



# BRAZOS VALLEY AMATEUR RADIO CLUB



AMATEUR RADIO FOR SOUTHWEST HOUSTON AND FORT BEND COUNTY

JANUARY 2004

VOLUME 28 ISSUE 1

## Antenna Loading

By Rick Hiller (W5RH)

*This is Part 1 of a 3-part article about antenna loading. The original article about loading was written for the BVARC newsletter in May of 1996 and has been available on the web site since that time at <http://bvarc.freeshell.org/w5rh/loading.htm>. Many years have passed and much more has been learned. I hope this updated article provides you with additional insight.*

### Series Introduction

When thinking about antennas for Amateur Radio, especially for the lower bands, the lack of space seems to be one of the bigger dilemmas with which Hams must contend. Whether they have a 40-meter stealth dipole stuffed inside a cramped attic or an 80-meter inverted V on a “too small” city lot, most Hams have to shrink at least one of their antennas to fit into the existing space.

Bending an antenna is probably the easiest way to fit an antenna into a confining space and is a valid technique, but bending can sometimes cause detrimental changes in the radiation pattern. A better and more controllable method of shrinking an antenna is through loading. Loading is used extensively by commercial Ham antenna manufacturers and with Hams that “roll their own,” especially in the world of mobile HF. Both camps, typically, use loading to do one (or more) of 3 things: 1) to make antennas physically shorter; 2) to provide a feed point match and 3) to phase multiple antennas or elements.

This is a 3 part series about the use of loading to shorten antennas. Part 1, this month, will talk about general loading principles. Parts 2 and 3, in January and February, will cover “Inductive Loading” and “End Loading”, respectively.

### Part 1--General Loading Principles

#### Resonance

Every piece of wire or metal tubing has a fundamental “resonant” physical length, which is  $\frac{1}{2}$  wavelength at the design frequency (Figure 1). Current and voltage standing waves exist as shown and will be referenced later. This resonant length is

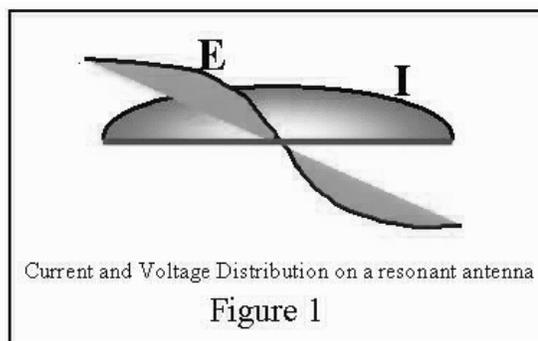
figured by the equation [length in feet =  $468 / f$  MHz].  $\frac{1}{2}$  wavelength represents 180 “electrical” degrees. This calculated length will vary slightly due to the element material diameter (Note 1) and will also change with the closeness to surrounding objects – called the “end effect”. When resonant, the antenna has a purely resistive feed impedance.

According to the above equation, a 160-meter dipole ( $\frac{1}{2} \lambda$  antenna) for 1.9 MHz would be 246.3 feet long; an 80-meter dipole for the B-VARC net would be 118.1 feet long; and a 40-meter antenna for the SSB portion of the band would be 64.5 feet long.

These lengths are too long to fit your available space; you can shorten the antenna by bending or loading it. Bending it will maintain the resonant length but is more apt to change the radiation pattern. Loading it properly will allow you to shorten the antenna and still maintain resonance and the radiation pattern of a full size antenna.

#### Reactance

As an antenna is shortened from the resonant length (keeping the frequency constant), a reactance develops at the feed point, in addition to the feed point resistance that is always there. This



Due to printing problems, holidays, and just not enough time in the day, the November/December newsletter was not printed. To bring things up to date, the November and December editions will not be printed.

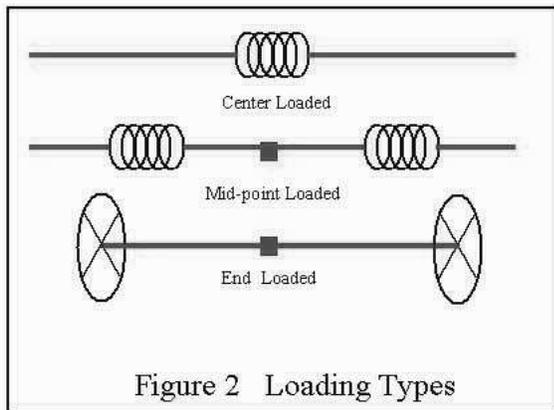


Figure 2 Loading Types

combination of resistance and reactance is called the feed impedance (e.g.  $52 -j43$  ohms). A shortened antenna will exhibit capacitive reactance within the feed impedance value, indicating that you need to add inductive reactance (loading) to cancel this capacitive reactance and make the antenna resonant again. Alternatively, lengthening an antenna will develop an inductively reactive feed impedance (e.g.  $52 +j43$  ohms), indicating that you need to load it with capacitive reactance to bring the antenna to resonance and the feed point to a purely resistive value.

