RF

ORANGE COUNTY AMATEUR RADIO CLUB, INC.

VOL. XLIV NO. 4 P.O. BOX 3454, TUSTIN, CA 92861-3454 Apr. 2003

The Prez Sez:

The band captains for Field Day are in place and everything is progressing, towards the June event. Many thanks to Don Hughes, who volunteered, to be head chef during Field Day.

I also wish to thank Cindy Hughes who had been trying for a year in getting John Ramsey KD6YKS to show and demonstrate the new Red Cross Emergency Operations Center (EOC) and the new and much larger Radio Room. John found time in his busy schedule and gave an impressive demo. Thanks John.

We had two speakers in March. The second was by Margaret Signoreli WA6PZO, who talked about her career as a Radio Officer with the ARCO Tanker Fleet. Thank you Margaret, for sharing your knowledge and experiences. It was delightful.

March has ended, the grace period is over, have you paid your club dues? Please get your renewal paid, so we can enjoy the year as one big voice in the HAM WORLD.

See you at the meeting,
73's----Lowell-KQ6JD

Field Day is Coming!!!

Mark your Calendar to Come to FD – June 28 & 29

This is the most fun event of the year for the OCARC. And everyone is invited and welcome to:

- Look at the activity and/or
- Help operate and/or
- Help setup/teardown and
- Come for 1 hour or
- Come for 24 hours

Field Day is a practice of an emergency communications event that lasts for 24 hours. The FD contacts start at 11AM on Saturday, June 28, and continue until 11AM on Sunday, June 29. Setup of equipment will begin at 7AM in Portola Park in Santa Ana (on Santa Clara Ave, about 0.5 miles west of Tustin Ave.)

The club will provide food for dinner and breakfast.

Plan to come, even if you can only stay for an hour or two.

April Meeting

The guest program speaker will be ARRL SW Division Director Art Goddard-W6XD, who will provide a slide-show of his recent DX-pedition that is entitled:

"...Discovering Corsica

.....The TK4Z Story"

Discover Corisica for yourself at this month's club meeting. Join noted photographer and raconteur Art Goddard, W6XD, for an illustrated tour of this remarkable land and its proud people.

Don't miss it. All members and visitors are welcome.

The next general meeting will be:

Friday, Apr 18th
@ 7:30 PM

We will be meeting in Anaheim Room in the east **Red Cross** Bldg.

In This Issue: **Page**

THE ORANGE COUNTY AMATEUR RADIO CLUB, INC.
P.O. Box 3454, Tustin, CA 92781

2003 Board of Directors:

President:
Lowell Burnett, KQ6JD
(714) 997-0999
LBur729028@aol.com

Vice President:
Steve Brody, KB1GZ
(714) 974-0338
stevebrody@sbcglobal.net

Secretary:
David Mofford, W7KTS
(714) 285-0693
davidmofford@hotmail.com

Treasurer:
Phil Andersen, N7PA
(949) 492-1900
n7pa@arrl.net

Membership:
Bob Buss, KD6BWH
(714) 534-2995
kd6bwh@aol.com

Activities:
Matt McKenzie, K6LNX
(714) 546-2228
k6lnx@arrl.net

Publicity:
Larry Hoffman, K6LDC
(714) 636-4345
k6ldc@earthlink.net

Technical:
Bob Eckweiler, AF6C
(714) 639-5074
af6c@arrl.net

Members At Large:
Cory Terando, AE6GW
(714) 894-3817
corymuzk@yahoo.com

Frank Smith, WA6VKZ
(714) 356-4695
wa6vkz@msn.com

2003 Club Appointments:

W6ZE Club License Trustee:
Bob Eckweiler, AF6C
(714) 639-5074
af6c@arrl.net

Club Historian:
Bob Evans, WB6IXN
(714) 543-9111
bobev@netzero.net

RF Editor:
Ken Konechy, W6HHC
(714) 744-0217
kkonechy@pacbell.net

WEB Master:
Ken Konechy, W6HHC
(714) 744-0217
kkonechy@pacbell.net

ARRL Assistant Director:
Ken Konechy, W6HHC
(714) 744-0217
kkonechy@pacbell.net

ARRL Awards Appointee:
Larry Beilin, K6VDP
(714) 557-7217
k6vdp@aol.com

OCCARO Delegate:
Bob Buss, KD6BWH
(714) 534-2995
kd6bwh@aol.com

Monthly Events:

