from AEA and from MFJ. MFJ's price is very low, and they have a waiting list. K1VR has the AEA unit. It can also be bought as a kit from GLB or from Pac-Comm. I bought the GLB kit, and Charlotte assembled it. There is quite a bit of soldering involved, but the PC board is very nice, and it goes together easily.

If your goal is to get on packet cheap, buy everything used except the TNC. You can probably find a used 2 meter rig for less than \$100.00, since you don't need bells and whistles. You can pick up a used C-64 from the *Want ADvertiser* or some other local buy-and-sell publication, or perhaps find a cheap computer with an RS-232 port. The KPC-2 and the MFJ TNC has a circuit which allows it to be connected directly to a C-64, and that may be cheaper than the Pakratt. MFJ also sells software for this combination.

As far as operating the PBBS, you want to connect to AK1A. If you can't reach him directly, you can try using me (K1XM) as a digipeater (it's explained in the TNC instruction manual). I may be an easier shot from the South, and my packet station is on full time.

Members currently on packet include AK1A, K1GQ, K1GW, N1AU, WB8BTH, K1XM/KQ1F, KY1H, K1VR, AK1L/KA1X, W1YK (KM1P), KA1MI, K1KI, and K1IU. Come join the party!

### Antenna Mast Design - A Rational Approach

Bill Shaheen, N1CQ

One problem the majority of radio amateurs encounter at one time or another is that of the bent or broken antenna mast as a result of high winds. The repair

of such a problem is tricky at best and often can be hazardous. This may involve pulling the bent mast out of the tower top section with antennas still attached and then lowering the assembly to the ground. Often the assembly may be poorly balanced and unstable, certainly a dangerous situation for all involved.

The aim of this article is to provide a rational method for antenna mast selection and antenna placement thereupon to avoid the above scenario.

This approach will use the elementary engineering mechanics presented by this author earlier in the 'Butt'. The analysis of the antennas and masting will be modeled as an upright cantilever beam (mast) with several loadings (wind force upon antennas and mast itself). These loadings will cause a bending moment at the neck of the tower, and hence a stress condition that one may compute. This actual stress will be compared to the maximum allowable stress for a given mast type (diameter, area moment of inertia, material strength) and its adequacy may then be assessed. As is common for design problems, iteration may be necessary for the "optimum" design.

Due to the great number of cases that are possible, we will restrict ourselves to the following: Design wind speed = 80 mph (117.6 ft/sec), pipe sizes from 1.5" nominal schedule 40 to 2.5" nominal schedule 80, design air temperature = 32° F, mast shall be designed to remain in its elastic range (no permanent bending), stresses due to bending are considered only, torsional, axial and shearing stresses are ignored.

### Calculation of Projected Area

Most commercial HF and VHF antenna manufacturers supply the projected area within the instructions; if they do not or if a homebrew array is used, then this area must be computed. To do so, consider the antenna aiming into the wind and add the projected frontal areas of *each* element in square feet. Next, consider the antenna broadside to the wind and calculate the projected area of the boom alone in square feet. The greater of the two values will suffice to be the working projected area of the antenna.

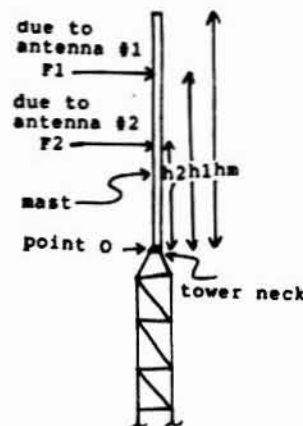


Figure 1. Forces Acting Upon Antenna Mast

### 2. Wind Loading Calculation

Each antenna on the mast (two in Figure 1) and the mast itself (not always insignificant) will contribute a loading to the mast due to the 80 mph design wind speed (see Figure 1). The force is given via aerodynamics as:

$$F = \frac{C_d \times A \times \rho \times V_o^2}{2}$$

where:

$C_d$  = drag coefficient = 1 (for our considerations and is a dimensionless number)

$A$  = projected wind area computed above in  $\text{ft}^2$

$\rho$  = density of air = 0.00251 slugs/ $\text{ft}^3$

$V_o$  = ambient wind speed (80 mph = 177.6 ft/sec)

$F$  = wind loading on antenna in pounds

$F$  must be calculated for each antenna on the mast and for the mast itself (consider projected area of mast above tower neck).

