RF

ORANGE COUNTY AMATEUR RADIO CLUB, INC.

VOL. XLIV NO. 3 P.O. BOX 3454, TUSTIN, CA 92861-3454 Mar. 2003

The Prez Sez:

During the February general meeting, we did something different, after the club business. Each member talked about his view of HAM Radio and its various facets. A big thank you goes to Rick KF6UEB for the idea. We had great participation and comments, by everybody.

I also, wish to thank Art KQ6HF for his talk on RF Exposure and its Dangers. This is something to think about, not only at home, but at Field Days.

Phil N7PA informed us that Frank Smith WA6VKZ, was in the CV ICU at St. Joseph's Hospital. But, Ken W6HHC has informed me that Frank has since been discharged to home and is anxious to get back on the air. Lets all wish him a full and speedy recovery.

It has been brought to my attention that renewal of club dues has been slow. Remember the end of March, is the end of the grace period.

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

DUES are DUE!!

A friendly reminder for those who might have forgotten to renew their club membership for 2003. The grace period is ending! The OCARC annual dues are due by the end of March. We don't want to lose you as a member!!

Phil – N7PA
Treasurer

OCARC General Meeting

Minutes – Feb 21, 2003

The meeting was held at the Red Cross East Building-7:30 P.M. Ken W6HHC Introduced Art Sutoris KQ6HF, Technical Coordinator for the Orange Section who gave an informative presentation on Electromagnetic Environment Awareness for Antenna Site Safety. (See PIX on Page 5)

The Business Meeting started at 8:50PM. Not present for role call: Steve KB1GZ; Frank WA6VKZ; and Cory AE6GW. A quorum was present.

Secretary:
OC Fair: The OCARC will work at

-- See **Mtg Minutes** cont'd page 5 --

March Meeting

The guest program speaker will be Margaret Signorelli, WA6PZO, one of the first women to take her amateur radio hobby to sea.

Margaret will provide a presentation entitled:

"...Being a Radio Officer on Super Tankers"

Does Ham Radio and Oil really mix? Learn about her being on the first ship in Valdez, Alaska after the Exxon Valdez went aground, and the real story behind the incident.

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

The next general meeting will be:

Friday, Mar 21st
@ 7:30 PM

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

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THE ORANGE COUNTY AMATEUR RADIO CLUB, INC.
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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**):
Wednesday Evenings

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

146.55 MHz Simplex FM
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 #27

IMPEDANCE

By Bob Eckweiler – AF6C

(This month, the Tech Talk article is the first of 2-part series on Impedance. This month Bob will introduce the basic concepts of impedance.)

Antennas and feedline cannot be discussed without hearing the word impedance. What exactly is impedance and where and why is it important? This month we'll try to answer these questions.

Looking at the input terminals of an antenna, that antenna can be represented closely by the circuit in figure one. The values of the three components, a resistor, a capacitor and an inductor determine the impedance of the antenna. The impedance is made up of two parts, resistance and reactance. Let's look more carefully at each of these parts. The resistive part is what does the work and is called the real part. It absorbs the energy from the antenna, turning it into either a radiated signal (good!) or heat (not good!). The inductive and capacitive components combine to determine the reactive part. The reactive part of the impedance absorbs no energy and is thus referred to as the imaginary part. The reactive part causes the voltage and current peaks to occur at different times in a cycle; this is called phase shift (See Sidebar on page 4).

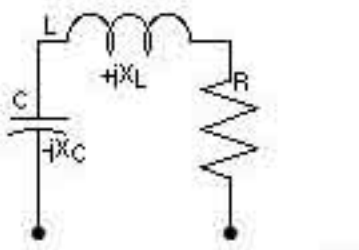

Figure 1

The reactance of an inductor is a positive value while the reactance of a capacitor is a negative value; both measured in ohms. The total reactance of an inductor and capacitor in series is the sum of these values. (Note that when you add the capacitive reactance you are adding a negative number.)