### Loading

What is loading? Loading or “lumped impedance tuning”, as referred to by the Navy’s Electronic Technical School, is the practice of replacing physical antenna length with a value of inductance or capacitance that is the electrical equivalent of the wire that has been removed (or added).

Antenna elements can be physically shortened by loading coils, linear loading, helical winding and end loading “hats” (Figure 2). Each has its associated attributes and applications. What type of loading you use is dependent on 1) what you are trying to accomplish and 2) where on the antenna element you are going to apply the loading.

A loading coil can be used in the higher current portions of the element (Figure 1), from the center out to about 60 percent of the element length. Examples of these are base loaded or center loaded verticals (Figure 4). (Note 2)

Hats are used at or near the element end, which is the higher voltage portion of the element. End loading “hats” have historically been called “capacity hats,” although that is a bit of a misnomer. (Note 3)

### 83 / 63 Rule

On a dipole, the sinusoidal current distribution is such that 83% of the dipole’s radiation is done by the middle 63% of the dipole (Figure 3). The end 37% (2 times 18.5%, as there are 2 ends) of the dipole

only radiates 17% of the total energy radiated by the antenna. This translates into the fact that you can remove the end 37% of a dipole’s physical length and pay a penalty in gain loss of only 17%, or about .6dB. Of course, when the end portion of wire is removed, it must be replaced. This replacement is called loading.

From a practical standpoint, in this example of an 83/63 Rule dipole, since the wire was removed from the end, it is best to load it at the end. This keeps the current distribution the same as that of a full-sized dipole, over the middle of the antenna, where maximum radiation occurs. You could also load the element in toward the center with coils, but then you would reduce or influence the radiation current curve. More of this in Parts 2 and 3.

### Feed Z

One of the changing factors that we must be aware of when shortening any antenna is the feed impedance. We can bring the shortened antenna into resonance by simply inserting a series reactance, of the opposite sign, in the antenna structure, but the resistance portion of the feed impedance decreases as the antenna is shortened and cannot, however, be changed. This decrease varies in rate depending on the type and position of the loading used. Chart 1 (Note 4) shows the “Antenna Length In Degrees” versus “Rrad” – (radiation resistance or Feed Z) with base, center and top loaded vertical elements. End loading maintains the feed impedance at a higher value than any other type of loading for the same amount of shortening. As can be seen from Chart 1, top loading a shortened 60-degree element, the feed is 28 ohms, where as this same element with a base loading coil has a feed Z of 13 ohms. A fair amount of difference and the differential gets worse the more that you shorten the element.

Feed Z (Radiation Resistance) decrease is one of the major concerns with using low band antennas on automobiles. For example, a 75-meter antenna that is

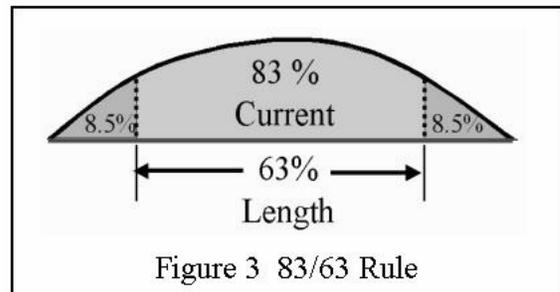
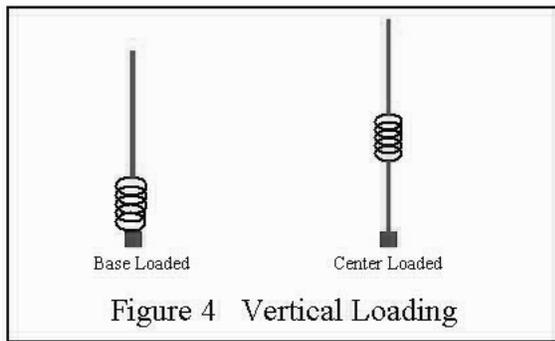


Figure 3 83/63 Rule

### New Air Ambulance in the Area

Sky Med, a division of Petroleum Helicopters, Inc. has started moving in Texas. Sky Med will be basing helicopters in Conroe, La Porte, Richmond, Cypress, Sherman, McKinney, and Love Field. Listen to them on 159.990 MHz.



9 feet (14 degrees) long will have a Feed Z of 2 ohms. Matching that is a bit of a problem, but more importantly, with an automobile body, the ground resistance can be above 2 ohms, making the antenna only 50% efficient, at best.

### Inductive Loading

The loading method that is most familiar to the Ham community is inductive loading at the center (or base) (Note 2) or towards the mid-point (or center) of each side of a dipole (Figure 2). As can be seen from the current distribution (Figure 1), these points on a dipole are the higher current points, and since a coil is a current operative type of passive component, it is what is used at this point in the antenna. The value of the coil used is dependent on 1) the value of reactance that is needed and 2) the position of the coil within the antenna. A basic rule of thumb is that the further out from the maximum current point the coils are placed, the more the inductance must be increased to provide resonance. (Note 5) More details in Part 2.