General Meeting:
Third Friday of the month
at 7:30 PM
American Red Cross
(near Tustin Ave & 4th St)
Santa Ana, CA

Club Breakfast:
First Saturday of the month
at 8:00 AM
CowGirl's Cafe, Too
2610 S. Harbor Blvd
(just south of Warner)
Santa Ana, CA

Club Nets (Listen for W6ZE):
7.115 ± MHz CW **OCWN**
Sun- 9:00 AM – 10 AM
Rick KF6UEB, Net Control

28.375 ± MHz SSB
Wed- 7:30 PM - 8:30 PM
Bob AF6C, Net Control

146.55 MHz Simplex FM
Wed- 8:30 PM - 9:30 PM
Bob, WB6IXN, Net Control

VISIT OUR WEB SITE

http://www.w6ze.org

for up-to-the-minute club information, the latest membership rosters, special activities, back issues of RF, links to ham-related sites, vendors and manufacturers, pictures of club events and much much more.

Club Dues:
Regular Members ...$20
Family Members* ...$10
Teenage Members ..$10
Club Badge** …....$3

Dues run from January thru Dec and are prorated for new members.
*Additional members in the family of a regular member pay the family rate up to $30 per family.
**There is a $1 charge if you'd like to have your badge mailed to you.

Tech Talk #28

ANTENNA IMPEDANCE

By Bob Eckweiler – AF6C

(This month, the Tech Talk article is the second of 3-part series on impedance. This month Bob will review the basic concepts of antenna impedance.)

Last month we discussed 'impedance'. We know it is made up of two parts, resistance and reactance; both measured in ohms. The reactance part can be positive (inductive) or negative (capacitive); the resistive part can only be positive

Now let's have some fun with that and examine the impedance at the input of a half-wave dipole in free space, and how it changes as we vary the size of the dipole. We will keep the frequency constant throughout this exercise; however, remember that raising the frequency is the same as lengthening the antenna, and lowering the frequency is the same as shortening the antenna (See Side Bar).

The resonant half-wave dipole we'll start with is made with thin wire and each leg is electrically one quarter wavelength long. At 7 MHz each leg is on the order of 33'5" (using the basic half-wave antenna equation of 468/f, where f is the frequency in MHz.) Since other variables, such as the thickness of the antenna wire, influence the length to some extent you should be able to adjust the length of the legs, usually by slightly shortening them, and reach a point where the impedance at the antenna terminals is purely resistive (the reactive component is 'j0 ohm' - Remember the 'j' signifies the reactive, or imaginary part and when you see 'j0 ohm' just say "'an imaginary' zero ohms.") The antenna is then resonant at the given frequency.

Figure 1a shows the half-wave dipole. What do we know about the dipole? We know the current at the tip of the dipole is at a minimum because any energy that hasn't been radiated is reflected and the cancels the current moving in the other direction. The curved lines show the current distribution along the dipole legs. At the feed point the current is maximum since it is 1/4 wavelength from a current minimum. When the current is maximum at the feedpoint one can surmise from Ohm's law that the resistance there is low. Now let's extend each leg of the antenna so that it is a half wavelength long, making a full-wave dipole. (Figure 1b). Since each tip is still a current minimum, the feedpoint is now also a current minimum and one can surmise that the resistance there is now high. Next, if we extend each leg to three-quarters of a wavelength the feedpoint will again be a current maximum and the resistance will be low. As the antenna continues to

