Vol.11 No.2 Feb 1997

The February meeting will be held Friday, 28FEB97, at 7:30 P.M., in the basement meeting room of the Huntington Bank Building in downtown Springboro. The bank is located on the southwest corner of the intersection of state routes 73 and 741.

Due to the threat of a low level coupe, the President finally yielded to the fierce pressure and changed his carefully planned non-existent agenda, and declared this month's meeting a measurements session. Daun Yeagley N8ASB, has been properly imposed upon to bring some really cool toys to the meeting, such as a network analyzer, etc., so bring some of your most intriguing black boxes for analysis.

Contents

Upcoming Events

4-5 APR Southeastern VHF Society, Atlanta, GA K3TD (770) 513-9252
14 APR 144 Mhz ARRL Spring Sprints
30 APR 432 Mhz ARRL Spring Sprints
17-18 MAY 50 Mhz ARRL Spring Sprints
16-18 MAY Dayton Hamvention
24-26 JULY Central Sates Conference Hot Springs, AR W5ZN (ex-WB5IGF) & WB5LUA
Web site: www.csvhfs.org

Attention!!! *"Haben Sie vergessen?"* (Have thou forgotten?) Check the label for your membership status and "propagate" your dues to the treasurer. We are getting ready to update the roster! **Thank You!**

De N8ZM

I have become fascinated with things orbital: satellites, planets, comets, etc. Particularly, I find the task of tracking and predicting orbits to be an interesting exercise in helping to understand the capabilities and limitations of space based communications systems. The quantity of items being tracked by the NORAD radar system, a reported 10,000 objects, is impressive in itself, but when you add to that feat the ability to predict the future location of those objects so that you can plan an orbital trajectory for a new mission, you've got some serious calculating goin'on! Recall the recent shuttle mission to repair the Hubble Space Telescope, and the report that the shuttle orbital altitude had to be raised by six miles to avoid a collision with a text book sized piece of space junk from some earlier launch. Of course, when your velocity is 17,000 miles per hour(that's about 25,000 feet/second, or almost 5 miles/second) you would not be considered irrational to view anything larger than a spec of dust as a serious threat to your well-being! Remember the rips and tears in Hubble's foil jacket, after only a few years in orbit? The impressive part of all this for me is NOT that from down here we can track most of the objects that are large enough to be really dangerous and predict their future positions, plug that information into the predictions for our planned mission, determine if there is any potential for a collision, and adapt to the needed changes. The truly impressive part of this is that someone had the foresight to apply the technology and the data to make space flight a bit safer. A lot of manpower and tax dollars no doubt go into the tracking and predicting efforts, but it is cheap compared to the consequences of a surprise encounter with absolutely no possibility of evasive maneuvers; if you even glimpsed it coming it would already be too late. Do you think that space walks would be as common if we had no knowledge of where the hazards are located? Somewhere there are some folks whose foresight has greatly reduced the risk involved. In effect, we can know one part of the future, and can take steps to achieve the desired outcome, or at least avoid undesired ones. Awesome!

What got me into this discussion was that recently I picked up the latest tracking software from AMSAT, a program called NOVA. It is written by Mike Owen, W9IP, and is quite a remarkable tool for anyone interested in satellites, EME, radio astronomy, and such. I like the ease with which I was able to get the program up and running, and I like the various ways of viewing the orbits of multiple objects at once. My only dislike is that the maps, even at their largest, are about half as big as an old bifocaled guy like me needs. Overall, this program is pretty cool! From AMSAT, it is $50 for members, and helps support P3D. Check it out.

For our meeting this month, on the fourth Friday of the month or the 28th, Daun Yeagley has agreed to bring along an HP network analyzer. This will be an opportunity to check the impedance of an antenna or check the gain of an amp or converter. Bring along any mystery gadget you have and we'll see if we can figure it out. Also, while the measurements are happening, we'll have ad old fashioned swap meet going on. Bring along anything you might want to sell or trade, as well as something you might want to show off. CAVEAT EMPTOR and all that. Also, we need to talk some about our plans for the club booth at HamVention.

