



July 2007

Tailgate Fest 2007...July 14th!

Johnson High School
3305 Poplar Springs Road
Gainesville, GA 30505

President's Corner

By Bob Aldrich, N9RLA, LARC Secretary and Newsletter Editor

Greetings all, Doyle is on vacation.

First of all let me say that this months newsletter is much, much shorter that the previous ones. Do you know why? Except for Mr. Ed...no inputs! I waited until today (July 6th) for any last minute inputs but nothing. In the future, if there are not more than 3 newsletter inputs by **different club members** by the 30th of the month, the following month will not have newsletter published. Just so this is clear...for example, if there are not at least 3 newsletter inputs by **different club members** by July 30th there will not be an August newsletter. This will apply for each of the following months. No inputs, no newsletter. I'm not baby sitting and sending out reminders that the end of the month is near...why, we're all grown, mature adults that can handle this task to keep this going. You know what this means, right? It means out of our entire membership (80 plus), **no one has anything that they can contribute** to our newsletter to keep it going. I'm ashamed and embarrassed to have to look at it like that...but the truth can be brutal! It's not fair that a very select few put forth all the effort for you...the club. It's really a very simple concept...contribute or loose it.

Now, for Field Day 2007! This month Doyle is enjoying himself in Scandinavia on a cruise so on behalf of Doyle and myself, I would like to deeply thank everyone that participated in our 2007 ARRL Field Day. Everything came together as planned even the weather came through. Terry...great site...perfect! There are several pictures that were taken at field day which are posted in the photo album on the LARC

website. This was a great field day. I met people I've only heard on the net and never seen at a club meeting and I also had the pleasure of finally meeting Tom, N2SBD...what a pleasure. We had some funny times also. Here's one for the books...Doyle and myself and I think Mr. Ed was there also invented a new technology...the wireless dipole! Terry (W4TL) thought it was funny and it was! We had constructed a 160 meter dipole, got it in the trees and all tied off nice and tight and THEN realized...no feedline! I just stood there looking up in the air, smiling and shaking my head. Those are the fun times, the lifelong memories (although slightly embarrassing) you remember with your friends. The unforgettable images, smiles and laughter that will live on in our minds forever are what make Field Days worth it all. Remember, we only get a chance to experience every moment one time and one time only...make them worth it!

Here is our Field Day breakdown and points submitted to the ARRL:

Callsign: W4E
Participants: 20
Class: 2A
Power Source: Generator
Power Multiplier: 2x

Bonus Points:
100% Emergency Power 200
Media Publicity 100
Youth Participation 20
Submitted via Web 50
Total Bonus Points 370

Score Summary:
Total CW QSOs: 308
Total CW points: 616
Total Phone QSOs: 256
Total Phone points: 256
Claimed score: 1744

Total Score w/Bonus: 2114

Thanks again to those of you that were there. Personally, you made my field day an event I will never forget and I will remember it as my best!

73's

Bob Aldrich, N9RLA

TURN YOUR VX-2R INTO A POWERHOUSE

By Ed Cravey, KF4HPY

How many of you know and love your little Yaesu VX-2R for the vest pocket treasure it is? Do you enjoy the AM and FM bands while waiting for the bus or catching up on world events on the SW bands? Or are you of the opinion that this radio is a weak excuse for an HT. You are probably right; the radio transmit output is only 1.5W on 2m and 1W on 70cm. This is the Hi-power setting for the VX-2R with its 3.7V lithium-ion battery. This is barely enough for a 6-mile simplex contact over ideal ground. So what must be done to improve the radio? The first thought coming to mind is, add an amplifier, too expensive unless you already have one. Better rubber duck antennas? Good idea, but not quite enough. How about doubling the power? Put fire in the wire! Yes! Let's do it to it!

How are we going to do it without entering the innards of this miniature radio? Did you read the specs in the manual? Well, it says with 6V external power, the output on 2m is 3W and 2W on 70cm. Double the power, 3dB gain; interesting, but is it going to break the bank? Guess what, all the stuff is at Radio Shack; yes, Radio Shack here in town. I would like to start with a parts break down.

First we need a plug to insert into the radio. The manual doesn't tell, but it is 2.3mm O.D. x .7mm I.D. in size. This is the "A" adapter plug RS#273-1704. Next we need a power cord with the socket on the ends to accept the plug. I favor the 6-foot (1.82m) "Adaptaplug" power cord with female sockets each end RS#273-1740. Normally I cut these cords in half for a belt pack, which is OK for my smaller size. The other half can be saved for a future project. We have our plug and power cord, next is the actual battery pack itself. I favor the "D" cell 4-pack RS#270-389 as it is compact and can be assembled back to back with another RS#270-389 and wired in series for 12V use. To use the pack, clip the wires at the riveted contacts, and pass 6-32x1/2" machine screws with washers through the grommet-like rivets. These screws will be your terminals. Crimp the proper size ring terminals to the power cord. The power cord Positive lead is black/with white trace. Negative is black. Secure the power cord with washers, lock washers or locknuts to the screws. Insert batteries (4) and we have completed the basic battery pack.