■ See **TechTalk** cont'd on page 4 –

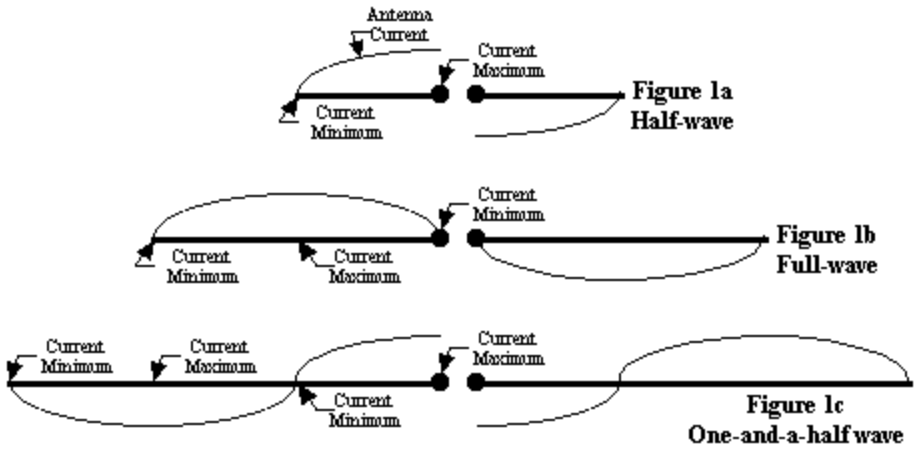


Figure 1: Current distribution on various dipoles

TechTalk -- cont'd from page 3

be lengthened by half-wave increments (each leg by a quarter-wavelength) the input resistance varies between low and high. The resistance at these points (especially the high resistance) varies significantly upon wire thickness and any close objects coupling to the antenna. The half-wave dipole has a low resistance around 72 ohms; the full-wave dipole has a high resistance on the order of thousands of ohms; and the one-and-a-half wavelength dipole has a low resistance on the order of 90 to 100 ohms. If you keep increasing the number of half-wavelengths of the antenna the high resistance gets smaller and the low resistance points get larger, converging towards 377 ohms which is the intrinsic impedance of free space.

At each of the multiples of half-wavelength the dipole is at resonance (the reactance is zero), but what happens to the reactance in between? That is shown in Figure 2, which represents the feedpoint impedance of a dipole as it is lengthened. Note in figure two how the impedance spirals inward and also how radically the reactive part of the impedance changes in even-wavelength dipoles. Also note that the resistance minimums and maximums are not truly at the resonance points, but slightly on the capacitive side.

Let's concentrate on a dipole near a half-wavelength in length and shorter since these are more commonly used by hams, especially when space is a restriction. As you slightly lengthen a half-wave dipole from resonance, the feedpoint reactance becomes inductive, and the resistance increases. As you shorten the dipole the feedpoint reactance becomes capacitive. That is why a coil is often used on shortened antennas; it cancels out the capacitive reactance of the shortened antenna. Not only does the capacitive reactance increase, the feedpoint resistance decreases rapidly. At an eighth wavelength the resistance is just a few ohms.

Shortened antennas are always a compromise. A half-wave dipole is a very efficient antenna; properly built and adjusted, and away from interfering structures, it radiates well over 95% of the energy it receives. The feedpoint resistance consists of the antenna's radiation resistance and any DC ohmic resistance, such as the resistance of the wires. Energy dissipated in the radiation resistance is radiated (good), and energy dissipated by the ohmic resistance is dissipated as heat (bad). Since the wire resistance is small compared with the approximately 72 ohm radiation resistance, the efficiency is high. When the antenna is

■ See **TechTalk** cont'd on page 6 –

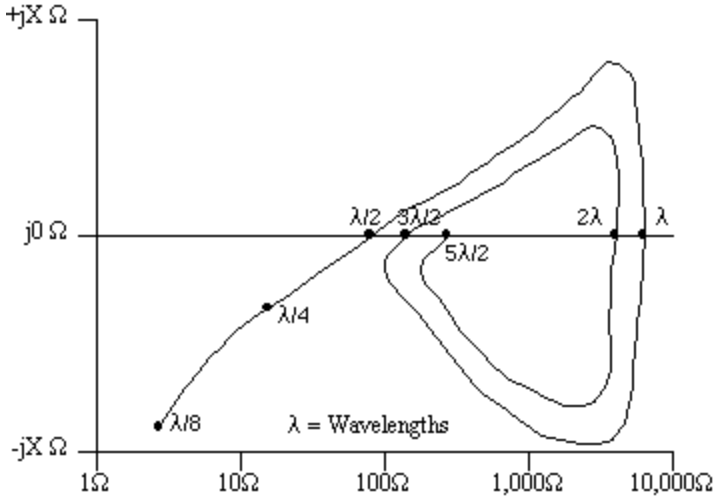


Figure 2: Antenna Feedpoint Impedance vs. Antenna Length

OCARC General Meeting

Minutes – Mar 21, 2003

The March 21 2003 meeting of the Orange County Amateur Radio Club was held in the East Building at the American Red Cross Compound. The meeting was called to order by President Lowell KQ6JD at 7:30 PM.