### 3. Maximum Bending Moment Upon Mast

By statics<sup>2</sup>, one may readily find the maximum bending moment exerted upon the antenna masting by taking moments above point O (see Figure 1).

Moment at point O

$$= F_1 \times h_1 + F_2 \times h_2 + F_n \times h_n + F_m \times \frac{h_m}{2}$$

where:

$F_1$  = wind loading due to antenna 1

$F_2$  = wind loading due to antenna 2

$F_n$  = wind loading due to antenna n

$F_m$  = wind loading due to mast alone

$h_1$  = distance of antenna 1 above tower neck

$h_2$  = distance of antenna 2 above tower neck

$h_n$  = distance of antenna n above tower neck



$h_m$  = length of mast above tower neck

#### 4. Properties of Standard Antenna Mast Sizes (see Figure 2)

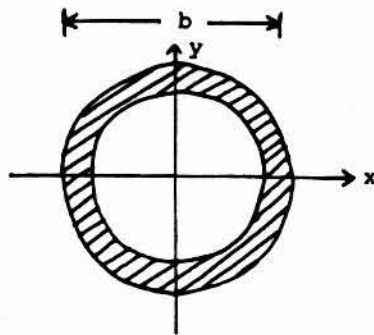


Figure 2. Typical Mast Cross-Section

Pipe Size and Type (nominal diameter)	$I_x = I_y$ (area moment of inertia)	b (outside diameter)
1.5" schedule 40	.310 in <sup>4</sup>	1.9 in
1.5" schedule 80	.391 in <sup>4</sup>	1.9 in
2.0" schedule 40	.666 in <sup>4</sup>	2.375 in
2.0" schedule 80	.868 in <sup>4</sup>	2.375 in
2.5" schedule 40	1.530 in <sup>4</sup>	2.875 in
2.5" schedule 80	1.920 in <sup>4</sup>	2.875 in

Table 1. Pipe Section Properties<sup>3</sup>

#### 5. Maximum Normal Stress Due to Bending

Recall that the yield stress,  $\sigma_y = \frac{M \times c}{I}$ , which is equal to  $\frac{M \times \frac{b}{2}}{I}$ .

The maximum outer fiber normal stress may now be computed and compared to the yield strength of the material in question. The factor of safety against bending failure is  $\frac{\sigma_y}{\sigma_{actual}}$ . The factor of safety should be 2 or better.

Typical yield strength ( $\sigma_y$ ) for mast material is given in Table 2.

Material & Type	$\sigma_y$ , yield strength
Steel, A36	36,000 psi
Aluminum, 6061	36,000 psi
Aluminum, 2024	42,000 psi
Aluminum, 1100	22,000 psi
Aluminum, 43	9,000 psi
Stainless Steel, 201	55,000 psi
Stainless Steel, 17-4PH	185,000 psi

Table 2. Material Properties<sup>4</sup>

#### Example

Given a Cushcraft 20-4CD fixed 5' above the tower

neck on 1.5" schedule 40 water pipe. Is it safe for 80 mph (117.6 ft/sec) wind and what is the factor of safety against failure due to mast bending?

#### Solution

Projected Area (Antenna) = 8.33 ft<sup>2</sup> per Cushcraft

Projected Area (Mast) =  $5' \times \frac{1.9"}{12" \text{ per foot}} = .792 \text{ ft}^2$

$$F (\text{Antenna}) = \frac{C_d \times A \times \rho \times V^2}{2} \\ = 1 \times 8.33 \text{ ft}^2 \times .00251 \text{ slugs/ft}^3 \times (117.6 \text{ ft/sec})^2 \div 2 \\ = 144.5 \text{ lbs.}$$

$$F (\text{Mast}) = 1 \times .792 \times .00251 \times 117.6^2 \div 2 = 13.7 \text{ lbs.}$$

$$M_o = F_1 \times h_1 + F_m \times \frac{h_m}{2} \\ = 144.5 \times 5 + 13.7 \times 2.5 = 757 \text{ ft-lbs} = 9084 \text{ in-lbs.}$$

(Watch units!!)