### Mobile Whips

Loading coils are most commonly used on mobile vertical whips, and rightly so! You couldn't legally drive down the highway with a 40 meter, 1/4 wave vertical (32 feet) hanging off of your bumper. HF mobile whips can be base loaded, or more typically, center loaded, like the "bug catchers" or Hustler whips (Figure 4). Loading is used to make a shortened mobile HF antenna electrically resonant on the HF frequency on which you want to QSO.

Another type of mobile use for a loading coil is in a 2 meter, 5/8 wavelength antenna. These antennas have a base loading coil used for resonance and matching. More on mobile whips and inductive loading in Part 2.

### End Loading

End loading (or voltage node loading – my term) requires a lump value equivalent circuit component /structure such as a "hat" (Fig. 2). End loading is very efficient. With proper end loading, you can

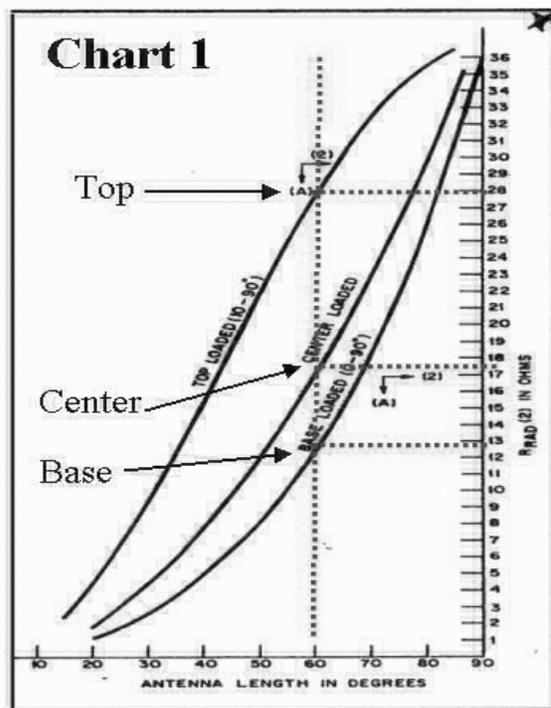
build an antenna that is very close to being 100% efficient, but only 2/3 full size.

Antennas can be shortened at any point along their physical length, but it is best to shorten them where the loading has least effect on the efficiency, bandwidth, and radiation resistance. End loading is best. It does, however, come with a higher "physical structure" price tag. More on end loading in Part 3.

### Summary

Loading antennas is a very common practice for the amateur operator, no matter what amateur band or antenna type is used. It helps reduce the size of the antenna when either physical height or length is a problem. Loading brings an antenna system into resonance, which is the preferred condition for coaxially connected, solid-state transceivers. On full wavelength or multiple wavelength antennas, loading can help configure the current distribution so that the currents are phased properly and therefore provide maximum radiation in the desired direction.

When experimenting with antennas, your knowledge of the types of loading and the characteristics of each is a benefit that will pay off many times over. With this knowledge, your antennas will be the most efficient skyhooks that can be designed and built. Radiating a great signal on the ham bands means more contacts and, hence, more fun...and that's what it's all about!



Next month Part 2 – Inductive Loading

**Notes:**

1 – ARRL Antenna Compendium #2 – Vertical Antennas: New Design and Construction Data -- Doty and Mills

2 – The adjectives to describe the position of loading coils or hats differ for horizontal and vertical antennas, but they mean the same thing. This is because a vertical ¼ wave is ½ of a half wave dipole.

**Horizontal Term**

Center loaded  
Mid-point loaded  
End loaded

**Vertical Term**

Base Loaded  
Center loaded  
Top loaded

3 – Comment on the Capacitive Hat misnomer -- [www.cebik.com/gp2.html](http://www.cebik.com/gp2.html)

4 – Low Band DX'ing – John Devoldere, ON4UN

5 – QST – Designing a Shortened Antenna – Oct 2003

**Presidents Corner**

*by Mike Hardwick, N5VCX*



**Banquet and Awards Dinner**

January 9<sup>th</sup> was Brazos Valley Amateur Radio Club's annual banquet and awards dinner. This year there were 38 club members at the dinner that everyone enjoyed and had a good time.

**The 2003 award were**

Order of the Key – Orin Snook, KB5F

Loop & Zepp – Allen Brier, N5XZ

Dr. Bill – John Moore, KK5NU

Presidential Award – Ross Lawler, W5HFF

Public Service - Doug Woodruff, KC5VYZ

Public Service Award – Darrel Kirk, KC5JAR

**News Letter Editor Needed**

Marie Schaer, KD5UJT, our illustrious newsletter editor has decided to step down due to other commitments (did she really win the lottery?). The BVARC BOD wants to thank Marie for all of her hard work on keeping the newsletter going. Hopefully the other commitments will not Keep Marie away from the general meetings.