Pres. Lowell introduced John Ramsey KD6YKS, Manager of Disaster Emergency Services for the American Red Cross. John took the club on a tour of the Red Cross new Emergency Communication Center. The new EOC is very impressive! It was a highly informative time.

V.P. Steve KB1GZ introduced the speaker for the evening, Margaret Signorelli WA6PZO. Margaret spent 15 years as a Radio Officer on the Arco Marine supertanker fleet. It was a fascinating presentation-Thank you Margaret.

9:30PM-Business meeting was called to order by Pres. Lowell KQ6JD. Roll call of officers / Not present: Larry K6LDC;Cory AE6GW and Steve KB1GZ. A quorum was present.

Secretary: Nothing to report

Treasurer: The club has $2549.54 as of 2/28.

Membership: The club has 34 members. Dues are “past due”.

Activities: Matt went thru the list of raffle prizes.

Technical: Bob AF6C showed a piece of equipment that shows polarity of a magnetic field. You can get “Hall effect” data sheets from Bob.

Old Business:

Field Day-

Captains- 10M Tom Thomas -WA6PFA
15M Bob Eckweiler -AF6C
20M Cory Terando -AE6GW
40M Chris Winter -W6KFW??
75M Larry Beilin -K6VDP
UHF/VHF – Bob Buss -KD6BWH
FOOD -Don Hughes - KC6ONZ.

The Field Day site will be Portola Park in North-East Santa Ana (near Tustin Ave and Santa Clara Ave). The club will set up an information booth at FD for the public.

New Business:

Good of the Club: AF6C's technical articles in the RF were well done.

Pres. Lowell opened the meeting to members to talk about out experiences in Amateur Radio.

Bob AF6C moved that we adjourn. Frank WA6VKZ seconded it. Meeting adjourned at 9:45PM.

Respectfully Submitted,
David Mofford W7KTS
Secretary

OCARC BOARD MINUTES

April 05, 2003

The April Board meeting of the OCARC was held at Cowgirls too! Café, Called to order at 8:35 am on April 5, 2003. Roll call revealed that Steve KB1GZ and Matt K6LNX were not present. Minutes of last meeting were approved.

Secretary-Nothing to report

Publicity: Foot-Hill Courier newspaper to print an OCARC FD article.

Membership: 34 members **(editor’s note: the corrected total is 38 members)**

Technical: Suggested that the club standardize on Anderson Connectors for powering rigs. Would like to get the club committed to the use of Anderson connectors by all members. These are used by most RACES groups for “interchangeability”. Some will be purchased for sale to club members. A short article will be written for the May issue of RF.

-- See **Board Minutes** cont'd page 7 --

shortened and inductance is added to compensate for the capacitive reactance at the feedpoint the radiation resistance goes down and the ohmic resistance (because of the coil resistance) goes up; both work to reduce efficiency.

The Vertical Antenna:

A dipole may be turned so that its axis is vertical and used very successfully. It is important that the ends of the vertical dipole (half-wave vertical) be kept clear of close objects such as the ground for best performance. A big drawback of a full-size half wave vertical is its height. The quarter-wave dipole is only half as tall for a given band and is very popular. Here the lower part of the dipole is replaced with a counterpoise often consisting of radials or the ground. Over "perfect ground" the quarter-wave vertical has a radiation resistance half that of the dipole, or about 36 ohm. As the ground becomes less perfect the antennas efficiency drops because the ground resistance increases and it is in series with the radiation resistance. This presents an interesting point:

Is Lower SWR Always Better?

We haven't talked much about Standing Wave Ratio (SWR) yet. But let's take a look at the quarter-wave vertical mentioned above. At resonance over perfect ground it has an SWR, assuming 50 ohm coax, of 50/36 or 1.4:1. Now lets put that vertical over a poorer ground with 14 ohms of ground resistance; the SWR would then be 50/(36 +14) or the "ideal" 1:1. However, now 28% of the energy is being dissipated in the ground resistance as heat – good for the earthworms, but not for your DXCC. Shortened quarter-wave verticals using coils have even lower radiation resistance and a good counterpoise becomes even more important.