The water pipe is made of A36 steel; therefore it yields at 36,000 psi. Also,  $I_x = I_y = .310 \text{ in}^4$ , and  $\frac{b}{2} = \frac{1.9"}{2} = .95 \text{ in.}$

$$\text{Therefore, } \sigma_{actual} = \frac{M_o \times \frac{b}{2}}{I} \\ = 9084 \text{ in-lbs} \times .95 \text{ in} \div .310 \text{ in}^4 = 27,890 \text{ psi}$$

Factor of Safety (F.S.) =  $\frac{\sigma_y}{\sigma_{actual}} = 36,000 \div 27,890 = 1.29 < 2.00$ . This is an unacceptable F.S. as it is less than 2 (criterion); therefore, lower the antenna on the mast and recalculate F.S. (iteration design process) until F.S.  $\geq 2$ .

If one follows this rational method for antenna installation and mast selection, the incidence of mast failure and its consequences will be reduced.

Next time ... Tower anchorage considerations.

#### References

1. Shaheen, W.A., "Strength of Materials", YCCC Scuttlebutt, No. 61, 1986.
2. Shaheen, "Statics", YCCC Scuttlebutt, No. 60, 1985.
3. American Institute of Steel Construction, Steel Construction Manual, 8th Edition, AISC, New York, 1980.
4. International Nickel Co., Inc., "Properties of Some Metals and Alloys", 3rd Edition, 1968.

#### SECRETARY'S REPORT YANKEE CLIPPER CONTEST CLUB

The April YCCC meeting was held on 5 April 1986 at the P. N. I. C. in Worcester, Massachusetts, with 50

members attending. Several members were missing to attend the wedding of Bob, N1RC. Congratulations, Bob!

Bill, N1AU, encouraged everyone to get on packet by next fall. He brought transcripts of the packet activity during the ARRL DX Contests.

The Treasurer's Report was presented, and everyone was reminded that dues for 1986-87 contest season are now due.

New dupe sheets and multiplier sheets are being prepared for next fall's contest season. Copies of the current sheets, typeset in the new format being used for the Butt, were available for comparison and comments, which should be sent to Paul, K1XM.

The club welcomed two new members:

KM1H Carl Huether  
NB1Y Don Nelsen

Elections were held, with nominations as follows:

President: N1AU, Bill Santelmann  
Vice President: K1BW, Ron Grzelak  
Secretary/Treasurer: KQ1F, Charlotte Richardson

Since there was no contest for any office, this slate of officers was voted in by acclamation.

Bill, KM1C, discussed his By-Law change proposal (as published in Scuttlebutt 62) to have six bi-monthly meetings at a common meeting place, to increase club spirit. The amendment, after some changes, passed. The final wording was:

**ByLaw 3. Meetings.** Regular meetings shall be held six times each calendar year on the first full weekend of every even month at such places as the President shall order pursuant to Article V of the Constitution. Specific meeting dates and/or places may be changed at the discretion of the President to provide for scheduling flexibility.

The next meeting, therefore, will be on June eighth in the Sturbridge, Massachusetts, area.

John, K1AR, will again have QSL cards typeset, printed, and delivered to your QTH by UPS, for \$35/2000. Contact John for an order form. The new cards have a report box designed to be covered by a label, for those members who print computerized report labels.

KY1H, Dave, is mounting a big Field Day effort and may need more ops. K5NA, Rich, also has Field Day plans.

Bill, N1AU, needs ops for the Walk for Hunger, Sun-

day, May 4th, on 2m and 440.

John, KB1T, again had Contest Calendars for sale for \$5 (of which \$1 goes to the Club treasury).

KA2MXO, Ed, has an IBM PC propagation prediction program available.

Ron, K1BW, then introduced the program. John, W1FV, discussed Beverage antennas. Rich, K2WR, provided comic relief. Scott, N1EE, showed slides of his C6ADR DXpedition. Dave, KY1H, showed slides of his station and of his antennas during the ice storm, which cost him his Cushcraft 40m beam.