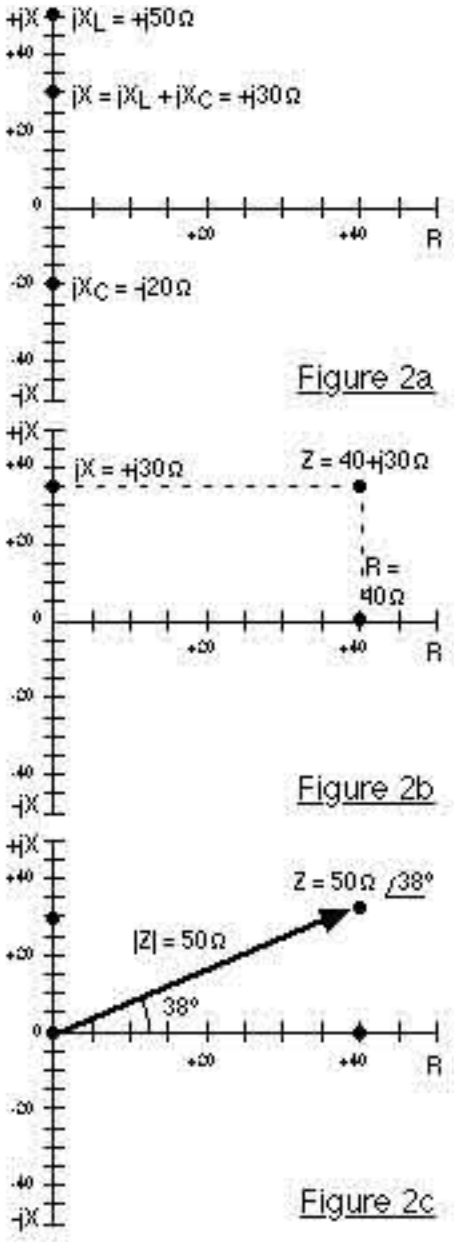

Figure 2a is a simple graph. The horizontal axis represents the resistive part of the impedance and the vertical axis represents the reactive part. The horizontal axis starts at zero at the left, since the resistance cannot be negative. The reactance can be positive or negative so the vertical axis passes through the zero point of the horizontal axis. Inductive reactance is plotted above

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the horizontal axis and capacitive reactance, being negative, is plotted below it. The horizontal axis is labeled R for Resistance and the vertical axis is labeled jX for reactance. (Remember that reactance doesn't absorb any power and is the imaginary part. Since the symbol "I" was already taken to represent current, "j" is used to signify "imaginary".) We'll talk more about "j" more in a future article. For now don't treat it as part of the equation; instead think "an imaginary". When you see " -j20 ohm" say "minus 'an imaginary' twenty ohms".

Let's assume that, at a specific frequency, the components in figure one have the following values: R = 40ohm, XC=-j20ohm and XL=+j50ohm. The resistance can be plotted on the horizontal axis as shown by 'R' in figure 2b. Before jX is plotted it must be calculated by adding the two values: +j50 ohm +(-j20 ohm) = +j30 ohm. This is plotted on the vertical axis as 'X' in figure 2b. A new point 'Z' can be plotted on the graph where lines drawn through the points and perpendicular to their axis cross. The point 'Z' represents the impedance and is often written in the form: Z=40+j30 ohm. Impedance always has two parts; here it's represented by a real part 'R' and an imaginary part 'jX'. Impedance can be represented in another way too, by its magnitude and the phase angle; we'll say more about that later.

Resonance

Earlier it was mentioned that reactance causes the voltage and current peaks to occur at different times in a cycle. Capacitive reactance will cause the current to peak before the voltage, and inductive reactance will cause the voltage to peak before the current. This difference (called phase shift) can be between -90° and +90° or up to a quarter of a cycle (one full cycle is 360°.) When the inductive reactance and capacitive reactance are equal they add to zero. When they do, the voltage and current peaks occur simultaneously, the phase shift is said to be zero and

