



RF



ORANGE COUNTY AMATEUR RADIO CLUB, INC.

VOL. XLV NO. 2 P.O. BOX 3454, TUSTIN, CA 92861-3454 FEBRUARY 2004

THE PREZ SEZ:

Already February, and the year seems to be slipping away. There are things/events that I would like to propose we do as a club. Some of my ideas will be pretty good and some will sink faster than the Titanic – but that's life and we all need to take risks now and again.

Now that you have read this far, consider reading a bit further – and answer the clarion call of our treasurer for all of us to pay our dues. We have just until March to do it.

How about these for ideas?

1. Invite other clubs to our monthly meeting, especially when we have a unique speaker or presentation.
2. How about a group picnic in a park with guest speakers. We have some very knowledgeable members, lets tap one or two to provide a brief talk.
3. How about a local mini-DX-pedition – maybe to Huntington Beach. They have overnight van parking.

These are just a few ideas, but what is really critical and important are the ideas our membership can come up with. I know that there are some of us that come each month to be entertained, and they are most welcomed. However, there are others that want 'things' to happen, and these are the people I want to hear from, so please let me know what you would like to see happen.

73, Steve, KB1GZ

A.R.R.L. NEWS:

Honorary Vice President Elected:

The Board bestowed one of its highest honors upon retiring ARRL VP, **Fried Heyn, WA6WZO** [longtime OCARC member – ed.], by electing him to the position of ARRL Honorary Vice President. The Honorary VP position recognizes sustained and outstanding contributions to ARRL and Amateur Radio over a period of more than 20 years. Fried's track record of service as an ARRL official extends from 1978, when he was elected as the Orange Section Manager. The Honorary VP position is for a lifetime term.

(From the ARRL SWD Newsletter)

Greetings. Here's some info on a Western Regional Conference of Amateur Radio Astronomers that I thought you might be interested in. The Society of Amateur Radio Astronomers (SARA) is "The ARRL" of amateur radio astronomy. (Many (>50%?) SARA members are hams).

See: **News**, on page 3

Reminder:

It's time to pay your club dues for the 2004 year.

You must pay by March 31st to remain a member in good standing and be included on the private roster. Dues remain at \$20, the same as last year (Bet your cable TV company cant say that!) Please pay Bob, KD6BWH at a meeting or breakfast, or mail your dues to our P.O. Box.

FEBRUARY PROGRAM:

"Antenna Modeling Software"

Ken Konechy, W6HHC, will present a program on antenna modeling software, such as NEC2, that can help you design better antennas, study the effects of antenna height, understand the effect of poor ground conditions, experiment "on a PC first" with the performance of "stealth antennas", etc. Come learn how these antenna modeling programs work and what they can teach you about effective antennas.

The next regular meeting will be:

**Friday, Feb 20th 2004
@ 7:00 PM**

We will be meeting in **Room 208** in the **east Red Cross Bldg.**

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**Next Club Breakfast & Open Board Meeting
March 6th 2004**

**THE ORANGE COUNTY
AMATEUR RADIO CLUB,
INC.**

P.O. Box 3454, Tustin, CA 92781



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2004 Club Appointments:

W6ZE Trustee:

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Bob Buss, KD6BWH
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Monthly Events:

General Meeting:

Third Friday of the Month
At 7:00PM
American Red Cross
601 N. Golden Circle Dr.
(near Tustin Ave & 4th St)
Santa Ana, CA

Club Breakfast:

First Saturday of the
month at 8:00 AM
CowGirl's Cafe, Too
2601S. Harbor Blvd.
(just south of Warner)
Santa Ana, CA

Club Nets (Listen for W6ZE):

7.115 MHz CW **OCWN**
Sun - 9:00 AM - 10:00 AM
Rick KF6UEB, Net Cntl.
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 December & 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.

“HAM ON ICE”

Recalled by Larry Hoffman, K6LDC

Sounds like a not-so-tasty lunch dish, but for Fred Whiteside, W5ABG, it was a way of life in November of 1952. Whiteside was a U.S. Air Force radio operator stationed on Fletcher's Ice Island at the North Pole. His post at the huge floating polar ice island was a USAF weather station established during the previous spring.

Whiteside made a prior arrangement with Bill Cowles, KL7AN, of Fairbanks, Alaska, to attempt to make contact at the same time daily. A convenient time for Cowles was 10 PM Fairbanks time, but made little difference for Whiteside because it was dark 24 hours around the clock. For their first contact and the world's first Amateur radio contact with a floating polar ice island, the time was 3 AM the next morning, Whiteside time.

Whiteside's time was really insignificant because at the pole, moving a little to the east or west could not only change the time, but the day itself. Cowles asked Whiteside if the island was actually floating; the answer was yes, but that it probably wouldn't travel far until spring.

Author's note:

I've been to the Geographic North Pole. It was about two years after this incident. Fortunately for me, I was not stuck on an ice island, but just flew over it as an off-shoot of my U.S. Navy duties in anti-submarine patrol. I'd like to point out that this was a boon to W5ABG, being able to talk regularly with someone stateside while stuck for months in what might be described as the most desolate spot in the World. Hanging antennas must have been quite a problem. And you thought you had it miserable!



QST! THE ULTIMATE ASTRO-NOMICAL EXPERIENCE!