1985 ARRL DX Test plaques were awarded to:

K1AR CW Top W/VE  
K1AR Top W/VE Combined Score  
K2EK CW Top 21 MHz Single-Band  
K2TR Top M/2 Both Modes  
K1ZM SSB Top 1.8 MHz Single-Band  
K1RX SSB Top W/VE  
W1RR CW Top 1.8 MHz Single-Band

Editors Awards have reportedly been earned by K1AR, W1FJ, W1GG, KY1H, AK1A, K1GQ, KC1F, K1XM, KQ1F, KA1X, and AK1L. Any other eligible members should contact Paul, K1XM.

The hungry crew retired to a local pub for much-needed refreshments.

Respectfully submitted,  
Charlotte L. Richardson, KQ1F  
Secretary/Treasurer  
7 April 1986

## KY1H Field Day David Robbins, KY1H

Come one!!! Come All!!! The first annual Yankee Clipper Contest Club Western Massachusetts section Field Day operation, Open House, ham radio demonstration, workshops and party! June 27-29 1986, Peru, Mass.

Featuring:

- Continuous demonstrations of emergency station operation.
- Free messages - send free radiograms to friends and relatives via ham radio.
- Novice exams!!!!
- Antenna construction workshops (bring your own coax and insulators and take home your very own emergency HF antenna!).

- Hands-on training in the setting up and operating of an emergency station.
- Answers to your questions about emergency stations, procedures, Field Day and general contest operation.
- Individual and group competitions all weekend long including:
  - Most QSOs in 30 minutes against Doctor DX (awards by license class).
  - Fastest set up of emergency antenna.
  - fastest set up of emergency station.
  - Code speed (awards by license class).
  - DXCC quiz.
  - and many more ...
- Packet radio demonstrations.
- Tower climbing and safety demonstrations.
- Tours of KY1H antenna farm.
- Party!!!

#### Cost:

- Demonstrations, tours, workshops, exams, and competitions are free.
- Bring your own picnic meals - grill available for cooking.
- Soft drinks and beer provided.

#### Misc.

- Overnight camping Friday, Saturday, and Sunday nights.
- Talk-in on 147.03-.63 Peru repeater, detailed maps available (send SASE).
- Set up begins 1400 EDT Friday 27 June, party begins 1800 EDT Sunday 29 June.

If you want to help out or want more information please contact:

David Robbins, KY1H  
 Baumann Rd.  
 Peru, Mass. 01235  
 (413)655-2714 evenings and weekends  
 (413)655-8511 Plastic Brain BBS 24 hours  
 (413)494-5618 work  
 147.03-.63 Peru repeater  
 145.01 KY1H-0 Packet - computer monitoring

## Computer Analysis of Some 20 Meter Beams

George Cutsogeorge, W2VJN  
 (reprinted from the Frankford Radio Club newsletter)

Several 20 meter beams have been analysed to determine performance relative to the 204BA. The analysis was based on the W2PV series of articles in **Ham Radio**. Element taper has been accounted for. All antennas were assumed to be tuned for 14.1 MHz.

In the following table the numbers are in dB.

antenna	14.0 MHz		14.1 MHz		14.2 MHz		14.3 MHz	
	gain	F/B	gain	F/B	gain	F/B	gain	F/B
204BA	8.4	25.3	8.5	22.7	8.5	18.6	8.6	15.7
20-4CD	8.8	18.9	8.8	20.8	8.9	19.6	8.9	16.9
205BA	9.4	11.4	9.4	12.7	9.4	13.3	9.4	13.3
ant. J	9.5	12.8	9.4	13.3	9.3	13.3	9.3	13.1
ant. G	9.4	18.4	9.5	22.9	9.4	29.0	9.1	16.0

Antenna J is a 204BA with an added director .4311 wavelengths long spaced out 10 feet. Antenna G is a scaled version of the 155BA. For reference, the boom lengths are: 204BA: 25'6", 20-4CD: 31'6", 205BA: 34', antenna J: 35'7", antenna G: 37'8". Element dimensions for antenna G are shown in the following table. This antenna has been constructed at K3ZUF. The measured F/B figures compare very closely with the calculated values.