So this means we are now needing a newsletter editor. If you think you are interested in this position, please contact the BOD and let them know. Marie will pass over the fonts styles and the newsletter template to the next newsletter editor.



**The 2002 awards were:**

HF NET Manager – Sam Wilson, N5CPA

VHF Manager – Doug Woodruff, KC5VYZ

Presidential Award – Claude Session, K5HFY

Presidential Award – Kevin Foto, KD5O

**February Meeting is New Ham/New Member month**

This year the BOD would like club members to either bring a person interested in ham radio or someone that is licensed but not a club member to the February meeting. Make February the month to increase the ranks of the hobby or club membership.



**It's Been Fun, But It's Time to Move On**

This issue marks the end of my editorship. I will be happy to turn over the fonts and layout template to any volunteers who come forward.

*'73, A. M. Schaer KD5UJT*

# Rag Chew Net

By Joe Morgan, K5JWM

3910 KHz +/-3KHz Wednesdays at 7:00 pm

Just WHAT IS the Rag Chew Net? Well it's a chance for you to get on the low bands and hang out with other BVARC members, as well as hams from around the south central US! WHAT?? Don't have voice privileges? Got a short-wave receiver? Dial in and listen, then check in using the telephone number announced at the beginning of each net.

10/15/03 \_\_K5JWM, K5CEK, N5CPA, KG5RQ, W5GHK, NM5K, KE5SR, K5VRJ, KB5F, WB5VYR, N5VXU, K5LBU, W5UHZ, KA5JKI, KC5AWZ, WB5SRN, K5IHV check-ins (17)

10/22/03 \_\_K5JWM, K5CEK, KE5SR, W5HFF, WB5VYR, N5CPA, KC5SYM, K5VRJ, AB5BA, W5CJN, K5HFF, K5LBU, W5UHF, K5LJ, W5UHZ, K5IHV, KG5RQ.check-ins (20)

, 10/29/03 \_\_K5JWM, K5CEK, AB5RJ, K5LJ, N5CPA, W5UHZ, K5VRJ, AB5BA, K5LBU, check-ins (9)

11/05/03 \_\_K5JWM, K5CEK, KD5WHD, N5CPA, K5LJ KG5RQ, K5LBU, W5UHZ, K5HFF, K5IHV.check-ins(10)

11/12/03 \_\_K5JWM, N5CPA, WB5VYR, K5VRJ, AB5BA K5LJ, W9BDD, WA5VRB, K5LBU, NM5K, W5HFF, W5JBP KD5O, KG5RQ.check-ins(14)

11/19/03 \_\_K5JWM, K5CEK, WB5VYR, N5CPA, K5VRJ AB5BA, NM5K, K5LBU.check-ins(9)

11/26/03 \_\_K5JWM, K5CEK, N5CPA, K5VRJ, AB5BA, W5UHZ WA5VRB, K5LJ, W5GHK,K5IHV.check-ins(10)

10/08/03 \_\_K5JWM, K5CEK, KE5SR, W5HFF, KB5F, WB5VYR, K5IHV, K5HFF, K5LBU, KG5RQ, W5UHZ, N5CPA,

## License Testing Results

by John Moore, KK5NU

BVARC administered the ARRL-VEC Amateur Radio Examination sessions that were held November 11<sup>th</sup>, December. 9<sup>th</sup>, and January. 13<sup>th</sup> at Houston Community College Scarcella Technology Campus, here in Stafford.

### November 11

#### MEMBERS OF THE VE TEAM:

- Dennis Dietrich, W5DDD
- Louis House, KD5GM
- Larry Jacobson, K5LJ
- John Moore, KK5NU
- George Ontiko, KM5VP

A single examination element was administered during the evening to one applicant. The overall "pass rate" for the evening was 100%.

- Michael Stringer - KD5WZF - Tech w/HF

### December 9

#### MEMBERS OF THE VE TEAM:

- Dennis Dietrich, W5DDD
- Ron Grimes, WA5SCE
- Larry Jacobson, K5LJ
- George Ontiko, KM5VP

Six examination elements were administered during the evening to five applicants. Two unlicensed candidates received their new Technician licenses, and a Technician upgraded to General, with the total

number of elements passed being 3. The overall "pass rate" for the evening was 50%.

- Kevin L. Fields- KD5ZWW - Technician
- Gordon R. Mowat- KD5UQR - General
- Lorolie K. Wong- KD5ZWX - Technician

### January 13

#### MEMBERS OF THE VE TEAM:

- Larry Jacobson, K5LJ
- John Moore, KK5NU
- George Ontiko, KM5VP

Five examination elements were administered during the evening to five applicants. Three unlicensed candidates received their new Technician licenses, a Technician upgraded to General, and a General upgraded to Extra, with the total number of elements passed being 5. The overall "pass rate" for the evening was 100%.

John A. Chauvin - K5IZO - Extra  
Charles P. Kane - - Technician  
Jerry Lee - - Technician  
Paul T. Rubin - N8NOV - General  
Russell J. Thoede - - Technician

Congratulations to everyone who passed an exam and/or upgraded.

