the B-VARC BULLETIN

The Monthly Publication of The Brazos Valley Amateur Radio Club

Volume 18 Issue 9 September 1995

NOTES FROM THE PRESIDENT

by Carl Cunert—WB8SVR

In mid July, I took a trip to my parents' house in Akron, Ohio. For a ham, having no way to communicate on a long trip is like being a fisherman with no bait in a bass tournament, or going to the Super Bowl with no tickets (something the Oilers have been doing for awhile). So, I decided to take my Ten-Tec Corsair 2 along to keep me company. The xyl was already in Akron taking care of things, so I had plenty of room in my little Ford Tempo on the front seat, and the radio traveled very nicely. Still, the fact that I had no HF antennas and little experience using HF on the road was only a minor obstacle. Free advice came from KF5NU on how to install antennas on a car. It may sound silly, but we all do things we just take for granted, or don't think abour. and I'm no exception. As Rick can tell you, for me, it's grounding.

Antennas and mast of the Hustler variety came by way of N5ECP and WN5A. The little 3-foot mast that Hustler offers is good for 10 meters and higher, but leaves a lot to be desired on the lower bands. So, the 5-foot mast is essential when running mobile HF, and again, the friendly advice helped get me on the road. After just a little tuning of the traps, I made my first HF mobile contact in my driveway. R1FJZ was calling CQ on 20 meters. I had no reason to believe he'd hear me, but I gave a call anyway. "R1FJZ de WB8SVR," HF noise, "WB8SVR de R1FJZ," and a QSO commenced. Darn if I wasn't surprised—the far eastern portion of Europe on 100 watts with a mobile antenna.

The next morning, I left Houston for Ohio after eating a good breakfast with two good friends at the Kettle (WD5DRB and KD6QZH). WD5DRB gave my mobile setup the once-over inspection and approval, and off I went.

KF5NU set up a schedule to meet him on 20 meters on the even hours of the day, beginning at 6:00 pm. Along the way, I had great QSO's with Arizona, Oklahoma, Illinois, Florida, and other states. Quito Ecuador QSO'd with me through the state of Mississippi. That was a great QSO, which lasted for about an hour and a half. We talked about almost everything, but he was most interested in the scenery. The first QSO with Rick was dismal. After all, I had only made it to Slidell, LA. Then we tried Meridian, MS again, and that proved a little better. Then, at 8:00 p.m., just outside of Birmingham, (did you read that KC5IWL?) KF5NU and KD5GM came on frequency loud and clear. Let me tell you, it is so nice to hear a friendly voice at the other end. Thanks very much guys!

My experience demonstrates a good reason to upgrade your license. In no way can VHF or UHF be as much fun on the open road as HF, and I was never without someone to QSO with. There is even a frequency the big truckers hang out on, 14302.5 and it is a thrill just to listen to them as they QSO along the road. Even if you can only upgrade to a general class license, the joys of HF on the open road will still be at your fingertips. KD5GM will be glad to help get your 13 wpm. It isn't as hard as you may think. All it takes is dedication and determination. Then, Harold—ND5F can give you the tests, and after passing them, down the road you go. I like B-VARC'S tests because when you pass them, you know you're ready for amateur radio and nothing has been given to you by guessing the answers; you've earned it. I take greater pride in things that I've earned.

Carl—WB8SVR

SPECIAL THANKS

All of us at B-VARC would like to extend our gratitude to the management at KHTV, Channel 39, for the use of their equipment and facilities in order for this bulletin to be published.

B-VARC BOARD MEETING

by Louis House—KD5GM

A quorum of the B-VARC Board of Directors met at the Sugar Land Community Center, on August 3, 1995. This was the eighth meeting of the calendar year. President, Carl Cunert—WB8SVR, called the meeting to order at 7:35 p.m.

The following Board Members and guest were in attendance: Carl Cunert,—WB8SVR; Ron Grimes—WA5SCE; Donn Washburn—N5XWB; Louis House—KD5GM; Billy Jones—KC5EVD; Victor Richard—N5NAS; Claude Sessions—K5HFY; Bud King—N5UOG; Sam Wilson—N5CPA; Mike Hardwick—N5VCX; Jackie Burton—KC5OHJ; Harold Parker—ND5F; Terry McCoy—KK5RL and Pete Norris—KJ5SS.

Recording Secretary, Louis House—KD5GM, presented the July minutes. The minutes were accepted with a motion which was seconded and passed unanimously.

Treasurer Donn Washburn—N5XWB, presented the financial report, showing a balance of $3,717.70 on August 3, 1995. Donn also reported a current membership of 210. The report was accepted with a motion and second that passed unanimously.

Corresponding Secretary, Billy Jones—KC5EVD, reported on the new club roster, pointing out the change to a landscape format. Billy also stated that he will be adding packet and e-mail addresses to the roster for those members who have one and want it published in the roster.