See you there! De N8ZM.

1997 VHF BANQUET

at the

Dayton Hamventionâ !

The VHF Weak Signal Group meets every **Monday Night** at 0200 UTC (**9 PM** EST) on 80 meters at **3.843 Mhz**. The Group would like to invite VHF enthusiasts that are going to attend **Hamventionâ** to also attend our annual banquet. We have reserved a banquet room capable of seating **150** at the **Holiday Inn North** on Waggoner Ford Road. The room is ours on **Friday evening 16MAY97, from 7:00 -11:00 PM**.

A pleasant evening of mingling, chatting and relaxing with VHFers from across the country and around the world is planned, attended by names you see in the major VHF journals. The evening will feature a cash bar, plenty of comfortable seating for those impromptu chats, a two entree banquet dinner, a guest speaker covering a short topic on VHF activity, a noise figure measurement table (bring your preamps and let's tweak them up!), and **over fifty prizes** in drawings. The **two grand prizes** are valued at over **$300** each!

Prize drawings will commence at 9:00PM.
Tickets for the evening, (meal included) are $29 per person,
(limited to 150), and are available from:

Tony Emanuele, WA8RJF **OR** **Tom Whitted, WA8WZG**
7156 Kory Court **4641 Port Clinton East Road**
Concord Twp, OH 44077 **Port Clinton, OH 43452**
please include a **clearly** self addressed stamped envelope

visit our website at:
WWW.WA8WZG.COM

This is one of the largest gatherings of VHF weak signal enthusiasts in the U.S., get your tickets early and join us for an enjoyable evening at the Dayton Hamvention®!

Thanks and 73's Tom Whitted, WA8WZG

Weak Signal Detection Challenge

* Copy this weak signal and WIN $100!* A nonham has become the first winner of the Mike Cook, AF9Y, weak-signal challenge. Gary Huntress, an electrical engineer at the Naval Undersea Warfare Center in Newport, Rhode Island, deciphered the call sign of the very weak EME signal calling AF9Y from a 60-second .wav file that Cook has had posted on his Web page, http://www.webcom.com/af9y/ for the past couple of years. In addition to the $100 prize, Huntress also got a free copy of Cook's FFTDSP42 program. Huntress has agreed to keep the identity of the calling station a mystery so the contest can continue. Cook says he'll award another $100 to the second successful identification of the station.

This and That

- **Heard Islands Expedition**. This DX-pedition to an island group in the Southern Indian Ocean set a number of records. Cost was roughly $ 400k of which the 20 operators each chipped in $ 10k. Operation was on all SW bands and on satellites. The log was transmitted per packet radio sats and posted by an ON station on the Internet. So you could check whether you were "in the log". A total of 80,000 QSOs were logged.

- **Strong Magnetic Field.** The field in a MRI (magnetic resonance imager) machine is approximately 30,000 times as strong as the earth's magnetic field. More can be found on the web: www.mribook.com

- **Satellite Radar Interferometry.** The Scientific American for February 97 has an interesting article on this subject with very convincing pictures showing changes of the ground after an earthquake and the shifting of the ice in Antarctica, for example. Well worth reading!

- **Your Appointment Calendar.** How many appointments or other important "upcoming" things can you keep in your head? Recent studies show the number is seven and there is no markedly change with age. So forgetting is more likely a sign that the brain is "overloaded" and events "drop out".

- **Luck is very important** but the more I practice the more luck I seem to have. [Pascal]

- **Collectors beware!** I have been going through some "aged" audio tapes with recordings done 20 years ago. Difficulties start with finding and getting a reel to reel tape machine going. Then you find the recordings are noisy, have dropouts and lots of echoes. Not only has time taken its toll, our ears are demanding higher quality also. We are only putting up with poor quality if these are truly important historical recordings. So a lot what I have got is ready to go to make room for other "collectibles". If you preserve tapes (and that includes video tapes) it is a good idea to roll them back and forth once a year. Of course, they should also be stored cool and with proper humidity. A museum person could give the right advice.