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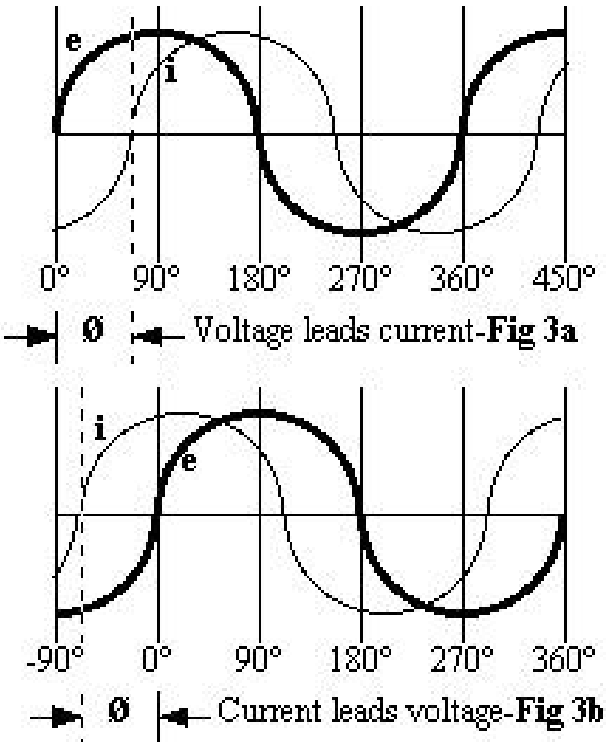
Sidebar - Phase Shift

When an AC voltage is applied to a pure resistance the voltage and current peaks occur simultaneously, and the voltage and current are said to be "in-phase". However, when an AC voltage is applied to an impedance that contains a reactive part, the current 'I' and voltage 'e' peaks occur at different times. This time difference is measured as an angle; where 360° is one full cycle of the AC voltage. The angle is referred to as "phase-shift" and is often designated by the symbol 'Ø'. When the reactive part of the impedance is positive (inductive) the voltage peak occurs before the current peak (Figure 3a), and when the reactive part of the impedance is negative (capacitive) the voltage peak occurs after the current peak (Figure 3b).



Gen'l Minutes -- cont'd from page 1

the fair booth on Wed. July 16. Minutes of the last meeting were approved as presented.

Treasurer: The club has $2451.97 in its account.

Membership: 21 members have paid dues for 2003.

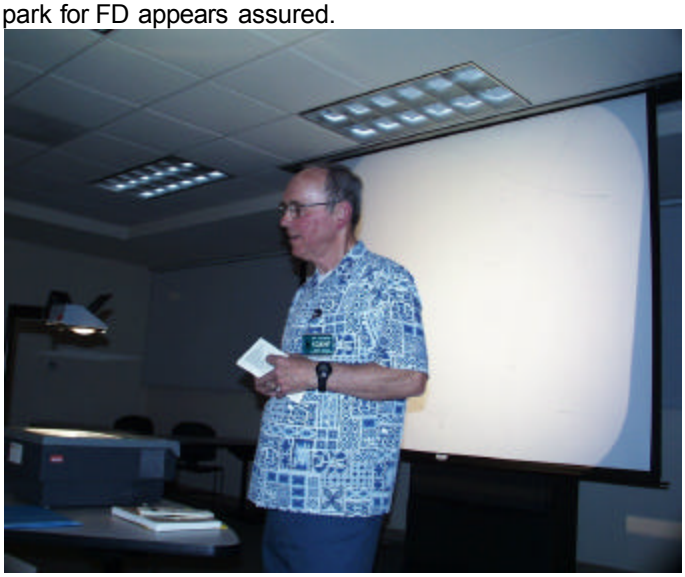
Publicity: Nothing to report

Technical: Working up articles for publication in the RF.

Activity: Raffle prizes for the evening.

Old Business

Field Day: Ken W6HHC is dealing with Santa Ana for use of Portola Park. All requests are in place and use of the park for FD appears assured.



Program Speaker Art Sutorus – KQ6HF talks on Electromagnetic Awareness & Safety

New Business:

It was suggested to hold a member forum, to tell about what members are doing radio wise, at each meeting. Pres. Lowell liked the idea and the balance of the meeting was spent with each member relaying what they were doing with their involvement in Amateur Radio. It was a very enjoyable time.

It was mentioned that Frank WA6VKZ is in St. Josephs (ICU) in Orange.

Bob Evans described that Jim Talcott N6JSV, a past club President, has become a Silent Key. Our condolences to the family.

The meeting adjourned at 9:43PM.