B-VARC Rag Chew Net Manager, Sam Wilson—N5CPA, reported that the B-VARC Rag Chew net, which meets on Wednesday evenings at 8:30 p.m. on 3960kHz, + or - 3kHz, had a high of 16 check-ins on July 5, and that thunderstorms made for a slow net on July 12. On July 19 and 26, the net had 12 check-ins. Sam said that phone check-ins are welcome for those who are not yet licensed for this frequency. The phone number is announced on the air during the net. Also, Doug Holley—KE5SR and Craig Culver—AB5OK, checked in during the month. Sam also stated that he would like to have some volunteers in outlying areas to pick up the net when he has thunderstorms in his area.

Mike Hardwick—N5VCX, Public Service Coordinator, reported that the last quarter of this year will be very busy months for public service events. On September 23rd and 24th is the Alamo Challenge Bike Tour. On October 8th is the 20K Warm-Up. On October 21st and 22nd is the Houston Symphony Classic, as well as the Wings Over Houston Air Show. The MS Enduroskate will be on October 28th, followed by the Texas Coastal Bike Ride on October 29th. The 20K Warm-Up and MS Enduroskate both need coordinator positions filled. Mike stated that he would assist anyone who would fill these coordinator positions.

Harold Parker—ND5F, presented copies of posters that he made up to advertise the B-VARC Morse Code Class and the 2 Meter Code Practice Net. Harold asked that if it met with the board's approval, the posters could be published in the newsletter and that a note could be attached, asking recipients of the newsletter to inquire at some of the local Radio Shack stores about placing the posters there to advertise the Code Class and Code Practice Net. Followed by some discussion, it was determined that printing the posters in the newsletter and handing them out at the local stores was a good idea.

Harold Parker—ND5F, presented an old B-VARC membership card and suggested that it might be a good idea to start issuing membership cards again, as we did in the past. Some discussion followed, but no action was taken.

Harold Parker—ND5F, asked if the Board had been contacted by members of the Gulf Coast Ham Convention about the Brazos Valley Amateur Radio Club participating at the Convention in November. The board members stated that no formal request for B-VARC to participate in the Convention had been received. Harold reminded the board that the B-VARC VE group only gave exams for special events with the board's approval. There was much discussion about the board not being approached, but no action was taken at this time.

Harold Parker—ND5F, brought to question, before the board, the fact that on several occasions the - (hyphen) used in the club's hyphenated acronym "B-VARC" has been omitted from the B-VARC BULLETIN. Harold submitted a letter dated August 3, 1995, addressed to "All B-VARC Board of Directors," reference: "Name of our News Letter." Attached to the letter was a copy of the August 1980 edition of the B-VARC BULLETIN, Vol. 3, No. 2 (we think), published by Stu Lamkin—WB5IGG, our first editor, showing the name of our club's newsletter being established and recorded to be "the B-VARC BULLETIN." After much discussion, a motion was made and seconded to mandate the use of the hyphenated form of B-VARC on all present and future occasions when referring to or describing the Brazos Valley Amateur Radio Club with its acronym. The motion passed unanimously.

Treasurer, Donn Washburn—N5XWB, brought before the board a soon to be due insurance policy, which covers commercial general liability. Donn requested the board's approval before paying the due premium. After some discussion, a motion was made and seconded to pay the premium and continue to carry the insurance policy. The motion passed unanimously.

Treasurer, Donn Washburn—N5XWB, brought to the board's attention that it is very difficult to return monies to those who overpay their dues by means of a check. The reimbursement checks need board approval and the by-laws do not allow for advanced payment of dues, so the monies cannot be applied to the next year. After much discussion, President Carl Cunert—WB8SVR, appointed a committee consisting of Ron Grimes—WA5SCE, Harold Parker—ND5F and Billy Jones—KC5EVD, to look into changing the wording in the by-laws to allow for a 12-month expiration date from the date dues are paid, and also, a multiple year dues structure will be under consideration.

Claude Sessions—K5HFY, asked the board's permission to use the club's call sign—KC5OIG, to obtain for B-VARC a Ten Ten and SHOT number. The board gave their approval of the use of the club call. Claude stated that he would like to offer a display at the next club meeting of magazines and books which are offered by handicapped individuals. The items offered are free; however, donations would be accepted.

President, Carl Cunert—WB8SVR, asked the board if the club wanted to offer a prize to the person who submitted the vanity call that was selected for the club. It was suggested that this idea be put before the general meeting to see if the

membership wants to pursue a vanity call for the club.

President, Carl Cunert—WB8SVR, raised the question of a Nominating Committee for the election of next year's officers. It was pointed out that the by-laws state the procedure for selection of who serves on the Nominating Committee.

With a motion that was seconded and passed unanimously, President, Carl Cunert—WB8SVR, adjourned the meeting at 9:17 p.m.