Many thanks to all the Team Members and Assistants who volunteer their valuable time and effort each month. All of us at B-VARC again thank everyone at HCC Scarcella Technology Center for making these excellent classroom facilities available to us for our exams each month.

## Public Service Events

By Mike Hardwick, N5VCX, President

### Several Events Still Needing Volunteers!

Here are several upcoming Public Service and other amateur radio related events needing amateur radio operators for communications or participation. Operators of web sites and remail list, post this information on your web site. Please show your support for amateur radio by coming out to help or by attending the events.

#### Motorola Marathon

<http://www.motorolamarathon.com/>

Austin, Texas

February 15, 2004

Contact Martin [KM5CT@arrl.net](mailto:KM5CT@arrl.net)

Approximately 50 operators are needed for APRS/packet and voice track runners and buses

#### BP MS150 Training Rides

There are several training rides that will need amateur radio communications. Besides helping the riders get prepared for the MS150, the ride also helps the operators prepare for it as well.

Feb. 1	Frost Bike 50 Bike Ride	Hwy 290
Feb. 8	The Big Chill Bike Ride	Katy
Feb. 15	The West U Warm-up	Houston
Feb. 22	Wild West End Ride	Fort Bend Co.
Mar. 7	Sun & Ski Sports Ride	Katy
Mar. 14	The Space Race	Clear Lake
Mar. 21	Blue Bonnet Express	Hempstead
Mar. 28	Tour de Cypress	West Houston
Apr. 4	Katy Ram Challenge	Katy

Don't forget the MS150 which uses amateur radio as the primary communications.

#### BP MS150 Houston to Austin Bike Ride

<http://www.ms150.org/ms150/>

**April 17& 18, 2004**

110 operators are need for this event. Please contact me as soon as possible as overnight accomodations need to arranged. The event is expected to have over 10,000 riders this year since it is the MS150's 20th anniversary. To provide communications for this event, all forms of amateur radio will be needed. Everything from HF to UHF from APRS to ECHO link is used for communications during the event. If you are interested in helping, please contact me as soon as possible.

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## Upcoming Hamfests

**Feb. 21, 2004**

**Smithville Swapmeet** Riverside Park 8AM-noon  
free admission, cheap tables & tailgate spots  
Bastrop ARC <http://www.qsl.net/kb5yae/>

**Feb 28, 2004**

#### Brazos Valley ARC Mix-N-Match Swap Meet

<http://www.hal-pc.org/~bvarc/> or [n5vcx@arrl.net](mailto:n5vcx@arrl.net)

8:00 a.m. to 2:00 p.m. Indoor tables and outdoor spaces available at Sugar Land Community Center. Volunteers are needed to help with the swap meet!

**Feb 28, 2004**

#### Orange ARC & Jefferson County ARC

VFW Hall on Hwy 87 approximately 1 m N of I10  
VE Sessions and forums. Talk-in on 147.180 MHz  
More info contact Joan Lexa WA5LFT, P.O. Box 232, Orange, Texas 77630 409-886-1892 or [wa5lfs@pnx.com](mailto:wa5lfs@pnx.com)

**Mar 20, 2004**

#### Brenham ARC

No entry fee, Free tables for commercial vendors and \$10 for individuals

<http://www.alpha1.net/~barc>

Contact: Dan Lakenmacher, N5UNU,  
10312 Highway 36 North, Brenham, TX 77833  
Phone: 979-836-8739 Email:

[akenmacher@yahoo.com](mailto:akenmacher@yahoo.com)

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## Monday Night NET Updates

The Monday Night Public Service Net will begin at **8 pm** instead of 9, starting January 5. Make sure you set your alarm to let you know when the NET is starting.

**Over the next few weeks, the NET may be on the 145.450 MHz repeater due to the repairs going on the MERA 145.470 repeater. Keep both frequencies programmed in your radio.**

### Monday Night Public Service Net Check-ins

10/20 - 15 - Joe, k5jwm      11/10 - 23 - Kevin, kd5o  
10/27 - 29 - Doug, kc5vyz    11/17 - 19 - Cam, k5cam  
11/3 - 33 - Cam, k5cam

## Silent Key

Alfonso "Al" Zermeno, KK5W, died on December 7, 2003 in Houston, TX. He is survived by his wife Betty Zermeno, and daughters Linda Kay Hale, Jeannie Walsh, Zena Marie Kaihlanen, and Nancy Jo Zermeno; son Dan Henderson; sister Catherine Zermeno; brother Bill Zermeno. Al, a retired physicist, worked for M.D. Anderson for 25 years and was active member in the M.D. Anderson amateur station and a member of MERA.