Respectfully Submitted; - David Mofford W7KTS, Secretary

OCARC BOARD MINUTES

March 01, 2003

OCARC Board Meeting was held at Cowgirls Too Restaurant. 8:30AM Meeting called to order by Pres. Lowell KQ6JD Board not present: Phil N7PA; Bob KD6BWH; Matt K6LNX; Frank WA6VKZ. Quorum being present. Minutes from 2/1/03 board meeting were approved as read.

Old Business:
Bob AF6C discussed badges being changed to free to new members. Motion : Bob AF6C moved to charge $3.00 for badges for new and replacement badges as well as $1.50 for License upgrades with a new call.
Seconded Steve KB1GZ
Discussion--Question: Passed.

Field Day: Use same team captains for FD as 2002.

New Business:
Letter from our Insurance carrier offering terror insurance for $16.00. K6LDC Moved to reject offer for terror coverage. Seconded by Steve KB1GZ.
Approved.

Domain Name renewal for Web site. Motion by K6LDC to spend $100.00 for 5 year renewal. Seconded by KQ6JD.
Approved.

Publicity: Larry K6LDC handed out press release draft for Field Day. This will be distributed to local newspapers and put on the website. Copy attached to minutes.

Meeting adjourned at 9:10 AM

Respectfully Submitted
David Mofford W7KTS
Secretary

2003 ARRL Southwestern Division
Amateur Radio Convention, Long Beach, CA.

www.hamcon.org

Save these dates: September 5, 6 & 7, 2003

"Focus Back on the Volunteer"

VE Testing	**Technical Forums**	**Many PRIZE Drawings**
Vendor Exhibits	**Wouff Hong**	**Demonstrations**
Saturday Luncheon	**Sunday Breakfast**	**Grand Banquet**

This year we will be in beautiful downtown Long Beach. This year's Convention Headquarters is the: Hilton Long Beach, 701 West Ocean Blvd., Long Beach, Ca. 90831-3102.

Early Bird Registration
Registrations post marked by April 30, 2003
$10.00 Per Registrant
Which INCLUDES One Logo Pin
Send registrations to Hamcon address below.

Pre-Registrations
Registration Post Marked from May 1 to August 1, 2003
$12.00 Per Registrant
Which INCLUDES One Logo Pin
While quantities last

Last Minute and Walk-In Registrations
Registrations received after August 1, 2003, and Fri., Sat. & Sun. Sept. 5, 6 & 7, 2003
$15.00 Per Registrant
INCLUDES One Logo Pin
While quantities last

Hilton Long Beach

Location: **701 West Ocean Blvd., Long Beach, CA. 90831-3102. For Reservations call 800-445-8667**
Mention "HAMCON" for a fantastic rate of $89 per night double occupancy.
Note: The last day to register and get this rate is August 15, 2003.

----------Mail-In Convention Registration Form----------

Call Sign: _____ Name: _____

Address: _____

City: _____ State/Prov: _____ ZIP /Postcode _____

Your E-Mail Address: _____ Club Affiliation: _____

Please List additional Attendees

No Charge for Children 16 years old or younger. They Must be accompanied by a registered adult.

KIDS	ADULT	Call Sign	Name *(Please Print Clearly)*
____	____	_____	_____
____	____	_____	_____
____	____	_____	_____

Note: Every attendee must be registered, including the kids

_____	Registrations	at $_____	ea.	= $_____
_____	Extra Pins	at $ 3.00	ea.	= $_____
_____	Kids under 16			= Free
_____	Banquet Tickets*	at $ 35.00	ea.	= $_____

**Please indicate preference: ( )Beef ( )Chicken ( )Vegetarian*

_____	Saturday Luncheon	at $ 20.00	ea.	= $_____
_____	Sunday Breakfast	at $ 17.00	ea.	= $_____
			Total Due	= $_____

Staff Use Only
Registration_____
Date_____
Finan._____
Date_____
Number Pins Given: _____
R-4

Make convention registration checks payable to**: HAMCON Inc.**
Mail this form to: **HAMCON Registration, P. O. Box 333, Pomona, CA. 91769-0333**

TechTalk -- cont'd from page 4

the impedance is purely resistive. This phenomena is said to be “resonance”. At resonance the imaginary part becomes zero but is usually still included: Z = 50+j0 ohm (Impedance is equal to 50 plus an imaginary zero ohms.) Whenever you see the value j0, it signifies resonance.