MEMBERSHIP REPORT

by Donn Washburn—N5XWB

As of August 10, 1995, the current membership for the club is:

213

VOLUNTEER(S) NEEDED!

by Dwayne Jones—KB5YTA

We are in need of a volunteer, or possibly several volunteers, to help run the B-VARC Public Service Information Net. Anyone wishing to volunteer or needing further information concerning the net should contact me as soon as possible.

73 Dwayne Jones—KB5YTA

OUT OF THIS WORLD HAM RADIO ACTIVITY

by Bruce Paige—KK5DO

Segment 2: Radios

Last time, we talked about working some of the satellites that have beacons. Well, what if you have not quite decided to get a satellite station together because you don't really know what you should buy? Hopefully, these next few segments will help. Tonight, we will talk about some of the satellite radios that are out there and what you should look for.

What type of radio should you get if you want to operate satellites? That's not too difficult a question, but there are a lot of choices on the market.

The radio can be two separate radios that are capable of transmitting sideband signals, or you can use a specialty radio designed for satellite use such as the Yaesu 736R, the ICOM 970H or the new 820, or the Kenwood TS 790A. When selecting the radio that best suits your needs, some of the considerations to keep in mind, besides cost, are: output power, tuning features, and the ease of adding 9600 baud TNC (in case you later decide to work the packet satellites). There are probably more, but I feel that these are the primary things that you must be able to do with your satellite rig.

The first feature I consider important is the power output. Besides using the radio to uplink to the satellites, you may also want to use the radio for sideband and terrestrial. If you do and you are going to use a linear, then you will want to make sure that you can drive the input of the linear to its fullest so that you will get the maximum out of the linear. When working the satellites, maximum power is almost never required. The only times I have found the need to use maximum power is when the satellite off-pointing is so far that you can barely reach the antennas. However, if you cannot hear yourself because the off-pointing angle is so great, all the power in the world will not help you reach the satellite.

The second feature to look at is how to store a pair of frequencies into memory and then load your VFO later to work a satellite. I have experience with the Yaesu 736R and the ICOM 970H, having owned both. The Yaesu 736R allows you to load your satellite pairs. When you select a memory location and want to work those frequencies, the 736R loads the VFO, but does not allow you to manually tune it. In order to do that, you must press the Memory to VFO button. This will load the memory contents into VFO, but also loads the trash in the VFO into the memory. So, to replace the memory with the correct contents, you must immediately press the memory store button before moving the VFOs. Now you can freely move either VFO and adjust your transmit or receive.

With the ICOM 970H, as soon as you select your memory location, the VFOs are immediately available to be tuned, with no other adjustment. The problem I have found with the ICOM is that if you want to store a non-standard split, such as those used for operating the shuttle, you have to first store the main frequency. Then, you use the set function and enter the frequency offset. The 736R, on the other hand, allows you to enter the two frequencies and then save the VFO values to memory, which is a bit easier than the ICOM.

For the Kenwood TS 790A, the tuning is somewhere in the middle between the Yaesu and the ICOM. You can load your frequency pair into memory, and if you want to tune the VFO, you must press the memory to VFO button. Unlike the Yaesu, the Kenwood memory locations are not overwritten when you do this.

The next feature worth looking into is the ability to use a 9600 baud TNC on your radio. Hooking up a 1200 baud TNC is fairly easy. Anyone can connect a few wires to the speaker or earphone jack—one to the microphone jack and another to the PTT switch. The problem with 9600 is that you must connect the receive to the discriminator output and the transmit to the varactor. If you have an ICOM 970H, the mods require no cutting or soldering. The great thing about this is you can always remove your connections if you need to send the radio in for warranty repair. The Yaesu 736R requires you to solder a few spots and replace a 10kHz filter with a 12 or 16kHz filter. This is not difficult, but requires a bit more time and is permanent. The new ICOM 820 is 9600 baud ready. The mods for the Kenwood TS-790A, the Yaesu 736R and the ICOM

970H are available from the AMSAT FTP site.

Now, for the adventurous. You can take two HF radios, purchase two transverters and operate that way. One major drawback is the frequency you tune to. For instance, when you tune to 28.105, you must convert that to 145.905. This may be a bit cumbersome, because you continually have to convert the frequency from the working frequency to the transverted frequency. Some people are still operating this way and are very comfortable with it. Finally, you can use a VHF radio and a UHF radio.

Both of these final two solutions to operating a satellite are ideal if you already have the radios and do not want to spend more money on the specialty satellite radio. If you are just starting out in satellite radio, you might want to consider one of the speciality radios. In any case, once you get the equipment and get on the air, you will really enjoy satellite communications and you will learn how your radio works and become proficient at it.