## The Annual Chili Supper and Elections

The November 13<sup>th</sup> general meeting was the annual chili supper and elections. The aroma of the different chilis floating through the room it made it difficult to hold elections. Marie, KD5UJT, our illustrious editor, felt that Rick Hiller's jalapenos stuffed with cream cheese were the star of the show. In the end, everyone filled up on chili and the elections were finally held. Several of the 2003 club officers decided to stay on for another term and one new person was elected to the board. The 2004 club officers are

- Mike Hardwick, N5VCX – President
- Allen Briar, N5XZ Vice President
- Mack Arp, W5EET –Corresponding Secretary and Treasurer
- Joe Morgan, K5JWM – Recording Secretary
- Ross Lawler, W5HFF – 1 Year Board Member
- Sid Sherwood, N5ZKD – 2 Year Board Member
- Kevin Foto, KD5O – Past President



Randy Pollard and John Moore almost ready to go back for more!



Get your raffle tickets here!

Larry looks like he just swallowed one Rick's stuffed jalapenos



Bruce looking spiffy in his sheriff's uniform



The chow line with your editor enjoying one of her favorite pastimes

## 2004 Club Officers:

President:  
Mike Hardwick, N5VCX  
n5vcx@worldnet.att.net

Vice President:  
Allen Brier, N5XZ  
abrier@hotmail.com

Corresponding Secretary/Treasurer:  
Mack Arp, W5EET  
w5eet@yahoo.com

Recording Secretary:  
Joe Morgan, K5JWM  
k5jwm@att.net

One Year Board Member:  
Ross Lawler, W5HFF  
w5hff@juno.com

Two Year Board Member:  
Sid Sherwood, N5ZKD  
n5zkd@arrl.net

Past President:  
Kevin Foto, KD5O  
foto@texas.net

## Club Happenings:

### General Meeting

Second Thursday each month,  
Sugar Land Community Center,  
224 Matlage Way

### Board of Directors Meeting

First Thursday of each month,  
Sugar Land Community Center,  
224 Matlage Way

### Volunteer Examiner Program

BVARC administers Amateur  
License Exams on the 2nd Tuesday  
of each month at the HCC Scarcella  
Technology Campus, 10141 Cash  
Rd. in Stafford.  
Contact John Moore, KK5NU

### Eating Schedule

Third Friday Dinner at 6:30 p.m.  
Location announced in the calendar.

### Saturday morning breakfasts –

7:00 a.m. New York Coffee Shop  
9720 Hillcroft, Houston  
7:30 a.m. Viking Den  
2939 S. Main, Stafford

### Rag Chew Net

3910 KHz +/-3KHz Wednesdays  
at 7:00 p.m.

### Public Service Net

Monday night on 145.47 (123 PL)  
at 9:00 PM

# Minutes of Brazos Valley Amateur Radio Club Board of Directors Meeting

**November 6, 2003**

**Attendees: President;** Mike Hardwick-N5VCX, 2 -Year Director/Club Elmer Ross Lawler-W5HFF, Corresponding Secretary/ Treasurer, Mack C Arp-W5EET, 1-Year, Past President Kevin Foto-KD5O, Past Secretary of Treasurer Camron-K5CAM.Doug-KC5VYZ, Recording Secretary, Joe W Morgan - K5JWM.

Meeting called to order at 7:39 PM by President Mike Hardwick. Comments: Mike Hardwick-Take a look at the new web site and give us some feedback on what you think what you think will approve the site.

**Emergency Business:** Elections next week, looking for some new board members. The board approved minutes for Aug, Sept, and Oct. Mike still working on the by-laws.

**Old Business:** Kevin will coordinate the chili supper for Nov 13th. Ross W5HFF is coordinating the ice cream social for August 14th.

**New Business:** Mack said bank account is up to date as of Nov/06/03 Ross would like to start a no code tech class at the first of the year. Doug read preamble for the net and said some changes might take place.

**Announcements:** Chili supper Nov 13,2003. Mix & Match swap meet Feb 28,2003 Backup repeater Freq for the net is 145.45

**Total Membership count:** 143

**Adjourn:** 9:25

**December 4,2003**

**Attendees:** President, Mike Hardwick-N5VCX, 2 -Year Director/Club Elmer Ross Lawler-W5HFF, Corresponding Secretary/ Treasurer, Mack C Arp-W5EET, 1-Year, Past President Kevin Foto-KD5O, Past Secretary of Treasurer Camron-K5CAM, Sid-1-Year Director Recording Secretary, Joe W Morgan - K5JWM. Meeting called to order at 7:42 PM by President Mike Hardwick.

**Comments:** Mike Hardwick-Welcome Sid to the board.

**Emergency Business:** Joe find minutes that show we elected Mack to board so we can get Mack signature authority at the bank. Mike still working on the by-laws.

**Old Business:** Chili supper was a hit; looks like everybody had a great time. Ross, W5HFF, is coordinating the ice cream social for August 14th. Doug read preamble for the net and talked about some changes that might take place.

**New Business:** Mack said Bank account is up to date as of Dec/04/03 Ross would like to start a no code tech class at the first of or middle of January. Talk about Field day and how to make it more enjoyable for all.