#### Modified 205BA Dimensions

Segment	1.24"	1.125"	.875"	.625"	.4375"
reflector	44.5	48	53	24	58
driven	35	46	50.5	24	51
dir. #1	35	46	50.5	24	51
dir. #2	21	46	50.5	24	53
dir. #3	21	46	50.5	24	55

The lengths in italics and boldface are changes from the original 205BA dimensions. Boldface are segments that require longer sections of tubing than were originally supplied.

Element spacing is as follows:

reflector to driven element 133"  
 driven element to first dir. 98.87"  
 first dir. to second dir. 90.25"  
 second dir. to third dir. 124.87"

Some conclusions that may be drawn from this analysis are:

- The 204BA is a very good 20 meter antenna even though it is relatively small.
- The 20-4CD has good front to back ratio but the increased gain of 0.4 dB is not enough to compensate for the added boom length/wind load.

- The 205BA has poor front to back ratio.
- Adding an extra director to the 204BA increases the gain a dB but ruins the front to back.
- To gain the dB and retain good front to back both element lengths and position must be changed.

## The Kantronics KPC-2 Packet TNC

### Bill Myers, K1GQ

KA1MI summed it up nicely: not long ago, packet was just a technical challenge that lacked utility. After the enthusiastic reports of the few who were involved in the YCCC packet spotting net this winter, I decided it was time for me to learn about the utility of 2m FM packet radio first hand. As you may have guessed from the title, I purchased the latest Kantronics Terminal Node Controller (TNC). Paul, K1XM, asked me to write a "product review" of the unit, but I have no frame of reference (experience with other TNCs), so this article is instead a summary of my "adventures" on packet.

Since I don't have a Commodore C-64, I was unconstrained when I started looking into TNC choices. I called a few friends to find out which were the quality units, and soon settled on the KPC-2 because it represents the latest design along with the Kantronics enhancements, and because Madison was able to ship the same day. I hate waiting once I've made up my mind, but none of the local radio stores had what I wanted in stock.

To get on packet, you need three items: a TNC, a 2m FM radio, and a video terminal or computer with terminal emulation software. The KPC-2 comes with everything you need to connect three boxes together except a mic connector for the 2m radio. The manual is quite clear on how to wire things together, although I found that the actual wiring for one connector was different than shown in the manual. I have a DEC VT-100 "dumb terminal" to use as the video display, and my 2m radio is a Kenwood TR-7930. The three units hooked together and worked perfectly the first time. This is as close to appliance operating as you can get.

The KPC-2 has a tremendous number of parameters that can be manipulated to customize the terminal interface, timing, canned text strings, modes, and so forth. As a novice on packet, I found the instructions confusing, but now when I need the manual as a reference I appreciate the organization and explicit terminology. Fortunately, defaults (that work!) are built in for all of these parameters, so you don't have to learn all of the nuances before you can fire up. Once you

select your own set of parameters, you can save all of the settings in a non-volatile memory to avoid having to reinitialize every time you power-on the TNC.

My unit came with version 2.0 of the Kantronics software; they recently updated to 2.2 (fixed some unexplained bugs). A new ROM was sent to me free of charge after I called them with my serial number. I haven't been able to detect any change in the performance of the unit; it has been working perfectly since I got it in March.

The disadvantage of using a terminal instead of a computer with the TNC is that once information scrolls off the screen, it is gone forever. Also, you have to type everything that goes out at the keyboard. Almost any home computer with communications software provides a way to save a copy of everything that comes in to a disk file, and a way to transfer the contents of a disk file out to the TNC.

I recently replaced the VT-100 with my HP-150 computer and began talking to the TNC using a terminal emulation program. Now I can compose this article, upload it from my disk to the YCCC Packet Bulletin Board System (AK1A on 144.950), and leave a message on the board to the Scuttlebutt editor to tell him what file to download. If you're reading this article, you will know that "E-mail by radio" really works!