- **Solar System Rocks**. There are at least 100 million objects moving about our solar system the size of a house. Fortunately major impacts with the earth only happen perhaps once every 300,000 years.

- **Windows 95**. This is a very large and complex operating system with thousands of lines of code/ instructions. Naturally it is susceptible to "hang-ups" and crashes. At a recent clubmeeting I was introduced to a new ham. We exchanged calling cards. At home I studied his card and found to my surprise he had a small business "specializing in Windows 95!"

- **Base Jumping**. This is skydiving by jumping from stationary objects as buildings, **antennas**, bridge spans and earth cliffs. This is five times more dangerous than jumping out of airplanes: one serious injury occurring in 20,000 jumps compared to one of 100,000 in regular jumps. [Curtis Pack, diving instructor]

- **Motherboards** are flooding the market. For $ 120 you can presently get a new motherboard with a 586 processor running at 133MHz. Although not quite as fast as a "Pentium" it comes close and certainly beats the older 486s running under 100 MHZ by a mile. Other advantages are the plug and play features of the new boards doing away with "interface cards". Com ports, printer, floppies, hard drive(s) and CD rom all plug directly into the motherboard.

- **Keyboard Labeling**. The characters on the individual keys are burned in by laser!

- **One Good Thing** that came with Windows 95 is the elimination of most "double clicks", recognizing the fact that many people have trouble with this. They actually went a step further: often you just point and drag the mouse until you find the program you want to run. Of course, anybody with Morse code experience has no problems and the double click is one thing I could always do better than my wife.

- **X—ray Machine Exposure Time** is typically .2 seconds.

- **World's Priciest Pinhole**. A camera with a .21 mm pinhole and 28 mm "focal length" resulting in F:133 aperture is offered for $ 279.- [Pop. Photography 8-96]

The Equation of Time

Have you ever wondered why it stays dark in the morning in January when supposedly the days ought to get longer again. Actually they do get longer, however, in the evening.

We define our “apparent” local 12 o’clock noon as the time, where the sun is at its highest point in its daily arch across the sky. If we compare this with our actual time, ignoring the effect of longitude which results strictly in a constant time shift, we do see a deviation amounting to approximately plus or minus 15 minutes over the course of a year. This “back and forth” wandering of the “true noon” is described by the astronomical term: Equation of Time.

What causes this? First we have the tilt of the earth’s axis on its orbit around the sun which gives us the apparent movement of the sun between 23.5 north and 23.5 south latitude during the course of a year. But there is also some movement towards the east and west. The other effect is the speed-up and slow-down caused by the elliptical orbit of the earth, and although this ellipse is close to a circle, its effect on the time shift amounts to almost 10 minutes. Combining those two effects leads to the equation of time. (see illustrations below)