**Announcements:** Homebrew night Dec 11,2003. 8 new members have joined the club Mix & Match swap meet Feb 28, 2003 Backup repeater Freq for the net is 145.45

**Total Membership count:** 143

**Adjourn:** 9:25

*Submitted by Recording Secretary Joe W Morgan-K5JWM*

The BVARC Board of Directors would like to thank **Lockard & White Telecommunications Engineers** for the production of the newsletter.



# 3rd Annual Brazos Valley Amateur Radio Club MIX 'n' MATCH SWAP MEET

8:00 a.m. to 2:00 p.m. February 28, 2004  
Sugar Land Community Center  
226 Matlage Way, Sugar Land

Talk-in on 145.470 (minus offset) 123.0 tone

Set-up at 7:00 a.m. Doors open at 8:00 a.m. Community Center closes at 3:00 p.m.

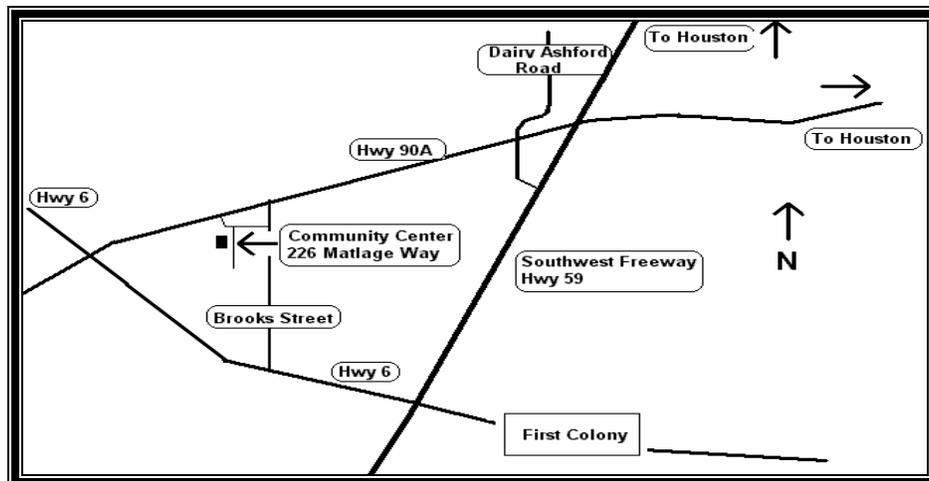
\$1.00 Admission   VE Sessions   Refreshments Available  
Emergency Communications Vehicle Display  
Grand Prize Raffle   Live Entertainment   Boat Anchor Raffle

Tables:   Club members - 2 tables free, \$5.00 each after the first 2  
Non members - \$5.00 each or 2 tables free with membership!  
Commercial tables - \$10.00 each

Tailgate:   Club members - 1 space free, \$5.00 each after the first 1  
Non members - \$5.00 each or 1 space free with membership!  
Commercial - \$10.00 each

It's time to do that early spring-cleaning and bring out the best of the worst or the worst of the best of your equipment, accessories or just plain junk and get rid of it. Come on out and see what equipment you can mix or match with yours. Contact Mike, N5VCX at 713-771-4625, [n5vcx@arrl.net](mailto:n5vcx@arrl.net) or Ross, W5HFF at 281-342-3340, [w5hff@juno.com](mailto:w5hff@juno.com) for your tables or information. Isn't it time to upgrade? BVARC's VE testing will begin at 8:30 a.m.

*Plan for 2005! - Mark March 5<sup>th</sup>, 2005, for next year's Mix 'n' Match*





Saturday breakfasts: 7:00 am New York Coffee shop 9729 Hillcroft & 7:30 am Viking Den 2939 S. Main, Stafford

## January 2004

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5 K5CAM Public Service Net 9:00 p.m. 145.470 MHz	6 <b>AMSAT Net</b> <b>8:00 p.m.</b> <b>145.470 MHz</b>	7 HF Rag Chew Net 7:00 pm 3910 +/-3KHz	8	9 BVARC Banquet Saltgrass Steak House	10
11	12 KD5O Public Service Net 9:00 p.m. 145.470 MHz	13 <b>VE Session</b> <b>6:30 pm</b> <b>AMSAT Net</b> <b>8:00 p.m.</b> <b>145.470 MHz</b>	14 HF Rag Chew Net 7:00 pm 3910 +/-3KHz	15	16	17 <b>ICOM Day</b> <b>Houston</b> <b>Amateur Radio</b> <b>Supply</b>
18	19 K5JWM Public Service Net 9:00 p.m. 145.470 MHz	20 <b>AMSAT Net</b> <b>8:00 p.m.</b> <b>145.470 MHz</b>	21 HF Rag Chew Net 7:00 pm 3910 +/-3KHz	22	23	24
25	26 KC5VYZ Public Service Net 9:00 p.m. 145.470 MHz	27 <b>AMSAT Net</b> <b>8:00 p.m.</b> <b>145.470 MHz</b>	28 HF Rag Chew Net 7:00 pm 3910 +/-3KHz	29	30	31

There will be no 3<sup>rd</sup> Friday night dinner in January due to the date being too close to the banquet. The 3<sup>rd</sup> Friday night dinner will resume in February.