## More Score Rumors:

### More CQ WW CW:

CALL	QSOs	Zs	Cs	SCORE
W1FJ	?	?	?	617516

### ARRL DX CW:

CALL	QSOs	Cs	Score
W1FJ	?	?	340560

### ARRL DX SSB:

CALL	QSOs	Cs	Score
N1AU multi	?	?	1485900
W1FJ	?	?	144480

### CQ WPX SSB:

CALL	QSOs	Cs	Score
W1FJ (15m)	?	?	18180

## Need an Inexpensive Surge Protected Outlet Strip?

R. P. Nelson, Jr., KF4VS  
(reprinted from "The Bullshead", Newsletter of the Texas DX Society, October, 1985)

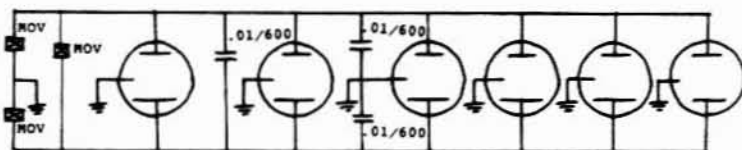
From time to time, K-Mart, Woolco, etc. put their six outlet portable extension cords on sale for less than



**\$10.** With one of these, you can make the equivalent of a much more expensive surge-suppressed outlet strip, and have it filtered as well. You'll need the following bits and pieces:

- 1 above-mentioned six outlet strip
- 3 MOVs (metal oxide varistors), V130LA10A (Radio Shack Cat. No. 276-570 @ \$1.59 each)
- 3 .01/600V Silver Disc (preferable) or other high grade capacitors.

Install the parts in accordance with the sketch below. Plug it in; you are now surge and spike protected!



Outlet strip

## Coming Soon...

The YCCC 1986-87 Roster will be printed in the next **Butt**. Make sure you give your address change, new phone number, or other new info to the club secretary (Charlotte, KQ1F) or the **Scuttlebutt** editor (Paul, K1XM) at the next meeting or by mid-July at the latest.

We are still working on new DX dupe sheets and multiplier checkoff sheets for next fall. Some members returned the sample ones from the last meeting with their comments, but not as many as we would have liked. If you have suggestions please get them to us. Also, if you have ideas about how to do a W/VE dupe sheet (for the SS fans among us), let us know.

## Excess Cargo

Moseley TA33 \$125.

3 KW Winco generator, B&S engine \$250.

Contact Jack, W1WEF, at (203)633-2756.

The **Scuttlebutt** is the newsletter of the **Yankee Clipper Contest Club** and is mailed six times per year to all paid up members. Dues are \$10 per year, payable 1 April with a grace period through 30 June. Non-members may subscribe to the **Scuttlebutt** by sending \$10 to the Treasurer: Charlotte Richardson, KQ1F, 11 Michigan Drive, Hudson, MA 01749. Subscribers who subsequently become members will be credited as having paid dues.

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The **Yankee Clipper Contest Club** (an ARRL Affiliated Club) holds six official meetings per year, on the Saturday or Sunday afternoon of the first full weekend of every even month in the Sturbridge, Massachusetts, area. The deadline for article submission to the **Scuttlebutt** is three weeks before the next meeting date. The next meeting will be on 8 June 1986. Attendance at an official meeting is required in order to become a member. Club members congregate on 3830 Khz or 1900 Khz Monday evenings; many routinely monitor these frequencies other evenings as well.

Rosters are mailed to all paid members each summer. For more information and/or assistance, contact the area manager nearest you on the following list:

Area	Call	Name	Home	Work
CT/RI	K1RX	Mark Pride	(203) 271-2076	(203) 265-8825
EMass	W1FJ	Al Rousseau	(617) 598-3744	(617) 599-7500 x 173
WMass	KY1H	Dave Robbins	(413) 655-2714	(413) 494-5618
VT/NH	KM1C	Bill Pedersen	(603) 673-1678	
ME	K1SA	Bernie Cohen	(207) 773-6589	(207) 797-3585
NNY	K2RD	Ira Stoler	(518) 439-5804	(518) 445-8474
SNY/NJ	K2EK	Bill Gioia	(914) 221-1672	(212) 888-2102

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