THE INTERNET . . . TO COME

by Jackie Burton—KC5OHJ

At the September regular meeting, John Moore will be giving us a presentation on the Internet. There are many Internet sites that are of special interest to amateur radio. Also, for packet operators, it may interest you to know that you can send messages to non-hams who have Internet accounts and/or e-mail addresses. For those of you who are new to computers and/or the Internet and would like more information, a series of articles on the Internet are forthcoming with the next issue.

Also, Billy Jones—KC5EVD, is in the process of adding e-mail addresses to the roster. If you have an e-mail address, please relay that information to Billy for inclusion in the next printing of the roster.

The Ediror

REPEATERS KC5OBT—145.47 AND 444.55MHz

The Memorial Emergency Radio Association (MERA) is the corporation that owns and operates the 145.47 and 444.55MHz repeaters. The purpose of the organization "...shall be to provide the capability for emergency communications to the Memorial Hospital System." With this in mind, all repeater users stand ready to assist during an emergency. The FCC has recently issued MERA a club call sign—KC5OBT, and this is now the ID being used on both repeaters.

Here are a few facts about the repeaters: Antenna is a Diamond X 500-H at 182 feet above ground level; output for the 2m machine is 15W and for the 70cm transmitter is 10W; the subaudible tone on 2m is 123.0Hz and 103.5Hz for the 70cm unit.

There are ten volunteer control operators who monitor both repeaters continuously for proper use and compliance with all FCC rules and regulations. Some of the "no noes" are: no business communications; no broadcasting or news media gathering; no music; no criminal activities; no codes or ciphers; no obscenity, profanity, or indecency; no false signals; no retransmitting of radio signals; and no malicious interference. If any of these "no noes" are heard by the repeater control operators, the repeater(s) will be turned off until the violation ceases.

Various nets are conducted on the MERA repeaters. Should an organization wish to conduct net activities on either of the repeaters, prior approval will be required. Just contact any one of the board members (listed below) for the necessary approval, prior to your net.

All repeaters need maintenance, repairs, and enhancements to stay operating. In other words, it takes money to run a repeater. As a user, you should support your favorite repeater with annual donations. Donations to the MERA Repeaters should be sent to our treasurer:

Harold Parker—ND5F
1915 Spillers Ln.
Houston, TX 77043

MERA will conduct an open meeting on September 19, 1995 at 7:30 p.m. at Strake Jesuit, Rm. 503. Please come to voice your views and hear what we have done and plan to do with the repeaters.

73, MERA Board

Randy	AK5G	President
Jack	WN5A	Vice President
Harold	ND5F	Secretary Treasurer/Trustee
Bill	N5KXU	
Ray	WA5F	Trustee
Bud	N5UOG	
Allen	N5AFV	
Vic	N5NAS	
Mike	WB3HZP	
Betty	KA0TEN	

VE EXAM RESULTS AUGUST 1995

by Harold Parker—ND5F

The following are the results of the August 8, 1995 VE Exams given at Strake Jesuit College Preparatory:

The VE Team consisted of:

Henry Morrison -	W5RIY
Harold Parker -	ND5F
Joe Tarrant -	K5DIY

The Assistants were:

Carl Albrecht -	AA5JW
Cass Germany -	KG5IT
Irene Gordon -	N5AYX
Don Schexnailder -	AB5IV

All of us at B-VARC again thank Vincent—WA5ETS and everyone at Strake Jesuit for making these excellent classroom facilities available to us for our exams each month. Also, many thanks to the team members and assistants who volunteer their valuable time and effort each month.

73, Harold Parker—ND5F

August 8th Results

A total of 29 exams were administered during the evening to 18 applicants. Five unlicensed candidates received their new "codeless" technician licenses. Three others upgraded, with a total of 13 elements passed for an overall "pass rate" of 45%.

Congratulations to all the following who upgraded and/or passed exams:

Thomas Ashby—Element 2
Janet Burke—Technician
Christopher McKeon—Technician
Robert Newman—Technician
Christopher Sanborn—Technician
Paul Stoessel, KB5AXX—Tech Plus
Robert Warren—Technician
Keith Westerman, KC5PUO—General
Mike Williams, KC5LCG—Advanced
Raymond Williams—Element 2

B-VARC RAG CHEW NET CHECK-INS

by Sam Wilson—N5CPA

The B-VARC Rag Chew Net is held on Wednesdays at 8:00 p.m. on 3.960MHz. The following check-ins were reported for the month of July:

July 5, 1995

N5CPA (NCS), W5GHK, W5IHY, KF5NU, AK5G, KB5ION, W5EFB, KK5DO, WN5A, KJ5SS, K5HFY, N5UOG, N5ECP, KG5KV, W5GLD, WA5TWL

July 12, 1995

N5CPA (NCS). Net was cancelled due to lightening in the area.