Shaped Folded Dipole

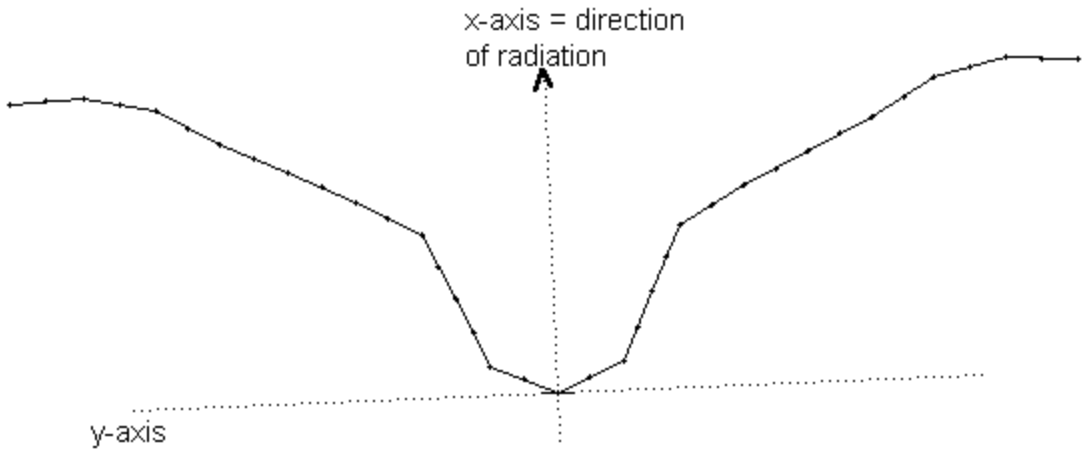
By DL7DU

Using Brian Beezley's (K6STI) antenna optimizer program Klaus, DL7DU has revisited the "birdwing antenna". One problem with this 3 element antenna has been with the unsymmetrical feeding method resulting in a skewed pattern. So, Klaus decided to look into using a folded dipol for the driven element.The calculated data and patterns are optimized for the dipol only with a 300 Ohm feed impedance. Feeding is possible with a 75 Ohm cable and a λ/2 balun.

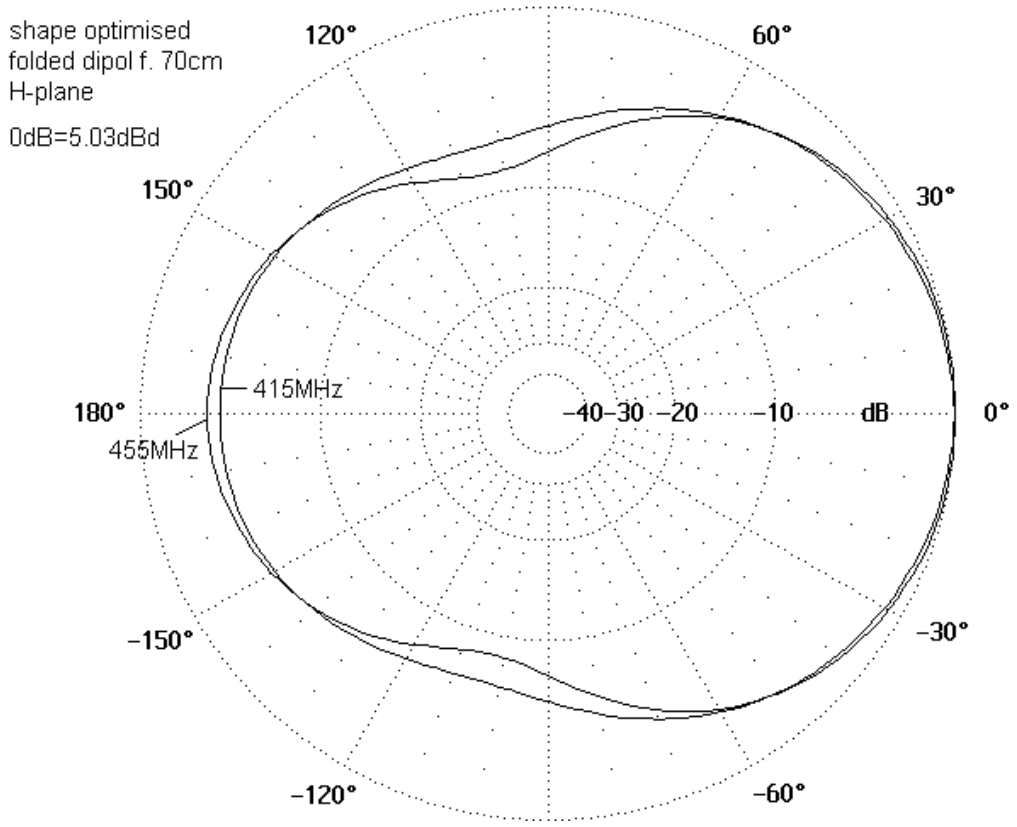
x	y
0	0
22	50
73	73
122	97
149	145
173	194
196	244
224	291
236	345
233	400