In Figure 2c a line has been drawn from where the two axes cross (the origin) to the point ‘Z’. Look carefully at this line; notice that it has a difference length than either R or jX. This length is call the “magnitude” of the impedance. It can be calculated by Pythagorean¹s theorem (I'll leave solving this to the readers who care!) but the answer is 50 ohm magnitude. If you again look carefully at the line you¹ll note that it makes an angle to the horizontal axis. This angle is called the phase angle and yes it is exactly the same phase angle we talked about above. What will this line look like at resonance? Think for a minute; we know that at resonance jX = j0, the phase angle is zero and the impedance is purely resistive. Thus the line must lie on the horizontal axis and must end at the point R. This impedance line is called a vector; it has

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David Mofford – W7KTS at his shack in the City of Santa Ana

WHOis….the Secretary?
by
Ken - W6HHC

(This is the twelfth in a series of articles to inform you about the background of the officers and leaders of the OCARC.)

The OCARC Secretary in 2003 is David Mofford – W7KTS. David got interested in HAM radio as a kid though hanging around the shack of his uncle, Bill – W7KTS. But he never got his license until 1980. In 1980, David was reminded of HAM radio at the OCCARO booth at the OC Fair. Soon after, he went to Gordon West class and received the call KA6NLY. Shortly later his mother, Jean, received the call of KA&LEP and his brother, Wayne, received the call N6PUQ. He joined the West Coast ARC and became President in 1981. He eventually became chairman of the OCCARO. In 1996, David was able to acquire the call letters of his deceased uncle, W7KTS. He joined the OCARC in 1999.

David lives in Santa Ana. His low band station (in transition after a recent move) is the Kenwood TS-820, a ICOM 720A, and a Henry 2K amplifier. He is looking to put up an all-band vertical. For the high-bands, there is a Alnico Model DR12 2M rig with a 5/8 wavelength 2M vertical on the roof.

David’s favorite HAM activities include HF contesting, rag-chewing, and emergency communications. He is a founder of Coastal Amateur Radio Emergency Services (CARES) that assist with 3-4 major events annually. He has also been a member of the HDSCS (Hospital Disaster Support Communications System) since 1995.

David was born in Vancouver, Washington. He came to California in 1976, and to OC in 1977. He works as a loan officer (mortgage broker) for a mortgage company. He is going to law school, part-time, and plans to graduate in 2007.

David’s favorite non-HAM activities include astronomy (he has a 9-inch reflector!!) and British History (especially interested in the monarchy from Queen Victoria taking the throne in 1837 up to the end of WWII in 1945).

TechTalk -- cont'd from page 7

two parts, magnitude and direction! Why is it called a vector? So mathematicians and engineers can impress management and demand higher salaries!

Thus, the second way impedance may be specified is by its magnitude and phase angle and an impedance such as Z=40+j30 ohm is often written as: Z = 50 ohm <+38° (Impedance is equal to a magnitude of 50 ohms at a phase angle of 38 degrees.)

Which representation of impedance you use depends on what you're trying to do or show. Usually one form makes computation easier than the other in a given situation.

Why is impedance important? The impedance of the antenna plays an important role in the transfer of power from the transmitter. We'll discuss this further in a future article.

In the next article on Impedance in Bob's Tech Talk series, we'll look at how the impedance at the antenna's terminals is affected by changes to the antenna, and why 'R' plays such an important part, especially for vertical antennas. This month we covered the heavy stuff (but hopefully did it lightly enough); in the next article we'll have some fun.

Club Nets

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

KD6BWH	**W7KTS**
AF6C	**K6LDC**
K6CCD	**KE6LEX**
KS6CW	**WA6NOL**
K6GVG	**W6NT**
AE6GW	**KE6OIO**
KB1GZ	**WA6RND**
W6HHC	**KF6TRA**
K3IMW	**KB6TWA**
WB6IXN	**KF6UEB**
KQ6JD	**K6VDP**
K3JIL	**WA6VKZ**
W6KFW	**WA6VPP**
KG6KGG	**KC6VQH**

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

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