July 19, 1995

N5CPA (NCS), W5GHK, N5AFV, KK5DO, KB5ION, W5IHY, W5GLD, W5KRN, W5EFB, N5UOG, KF5NU, KC5HNJ

July 26, 1995

KB5ION (NCS), N5CPA, WD5CJL, W5GLD, W5IHY, KF5NU, N5ECP, KI5SC, KB5PAJ, N5UOG, KG5KV, WA5TWL

THE WORLD OF TEN TEN INTERNATIONAL

by Al Mattis—N5AFV

The Ten Ten International 1995 Summer Phone QSO Party was held July 15-16, 1995. Propagation was good, and participants had a wonderful time. The Houston SHOT chapter thanks all Houston area stations who participated. The next QSO party is the 1995 Fall CW QSO Party, which will be held October 21-22, 1995. Ten Ten International has an opening for a contest manager for the QSO parties. Anyone interested in applying for the position should contact Ed Redwine—K5ERJ, chairman of the Operations Committee. A new Ten Ten award for working mobile stations has been announced. The mobile award program will begin on January 1, 1996, and details will be announced in the next Ten Ten International News.

The Houston SHOT chapter's weekly net continues to have 10 to 15 stations check in each week. The chapter is pleased to welcome Arnold Jones—KC5NMR, and Robert Moore—KC5MBV, as the newest local members. A number of other Houston area stations recently received their Ten Ten numbers, and we were pleased to have them check into the Houston SHOT net.

Ten Ten paper chasers continue to be active on 28.345MHz. Chapters with specials for paper chasers this month include Peach State (TX), Fort McHenry (MD) and Cornerstone (MD). Word has been received that the Niantic Bay (CT) and Earthquake Country (CA) chapters have gone QRT. Gary Miller—KA6GPC, is the new chapter head of the Keystone (CA) chapter, and James Fortune—KB0EOV, is the new chapter head of the Kansas Trails (MN) chapter.

Propagation on the ten meter band has not been very good the last few weeks, but the fantastic openings we experienced in late June and early July were some of the best in the last decade. Expect ten meters to continue to have good E-layer openings during the summer propagation season.

Remember, the Houston SHOT net meets every Tuesday evening at 8:00 p.m. local time on 28.488MHz. All amateurs are welcome to check in, even if they do not have a Ten Ten number. If you are not a member of Ten Ten International and wish to join the organization, please check into the net. There are a lot of exciting activities in Ten Ten, and many friendly people can be found on the ten meter band.

PUBLIC SERVICE EVENTS

by Mike Hardwick—N5VCX

VOLUNTEERS NEEDED NOW!!!!

We need volunteers for the upcoming Alamo challenge. Food will be provided. Lodging is also available at the rate of $10 per person per night.

I would also like to thank all the volunteers who participated in the Katy Flatlands event, as well as the trustee of the 146.88 repeater for its use during the event. The event went well, with only a few minor problems.

The upcoming events are as follows:

Sept. 23rd and 24th—Saturday/Sunday
ALA Alamo Challenge Bike Tour
Contact: Mike Hardwick—N5VCX
(713) 771-4625

Oct. 8th—Sunday
20K Marathon Warm-up
Contact: Open—volunteer needed. (I would hate to let down the Houston Striders in putting on a very popular event due to lack of a coordinator. Please contact me if you are interested.)

Oct. 21st and 22nd—Saturday/Sunday
Houston Symphony Classic
Contact: Bret Prichard—N5VOY
(713) 645-5400

Oct. 21st and 22nd—Saturday/Sunday
Wings Over Houston Air Show
Contact: Bill Terrell
(713) 486-4552

Oct. 28th—Saturday
MS Enduroskate
Contact: Open—Volunteer Needed

Oct. 29th—Sunday
Texas Coastal Bike Ride
Contact: Bret Prichard—N5VOY
(713) 645-5400

ANTENNA LOADING

by Rick Hiller—KF5NU

Over the past few months, I have been doing some experiments with my full wavelength, 40m loop in the delta or triangular configuration. My design goal is to reduce the physical size of the loop, but keep the DX (vertical polarization) performance the same. I have been able to do this with expedient loading practices, and I continue to experiment with the help of Mel—KB5ION and Maurie—VK3CWB. I still have a few other things to try, and will give a full account at a later date; but, in the meantime, I came across something that I thought would be interesting to pass on.

Did you know that on a dipole, the sinusoidal current distribution is such that 87% of the dipole's radiation is done by the middle 67% of the dipole? (see Figure 1).

I read this in the new Lew McCoy antenna book, and took a pen to paper, along with a cosine table, to see it for myself. The end 33% (2 times 16.5% as there are 2 ends) of the dipole only radiates 13% of the total energy being radiated by the antenna. This is a great discovery which literally means that we can remove 33% of a dipole's physical length and pay a penalty in loss of only 13% or about .6dB.