## February 2004

SUN	MON	TUE	WED	THU	FRI	SAT
1 <b>Frost Bike 50</b> <b>Bike Ride</b>	2 K5CAM Public Service Net 9:00 p.m. 145.470 MHz	3 <b>AMSAT Net</b> <b>8:00 p.m.</b> <b>145.470 MHz</b>	4 HF Rag Chew Net 7:00 pm 3910 +/-3KHz	5 <b>BOD Meeting</b> <b>7:30 pm</b>	6	7
8 <b>The Big Chill</b> <b>Bike Ride</b>	9 KD5O Public Service Net 9:00 p.m. 145.470 MHz	10 <b>VE Session</b> <b>6:30 pm</b> <b>AMSAT Net</b> <b>8:00 p.m.</b> <b>145.470 MHz</b>	11 HF Rag Chew Net 7:00 pm 3910 +/-3KHz	12 <b>General club</b> <b>Meeting</b> <b>New Ham/New</b> <b>Member Night</b> <b>7:30 pm</b>	13	14
15	16 K5JWM Public Service Net 9:00 p.m. 145.470 MHz	17 <b>AMSAT Net</b> <b>8:00 p.m.</b> <b>145.470 MHz</b>	18 HF Rag Chew Net 7:00 pm 3910 +/-3KHz	19	20 6:30 p.m. 3 <sup>rd</sup> Friday dinner Hickory Barn 11534 Wilcrest	21 <b>Bastrop ARC</b> <b>Swap Meet</b> <b>Smithville</b> <b>MS150 Volunteer</b> <b>Training Day</b>
22	23 KC5VYZ Public Service Net 9:00 p.m. 145.470 MHz	24 <b>AMSAT Net</b> <b>8:00 p.m.</b> <b>145.470 MHz</b>	25 HF Rag Chew Net 7:00 pm 3910 +/-3KHz	26	27	28 BVARC <b>Mix-n-Match</b> <b>Swap Meet</b> Orange ARC Swap Meet
29						

FEBRUARY 20, at 6:30p.m. (sharp) at THE HICKORY BARN BARBECUE at 11534 Wilcrest, 1-1/2 N. of US59 (SW Frwy.)



**Monthly Publication of the Brazos Valley Amateur Radio Club.**  
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**Club Call sign - KC5OIG, W5DPA**  
**BVARC's Website: <http://www.hal-pc.org/~bvarc>**  
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**John Moore, KK5NU, [jwm@hal-pc.org](mailto:jwm@hal-pc.org)**

## BVARC Meeting Dates for 2004

Time to mark your calendar for the 2004 meeting dates. With the early morning efforts of Cameron Mitchel, K5CAM, the dates for the last of 2004 were finalized in July. Cameron shows up before the roosters even think about getting up and signs the club up for the rooms at the Community Center, so mark your calendar with the dates for the Board of Directors and general meeting for 2004.

Date	Type	Location	Date	Type	Location	Date	Type	Location	Date	Type	Location
Feb 5	BOD	SLCC	March 4	BOD	SLCC	April 1	BOD	SLCC	May 6	BOD	SLCC
Feb 12	General	SLCC	March 11	General	SLCC	April 8	General	SLCC	May 13	General	SLCC
June 3	BOD	SLCC	July 1	BOD	SLCC	Aug 5	BOD	SLCC	Sept 2	BOD	SLCC
June 10	General	SLCC	July 8	General	SLCC	Aug 12	General	SLCC	Sept 9	General	SLCC
Oct 7	BOD	SLCC	Nov 4	BOD	SL Lib	Dec 2	BOD	SL Lib	<b>SL Lib – Eldridge Road Library</b>		
Oct 14	General	SLCC	Nov 11	General	SLCC	Dec 9	General	SL Lib	<b>SLCC – Sugar Land Comm. Ctr.</b>		

Peter Sauermilch, KD5QPX, showed up around 3:30 a.m. on January 2, to insure that we have the community center for the first half of 2005. Keep your eye on upcoming newsletter editions for the dates. BVARC thanks

Cameron and Peter for their early morning treks to the Sugar Land Parks Department.

**VOLUME 28 ISSUE 1**

**January 2004**

**BRAZOS VALLEY**  
**AMATEUR RADIO CLUB**  
**P.O. BOX 1630**  
**MISSOURI CITY TX 77459-1630**  
 ADDRESS SERVICE REQUESTED

FIRST CLASS POSTAGE

**Monday Night Public Service Net Now at 8:00 P.M.**  
**Next General Meeting on February 12 at 7:30 P.M.**  
**And don't forget the BVARC Mix-n-Match Swap Meet on February 28<sup>th</sup>!**

If your mailing label is highlighted in color its time to renew your membership