More On Resonance:

Why does a dipole (or any antenna) have to be resonant? This is a good question and the answer may surprise you: It doesn't! Resonance is not a requirement for an antenna to be efficient. In the early days of radio antennas were fed with open-wire feed and link coupling, and resonance was of little concern. It was only with the development of the pi-network output and coaxial cable that resonant antennas became widespread. The typical pi-network output circuit used on later tube transmitters and amplifiers could match impedances with resistive and inductive parts that resulted in an SWR up to about 3:1 when feeding 50 or 75 ohm coaxial cable. Antennas such as resonant dipoles, inverted vees, beams, and verticals could easily be matched through a length of coax, and the pi-network could correct for a fair degree of variance as one moved away from the resonant point of the antenna; antenna tuners were not often used with these setups except on the lowest bands where frequency excursions were the greatest (percentage wise.). The pi-network and coaxial cable made installation and operation easier than with link coupling and open-wire feeders. Today's solid-state transmitters use broadband output circuits that are much less tolerant of a mismatch and have protective circuits that reduce power when the transmitter sees excessive SWR. That is why antenna tuners are once again found in many shacks - to tune out this mismatch.

Next month we'll move closer to the transmitter as we examine what happens to the impedance as signals travel through the feedline.

Side Bar: Is This Right?

At first "raising the frequency is the same as lengthening the antenna" may seem backwards. After all, as the frequency increases a half-wave becomes smaller. However, if you start with a resonant half-wave antenna and lengthen it, while keeping the frequency constant, the antenna becomes too long and the reactance becomes inductive. Also, if you keep the length of the resonant half-wave antenna constant and raise the frequency, the antenna again becomes too long, and the reactance becomes inductive. Thus, raising the frequency is the same as lengthening the antenna.

Board Minutes -- cont'd from page 5

Treas: $2661.77 in account. 1st Quarter financial statement was provided.

Old Business:
Bylaws Committee; Report in progress. Will try to report July-Sept or Wait till 1st quarter 2004. Will present complete report with options and let club provide guidance. Still awaiting CA state report on club legal status. Should the club remain a non-profit 501c7 or change to 501c3? Motion: Larry K6LDC moved that club change to a 501c3 status. Seconded by Bob AF6C. Motion passed.

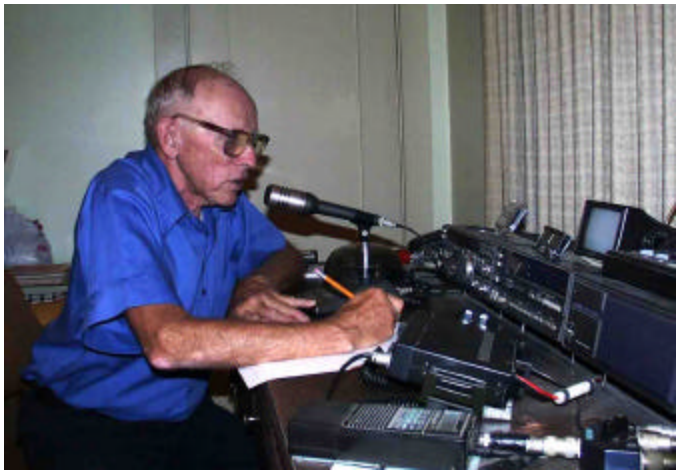
New Business:
Bob AF6C brought up the idea of a club reunion to bring past members together and to boost club membership. Possibly in September. AF6C will head up the effort and report back in May.

Good of the Club:
Bob AF6C has a copy of the movie "Frequency" for possible sale at the club auction.

Larry K6LDC mentioned a series of articles in QST re: Programming for Ham Radio. Would like to see session available to teach this subject to club members. Ken W6HHC has read the articles and Bob AF6C will read the articles. They will check in to it.

Meeting adjourned at 9:15am.

Respectfully Submitted:
David Mofford W7KTS, Secretary



Bob Evans – WB6IXN in his shack as "OCARC net control" in the City of Santa Ana

WHOis….the Historian? by Ken - W6HHC

(This is the last of a thirteen-part series of articles to inform you about the background of the officers and leaders of the OCARC.)