Of course, when the end portion of wire is removed, it must be replaced. This replacement is called loading. Loading is basically the practice of replacing physical antenna length with a lump value of inductance or capacitance which is the electrical equivalent of the wire that has been removed. Since the wire was removed from the end, it is best in this case to load it at the end. This keeps the current distribution the same as the full size dipole, over the middle of the antenna, where maximum radiation occurs. The point on the antenna at which loading must be used determines the type of loading to use and the value of that loading.

Reactance Factor

As an antenna is shortened (or lengthened) from the resonant length, reactance develops at the feed point in addition to the feed point resistance. This combination of the resistance and the reactance is called the feed impedance. A shortened antenna will exhibit a capacitively reactive feed impedance, indicating that we need to add inductive reactance (loading) to cancel this capacitive reactance. Alternatively, when lengthening an antenna away from the resonant length, it will develop an inductively reactive feed impedance, indicating that we need to load it with capacitive reactance to bring the antenna to resonance and the feed point to a resistive value.

Capacitive Loading

End loading (or voltage node loading) requires a capacitive type of lump value equivalent circuit component such as a capacitive hat (Fig. 2). This type of capacitive loading is very efficient, and you will end up with an antenna that is very close to being 100% efficient, but only 2/3rds the size. Of course, this antenna size reduction doesn't come free. The downsizing causes a decrease in radiation resistance down to about 45 ohms, which will give us a little better match to 50 ohms, but useable (2:1) bandwidth will also suffer very slightly.

The end loading scheme can be done in another manner for hams who don't have the room to put up a full-size dipole, but don't want to go to the trouble of using or building capacitive "hats." What can be done is just to fold the ends of the antenna to the side (method A, Fig. 3) or even fold it back onto itself (method B, Fig. 3). This reduces the physical length, but keeps the efficiency fairly high. Folding the end back onto itself keeps the wire length the same, but reduces the physical space by making a capacitively loaded end.

In general, 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. There are other methods to perform loading, but none with as low a loss as proper, capacitive hat end loading.

Inductive Loading

The loading method that is most familiar to the ham community is inductive loading at the center (feed point) or towards the mid-point of each side of a dipole (Figure 4). As can be seen from the current distribution (Figure 1), these points on a dipole are the high 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 the value or reactance that is needed and the position of the coil within the antenna. A basic rule of thumb is that the further out from the maximum current point that the coils are placed, the more the inductance must be increased to provide the proper loading.

Mobile Whips

Loading coils are most commonly used on mobile vertical whips, and rightly so! You couldn't drive down the highway with a 40 meter, 1/4 wave vertical (32 feet) hanging off of your bumper.

HF mobile whips are typically base loaded or more typically center loaded, like the bug catchers or Hustler whips (Figure 5). This type of loading is used to make a shortened antenna electrically resonant on the HF frequency on which we want to QSO.

Another type of mobile use for a loading coil is in a 2 meter, 5/8 wave length antenna (Fig. 6). These antennas have a base loading coil. This coil is needed to increase the antenna electrical length by 1/8th wavelength so that it becomes resonant at 3/4 wavelength and the feed impedance is a low resistive value. In fact, as also indicated in Figure 6, the loading coil is also used to allow the feed point to be tapped to give a perfect 50 ohm match.

Summary

Loading an antenna is a very common practice to the amateur operator no matter what amateur band or antenna type is used. It helps reduce the size of the antennas when either physical height or length are a problem. Loading will also bring an antenna system into resonance, which is the desired 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 or desired polarization.

When experimenting with antennas, 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 fun...and that's what it's all about!

73 Rick Hiller—KF5NU

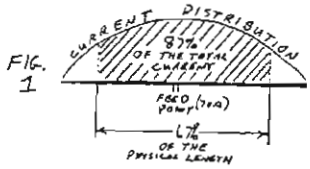

FIG. 1

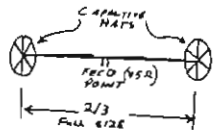

FIG. 2

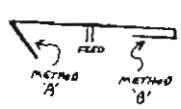

FIG. 3

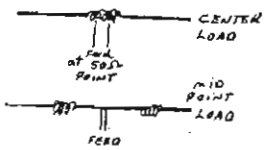

FIG. 4

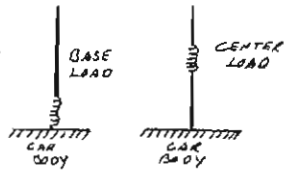

FIG. 5

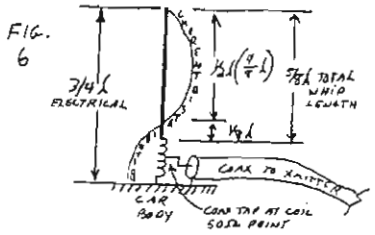

FIG. 6

THE EPICUREAN HAM

by Carl Hacker—KB5LDY

Enchilada Casserole

This recipe is tasty and easy to prepare in either a traditional oven or a Dutch oven. It would be a great treat following a hurricane and loss of power. Be sure to purchase the ingredients while the storm is far out in the Gulf. Canned tomatoes can be substituted for the Romas, but you will need some ice to keep the cheese fresh.