Some notes on this assembly: the pack terminals are exposed and if the plug sleeve touches the positive terminal screw; arcs and sparks are the result. Apply tape over the terminals as a precaution. A belt pouch would take care of the safety factor and have a nice appearance. If a smaller pack is desired use a similar pack for "C" cells instead. One operating precaution: The finals in this radio running 6V in a continuous duty cycle as in a net control rag chew would not last too long. The same could be said for most HT's. So keep the duty cycle reasonable, two minutes transmit, two minutes receive or rest, a 50% duty cycle. The steps we have taken to add a battery pack of "D" cells has doubled the output on 2m and 70cm to 3W and 2W on high power (H/L) and even the low power setting (H/L) has increased from .1W to .3W on both bands.

You can make up battery packs for any radio by combing cases to use common "D" or "C" cells of disposable or rechargeable batteries. Remember 8 Alkaline cells equal 12V, but 8 Ni-cad cells equal only 9.6V. I will list some "Adaptaplugs" for various radios including Yaesu FT 817, Alinco HT's, and even a printer.

FT-817: plug "B" RS#273-1705

Alinco HT's: "I" RS#273-1712

Canon BJC printer: "D" RS#273-1707

Short pigtail lead (4") RS#273-1743

A good way to allow any radio to become a base station is with an outdoor antenna, and a power supply or battery pack of the proper voltage. Great stuff for disaster relief people, as often recharging is not practical. I can just see my VX-2R, with a varnished wooden plaque, a Strong-tie FB24Z bracket, and my power pack bolted down to form a power pack/stand, in league with a speaker mike and discone

antenna. An art form in small scale; a mini-powerhouse for those who love Benvenuto Cellini miniatures.

Antennas and Yagi

By Ed Cravey, KF4HPY

Once upon a time in faraway Japan in the 1920's at a university, Professor Hidetsugu Yagi and his cohort Uda, took a simple dipole driven element and added elements either in the front or rear along the length of a boom. Using voltmeters and ammeters at various points on the boom and elements, they found current changes occurring in the antenna when the added elements were moved along the boom or the length and placement was varied.

Each element added to a Yagi boom is not connected to the driven element, which is normally isolated. Such added elements are called parasitic elements and are mutually coupled to all the other parasitic elements and to the driven element. Yagi and Uda found that placing an element longer than the driven element behind the driving dipole at certain spacing would reinforce the original radio wave during receive or transmit. What is taking place? The parasitic elements, depending on length and spacing on the boom reradiate the signal. These parasitic elements are called reflectors or directors when placed in front of, or behind the dipole. Let's look at a pair of two-element Yagis.

Take the parasitic element longer than the dipole and place it behind the dipole, calling it a Reflector. Key the transmitter and send a radio wave to the dipole which will radiate toward the distant radio station and toward the reflector; the reflector will reradiate back to the dipole and reinforce the outgoing radio wave toward the distant radio station. How much reinforcement in this out going radio wave? The max theoretical gain for a two-element Yagi antenna is 5 dBi (3 dBd real world gain).

Take the parasitic element shorter than the dipole and place it in front of the dipole, calling it a Director. Key the transmitter and the dipole radiates toward the director and weakly to the rear; the director reradiates the radio wave back to the dipole reinforcing the signal going out toward the director and distant radio station. The gain is the same as for the Yagi using the reflector as outlined in the Antenna Handbook. These gains are achieved at a spacing of .10 to .15 of a wavelength for the two-element beam using a reflector. The two-element beam using a director is spaced at .15 of a wavelength from the driven element.

Since the two-element beam has a gain of double the dipole, there has to be a loss because you can't get something for nothing. The response to the rear of the antenna is 10 dBi less than the forward response. This is called front to back ratio and is what makes the Yagi antenna directional. Gain in one direction and attenuation to unwanted signals in the other direction. Feed point resistance: on a dipole 72 Ohms, on a Yagi the resistance is reduced to around 20 Ohms.

The three-element Yagi has a reflector behind the driven dipole element and a director in front, all doing the same jobs as described earlier. The theoretical gain is now 7.28 dBi (5.13 dBd real world gain). The front to back ratio is now 24 dBi with three elements. The basic commercial Yagi beam is a three-element beam with a boom of .45 to a .3 wavelength in length, with the longer boom antenna having the greater gain. Adding directors to the three-element Yagi increases the gain by 1 dBi per director.

Some of you may disagree with the gain figures of the completed antennas. These figures are from the ARRL Antenna Book. If you read older antenna books published before the age of the personal computer, those books came up with slightly higher gain figures. Even within the ARRL Antenna Book there is disagreement.