The OCARC Historian for many, many years has been long-time member Bob Evans – WB6IXN. Bob became interested in Ham Radio while in high school in Western Pennsylvania because of his basic interest in communications. But, a lack of money kept Bob from getting a rig/license until after graduation from college. Finally, Bob got a teaching job in Dayton, PA after getting his teaching degree from the University of Pittsburgh, and then took a correspondence radio course from National Radio Institute (NRI) to learn radio theory. He soon traveled to Buffalo, NY to visit the FCC Office and passed his General license as K3JFG in 1959. (As a note….there were no VEC organizations to give tests….the FCC testing team visited "some" cities every 3 months for license testing!) Bob had a local "Elmer", Milt W3RUL – president of the Vernago Mike & Key Club, who mentored him onto the air. Bob's first station was an old Knight Kit receiver and a war-surplus 40M ARC-5 transmitter. While working as a teacher, Bob built his first "radio-controlled bomb" for the Chemistry Club. He also remembers that his first Field Day in 1960 came with a lightning storm and a tremendous rain storm. Later on, Bob moved up to a multi-band rig with a tri-band beam, but a freak W. PA wind-storm (mini-tornado?) twisted his steel tower and beam into a "cork-screw"!!! In 1963, Bob left PA to become a Garden Grove HS teacher. He soon changed to the call of WB6IXN in Santa Ana and immediately joined the OCARC.

Bob's QTH is still in Santa Ana. His low-band station is a Yaesu FT-757 transceiver with a AT-757 antenna tuner to a Hygain, 40M –to-- 10M, vertical antenna. On the high-bands, he uses a Yeasu FT-5100 144/440 MHz rig to a Diamond 5/8 wavelength antenna. For mobile operations, Bob uses a Kenwood HT in the car.

His favorite HAM radio activities include rag-chewing, CW, operating OCARC nets, building radio gear, and participating in OCARC FD operations.

Bob was born in Oil City, Pennsylvania and retired as a Garden Grove HS school teacher in 1984. His main non-ham activities include astronomy, earthquakes/seismology, and he loves computer programming….(been involved with PCs since the "trash-80" in the 1970's), and volunteering for work at his local church.

If you get a chance, ask Bob…."who was the original holder of the current OCARC call, W6ZE"??

2 Meter Band-Plan Changes Considered by TASMA

This notice is to alert you that TASMA is working on a revised bandplan for 2M in So California. The schedule for adopting the revised bandplan is:

Draft Bandplan - April 2003 General Meeting
Bandplan Presentation - August 2003 Gen Mtg
Adopt Bandplan - December 2003 Annual Mtg

There are a total of 46 changes contained in the draft band-plan. You can review the draft bandplan by going to the TASMA website (**www.tasma.org**) and navigating to the March 2003 newsletter. Band plan info is contained on pages 9-15. If you have comments on the bandplan, please contact Bob Dengler, NO6B, at: no6b@tasma.org

If you want to attend the April general meeting, here are the details:

General Meeting - Saturday, April 12, 2003, Ventura County Sheriff's East County Station, 2101 E Olsen Rd., Thousand Oaks, CA Sign-in begins at 9AM.
TALK-IN: K6AER 146.85 MHz 94.8 Hz

Club Nets

March check-ins for Wednesday evening 10M and 2M phone nets and the Sunday morning 40M OCWN CW net:

KD6BWH	**K6LDC**
AF6C	**KG6MIF**
K6CCD	**KG6MIG**
KS6CW	**KG6MIH**
K6GVG	**W6NT**
W6HHC	**KE6OIO**
K3IMW	**KG6PAU**
WB6IXN	**WA6RND**
KQ6JD	**KB6TWA**
K3JIL	**AE6UC**
W6KFW	**KF6UEB**

K6VDP
WA6VKZ
KC6VQH

Check WB6IXN's NetNews monthly reports on WWW.W6ZE.ORG

ORANGE COUNTY AMATEUR RADIO CLUB, INC
P.O. BOX 3454
TUSTIN, CA 92781-3454

First Class Mail

Time Dated Material.
Please Expedite!!