Ingredients:
2 lbs. ground beef
14 oz. can tomato sauce
7 oz. can green chiles (peeled)
4 Roma tomatoes (chopped)
½ cup jalapeño peppers (sliced)
½ lb. Monterey Jack cheese (shredded)
1 lg. onion (chopped)
Corn tortillas
Cayenne pepper
Cumin

Brown meat with cayenne pepper and cumin. Season to taste. Add ⅔ of the tomato sauce and stir in well. Place a corn tortilla on the bottom of a 10-in. Dutch oven or traditional casserole. Layer about ⅓ of the ground beef, Roma tomatoes, green chiles, jalapeño peppers, onions, and cheese. Place a corn tortilla over this layer, and repeat layering until all ingredients are used. Top with a corn tortilla and add the remaining tomato sauce. Heat for 20 minutes in a 350° oven, or heat for 30 minutes in a Dutch oven with 12 coals below and 10 coals above.

Next month: The Lore of the Dutch Oven

FCC CALL SIGN UPDATE

The following is a list of the FCC's most recently issued call signs as of August 1, 1995 for District 5:

Group A—Extra:	AC5EF
Group B—Advanced:	KK5RM
Group C—Tech./Gen.:	++
Group D—Novice:	KC5QAC

++Either all call signs in this group have been used or no new call signs have been recently issued in this district.

SCANNER JACK'S CORNER

by Jack Roberts—KB5TMY

School has started, and here are some of their frequencies:

Ft. Bend ISD	488.9625
Lamar ISD	488.8375
	488.8625
Maint.	488.4125
Alief ISD	938.6000
	938.6125
	938.6250
	938.6375
	938.6500
	938.6625
Houston ISD Police	462.6500
Bus	853.3375

Last month, I gave you some frequencies for the Harris County Sheriff's Office trunking system. Here are some more of those frequencies to add to your list:

868.7625
868.4875
868.2375
867.6625
867.9125

Especially for WD5DRB...

B-VARC SHIRT ORDER

S ( ) M ( ) L ( ) XL ( ) XXL ( ) XXXL ( )

PRICES: S-XL $14.00 XXL - XXXL $15.00

Payment in advance is appreciated. Shirt(s) will be delivered at the next B-VARC regular meeting.

Call Sign:_____

Name:_____

Address:_____

Telephone:_____

Make check or money order payable to: Elton Kytle. You may either give your order to me in person at one of the B-VARC meetings, or it can be mailed to me at 5731 Dumfries Drive, Houston, TX 77096-4818. Thank you for your order.

RFI, EMI AND OTHER STUFF

by Pete Norris—KJ5SS

A club member recently mentioned he was planning a trip in his vehicle which contains CB and VHF transceivers and a scanner which covers the UHF bands. In addition, he wanted to carry a thermoelectric cooled food chest. Unfortunately, the chest contained a small electric motor which drove a fan to supply air flow to a heat exchanger. This little motor caused interference on all bands his equipment covers, including the 162.XXMHz weather channels available on the scanner, sounding like a buzz or rapid popping mixed with the desired signal's audio. While talking about this problem and listening to the annoying effect the little motor was producing, I mentioned it might be fun to try to "quiet" the motor's RF output. Before describing the "fixes" employed, a review of the nature of electromagnetic and radio frequency interference (EMI and RFI) is in order.

A transmitted radio signal consists of electric and magnetic fields. The power contained in these fields decreases with distance from the source at some rate until the receiver antenna is encountered. For a transmitter output of 1 W, a receiver at 10 miles might see 500 pW (500*exp(-12))/square meter or about 440μv (440*exp(-6))/meter. This is a good signal for my HTX-202, which has a sensitivity of 0.2μv, using an antenna length of only a few centimeters.

Now the interfering signal, in this case, is a DC electric motor and the source of the EMI is the motor's commutator, which is acting like a switch opening and closing many times a second. This commutator action produces a visible arc and a signal which resembles a spark transmitter. If the motor is producing a waveform resembling a square wave, then the harmonics of the fundamental will be produced and will decrease in amplitude as 1/n, where n is the harmonic number. Thus, the 100th hannonic will have a value of 0.01 of the fundamental, and is said to be 40 dB down. Now if we assume a 1v, 300Hz fundamental, the 30MHz harmonic (number 100,000) should be 100 dB down, or 10μv. Alas, things are not so simple, but at least we have a feel for what we must deal with.

Next time: An Analysis.