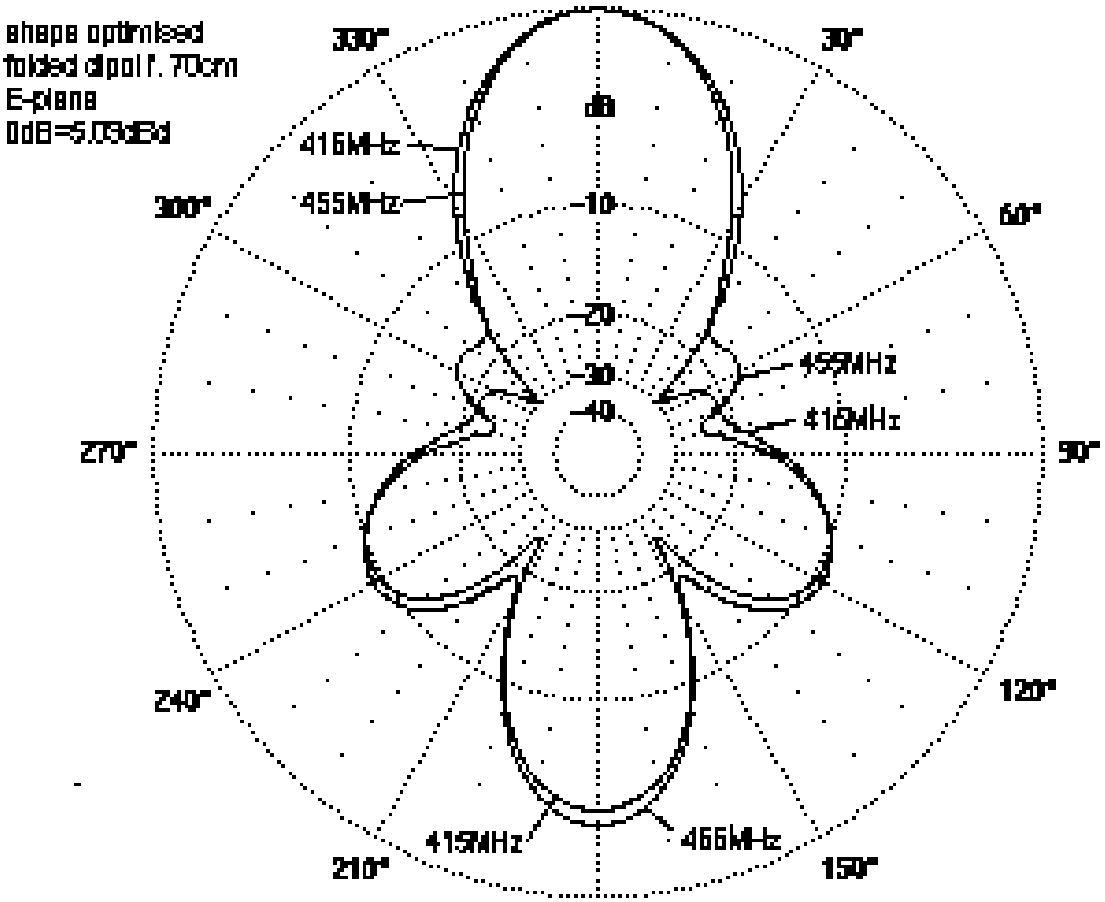
Folded dipol dimensions: 6mm diameter aluminum, 25.7mm distance.
Each side (there are 4) is made up of nine 55 mm pieces.
The total length including the end pieces and bends is 2038.25 mm.

<<< Coordinates of folded dipol (one quarter).



Frequency	SWR	R I	Gain dBd	F:B dB	AZ	EL
420 MHz	1.45	292 -j110	5.05	3.61	39	123
430 MHZ	1.15	315 -j40	5.1	3.44	38	122
440 MHz	1.24	370 -j20	5.1	3.27	37	121
450 MHz	1.61		5.06	3.1	37	120


shape optimised
folded dipol f. 70cm
H-plane
0dB=5.03dBd
120°
60°
150°
30°
180°
0°
−150°
−30°
−120°
−60°
415MHz
455MHz
−40 −30 −20 −10 dB


shape optimised
folded dipol f. 70cm
E-plane
0dB=5.03dBd
330°
30°
300°
60°
270°
90°
240°
120°
210°
150°
dB
−10
−20
−30
−40
416MHz
455MHz
455MHz
416MHz
415MHz
466MHz