Getting back to Professor Yagi and Mr. Uda; Yagi introduced the beam antenna now bearing his name to the world through his writings in English. The design was applied to shortwave broadcasting about 1928. By 1935 the amateur radio world was reading an article in QST by M.P. Mims, W5BDB, for a two-element 20m rotary Yagi beam. By 1938, Mims' Yagi rotary beam had set the trend for 10m beams. Moving forward in time, I have some aircraft books showing the WWII Messerschmitt 110 G-4 "NachtJager" (Night Hunter) with upward firing cannon, and Yagi arrays on the nose of the aircraft for the Lichtenstein Radar. The arrays were called "Hirschgeweih" (Stag's Antlers). I have read accounts of these "NachtJager" fighters over the Reich hunting the huge 4-engined RAF Lancaster bombers in pitch-blackness. Chilling! After the war when aluminum tubing became common, Yagi antennas appeared from 40m to UHF at ham stations. On the consumer market, TV antennas for far fringe use were, in the main Yagi antennas. Professor Yagi, in Japan was treated like a war criminal, no messing with radios etc. per an article in QST during the 50's. I remember the opening line of the article: "Doko Ni Yagi San?" (Where is Mr. Yagi?). Imagine, unknown in 1926, published and recognized in 1928 and a bad guy by 1946.

My own experience with Yagi antennas has been limited mainly to rotary 6m and 2m beams with booms of wood, and copper elements. As a budding Technician on 6m, my first dipole of wood, and threaded-rod elements, was a wondrous item showing bi-directional traits. Next it was building my own two element beam using treated wood 2x2's and copper plumbing pipe; magic stuff, talk of gain, wow! I used the dimensions provided by Ken Neubeck, WB2AMU, from his book: "Six Meters, A Guide to the Magic Band". The reflector was 120", the driven element was 112" cut into two pieces as was the reflector, because I favor staggered elements for portable use. The boom spacing was 48" between the elements. Performance was very good, and stayed on the antenna farm until the MFJ 6m three-element Yagi entered the market. Other two-element Yagi antennas I have assembled were for 2m, with a spacing of .2 of a wavelength for 50 Ohm matching to be used for emergency use. From my youth, Yagi arrays have indicated DX transmissions, and far fringe TV reception. How about you??

Georgia ARRL Events

Dates	Type	Event and Contact	Location
11 Aug 2007	+	Ellijay Amateur Radio Society http://www.qsl.net/w4hhh/ Talk-In: 145.170 -600 (PL 100) Contact: Sam Underhill, K4SWU 446 Sutton Road Ellijay, GA 30540 Phone: 706-276-4877 Email: k4swu@ellijay.com	Ellijay, GA Ellijay Lions Club 1729 South Main Street Div: Southeastern Sect: Georgia
15 Sep 2007	+	Paulding Amateur Radio Club http://www.pauldingarc.com Talk-In: 146.895+ (PL 77) Contact: AL Martin, KF4RPQ 409 Sleepy Hollow Road	Dallas, GA Paulding Meadows Park Highway 61 Div: Southeastern Sect: Georgia

		Powder Springs, GA 30127-6751 Phone: 770-920-1309 (Home) or 404-281-6859 (Cell) Email: KF4RPQ@yahoo.com	
13 Oct 2007	+	Amateur Radio Club of Augusta http://www.w4dv.org/ Talk-In: 145.490- Contact: Doug Pugh, KE4JSJ 1806 Birch Drive North Augusta, SC 29860 Phone: 803-279-6725 Email: doug9945@yahoo.com	Evans, GA Evans Middle School 4781 Hereford Farm Road Div: Southeastern Sect: Georgia
20 Oct 2007	+	Al Brock Memorial Hamfest/Computer Show Northwest Georgia Amateur Radio Club http://www.w4vo.org Talk-In: 146.34/146.94 (PL 88.5) Contact: Grover Keith, KA5QFI PO Box 5002 Rome, GA 30162 Phone: 706-766-1118 Fax: 706-292-0516 (call prior to faxing) Email: gfkeith@comcast.net	Rome, GA Rome American Legion Post 5 5 Shorter Avenue Div: Southeastern Sect: Georgia
3-4 Nov 2007	*	Georgia Section Convention (Stone Mountain Hamfest & Computer Expo) Alford Memorial Radio Club http://www.totr-radio.org Talk-In: 146.76 (PL 107.2) Contact: Randy Bassett, KR4NQ PO Box 1282 Stone Mountain, GA 30086-1282 Phone: 770-978-9181 Fax: 770-978-9181 Email: hamfest@totr-radio.org	Lawrenceville, GA Gwinnett County Fairgrounds 2405 Sugarloaf Parkway Div: Southeastern Sect: Georgia
12 Jan 2008	+	TechFest Gwinnett Amateur Radio Society http://www.gars.org Talk-In: 147.075+ (PL 82.5) Contact: Norman Schklar, WA4ZXV 480 North Peachtree Street Norcross, GA 30071 Phone: 770-840-9664 Fax: 770-755-5411 Email: norman@schklar.com	Lawrenceville, GA St. Marguerite D'Youville Church 85 Gloster Road NW Div: Southeastern Sect: Georgia

**Send newsletter submissions to Bob Aldrich, N9RLA,
LARC Secretary and Newsletter Editor**

**My sincere thanks go to Mr. Ed because without his new
inputs this month, there would not have been a July
newsletter! Thank You.**

This newsletter is for the club **BY THE CLUB.
Contributing to this newsletter is a team effort but I'm not
seeing it!**

Contribute or loose it!