SCHEDULE OF WEEKLY NETS

Monday

7:30 p.m. 34.94 Swap Net
146.94MHz

8:00 p.m. Ft. Bend Cty EM Net
145.49MHz

9:00 p.m. B-VARC

Tuesday

8:00 p.m. Ten Ten SHOT Net
28.488MHz

10:00 p.m. AMSAT Net
147.10MHz

Wednesday

7:30 p.m. B-VARC Rag Chew
3.960MHz (+/- 3kHz)

8:30 p.m. B-VARC Code Practice Net
146.47MHz (receive only)

Friday

8:30 p.m. B-VARC Code Net
146.47MHz (receive only)

Saturday

9:00 a.m. Houston Emer. Mgmt. Net
3.905MHz

Sunday

7:30 p.m. ARES Net
147.30MHz

2nd & 4th Sundays

1:30 p.m. TX State RACES Net
7.248MHz

B-VARC CODE PRACTICE NET

by Louis House—KD5GM

The Brazos Valley Amateur Radio Club sponsors a Morse Code Practice Net, called BCN, on Monday, Wednesday and Friday nights at 8:30 p.m. The purpose of this net is to offer a consistent code practice schedule for all amateurs who are working on their upgrades.

The text is sent at approximately 5, 8, 10, 13 and 18 wpm. The signal source is modulated tones on FM (MCW). The source of the text is announced in CW before the text is sent. The length of the net is usually 25 to 30 minures. Voice check-ins are welcomed at the start of the uet, but are not necessary to participate. Just tune in on 146.47 (simplex), with a desire to increase your code proficiency and have a good time.

The net roster for the months of June and July lists a total of 15 stations checking in. They were: N5UOG, KK5RL, KC5HNJ, KC5KGG, KC5EUS, KC5MBV, WD5DRB, N5TRQ, KC5FIG, KB5WZI, KC5EUX, N5LYB, KB5DXP, ND5F and W5HJL.

Have fun and...

73 de KD5GM AR SK

B-VARC CODE CLASS

by Louis House—KD5GM

QST QST de KD5GM BT. The Brazos Valley Amateur Radio Club is starting its fall Morse Code class on September 11, 1995. The classes will be held at the First Colony church of Christ located at 3119 Sweetwater Blvd. Take US 59 South, pasr Highway 6. Exit Sweetwater Blvd. and go over the freeway (left). The building is on the right, approximately 2.3 miles from the freeway, with parking behind the building.

The classes will meet on Monday nights from 7:00 p.m. to 8:30 p.m., and will last for about 8 weeks. Call and let me know if you are planning to attend at 498-5639. Please call prior to September 4, 1995.

Morse Code will be taught up to 5+wpm, and on-the-air operating etiquette will be covered. The classes are free to all who are interested.

Don't miss the fun! Bring paper, pen and a desire to learn Morse Code.

I hope to see you there.

73 de Louis—KD5GM AR N

FOR SALE

The gin pole which is owned by B-VARC is now being offered for sale. For more information concerning price, etc., please contact Donn Washburn—N5XWB, at 498-0569.

the B-VARC BULLETIN

The Monthly Publication of the
BRAZOS VALLEY AMATEUR RADIO CLUB
Serving the Greater Houston Area
(Club Call Sign—KC5OIG)

Editor-in-Chief: Jackie Burton—KC5OHJ (713) 460-1968

The Brazos Valley Amateur Radio Club (B-VARC) was originally organized in 1978, primarily as an emergency communications group available to assist the communities of Missouri City and Stafford, when required. Since that time, B-VARC has grown and expanded its activities to become the most active HAM radio club in the southwest Houston area.

Today, B-VARC is truly a general-interest club with an impressive record of Public Service. The commitment to service has been recognized by the Amateur Radio Relay League (ARRL) with the coveted status of Special Service Club. We are proud of our members who represent the finest in Amateur Radio. Membership is not limited to licensed operators, but is open to anyone with an interest in Amateur Radio. Meetings are held at 7:30 p.m. on the second Thursday of each month, at the Sugar Land Community Center. Talk-in assistance is available on the 145.47, 444.55 and 442.5 MHz repeaters.

To obtain information about the club, its activities, or about joining B-VARC, contact Betty Wilcox—KA0TEN, at (713) 859-6512

B-VARC MEETING SCHEDULE		B-VARC EATING SCHEDULE
Thursday, September 7th 7:30 p.m.	Board of Directors Meeting Sugar Land Community Center Open to All B-VARC Members	Saturdays—7:00 a.m. to 9:00 a.m.—Kettle Restaurant, Chimney Rock and Westpark/NE corner 3rd Friday Dinners—6:30 p.m. SHARP! Locations announced each month
Thursday, September 14th 7:30 p.m.	B-VARC Membership Meeting Sugar Land Community Center Program: The Internet	

Volume 18 Issue 9 September 1995

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ADDRESS CORRECTION REQUESTED

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