From: *Sirius Astronomer*

It is Perfect for armchair astronomers – from the comfort of your computer! – take your own CCD images, NO SPECIAL SOFTWARE REQUIRED! – ready to use in minutes – no expensive equipment to purchase – perfect for those with physical disabilities... and more!... Interested?... Call Rent-a-scope at (714) 501-8247 anytime! And check out:

<http://www.arnierosner.com>

on the web.

from: Bob, WB6IXN

News, cont. from page 1

Please pass the word on to technically-minded hams who might like to attend.

The conference is being held at the Owens Valley Radio Observatory, Feb 28 & 29, 2004. More info at:

<http://www.qsl.net/SARA/meetings/owens04.htm>

73, Art Goddard, W6XD
Director
ARRL Southwestern Division

MY NOVICE DAYS – Part I:

by: Bob AF6C

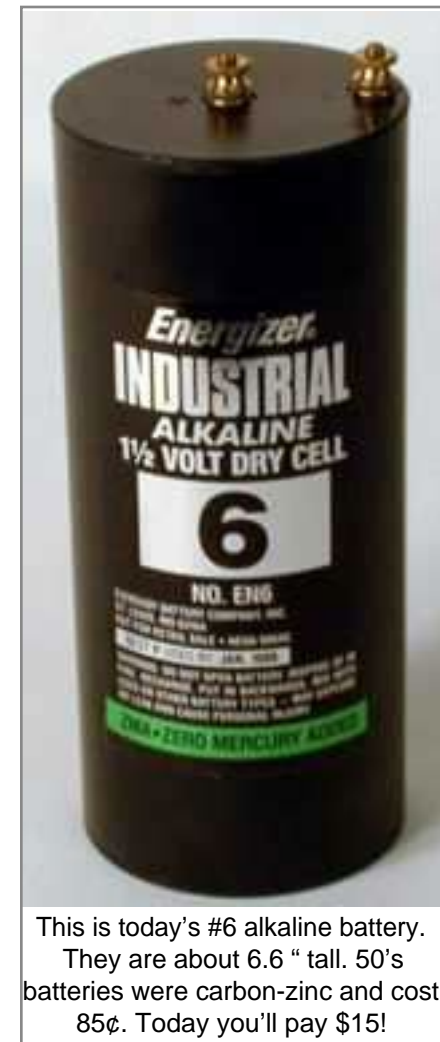
I don't recall when I first got interested in electricity. I do recall playing on the living room floor, when I was seven, with a #6 battery, some bell wire, knife switches, a door buzzer and small lamp; creating all kinds of simple circuits. I was living in the town of Manhasset, on Long Island. My interest in radio, with the exception of building a kids crystal set, didn't begin until my dad brought home a National NC-88 communications receiver. He bought it from Terminal Radio on Cortlandt Street in New York City, An area known in the fifties as **Radio Row**. I remember putting up a "short" wire antenna above the ga-

rage and listening to shortwave broadcasts and numerous other unidentified signals that were present across the bands. I don't remember ever listening to any of the "ham" bands during that time.



National NC-88 Receiver

But ham radio was in my blood; my father, in his youth, held the call 2CXX, and my Uncle had traveled demonstrating **Grebe** radios around the country.



This is today's #6 alkaline battery. They are about 6.6 " tall. 50's batteries were carbon-zinc and cost 85¢. Today you'll pay \$15!

In seventh grade, a kid by the See: **Novice Days** on page 5

Bob's Tech Talk #26:
by: Bob, AF6C

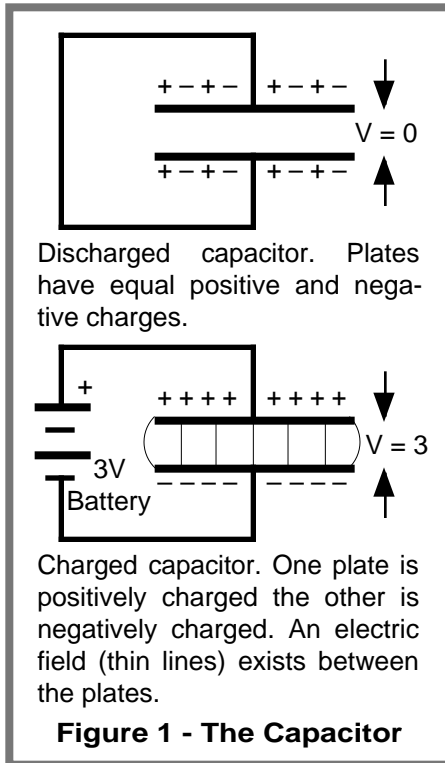
Capacitors - Part I

Last month on the ten-meter net the discussion turned to capacitors, and some of the participants thought it would make a good topic for *TechTalk*. After all, capacitors are found in virtually every electronic component; they play an important part in antennas, power supplies, and tuned circuits, without which radios wouldn't work.

So what is a capacitor, and what does it do? *Capacitance* is one of three basic building blocks of electronic circuits. The others being *resistance* and *inductance*. We've discussed resistance, and ohms law, in prior *TechTalk* articles. Perhaps we'll get to inductance in a future series. We know resistance dissipates electrical energy; briefly, inductance stores electrical energy in a magnetic field and capacitance stores electrical energy in an electric field.

The basic capacitor is made up of two parallel conductive plates separated by a dielectric such as air. Many other dielectric materials can be used and we'll discuss them later. Initially, the two plates have an equal number of free electrons on them (because they are conductive), and there is no electric field between the plates; the capacitor is said to be discharged. When a battery is placed across a capacitor (see Figure 1) a current flows in the circuit as electrons flow into the negative plate and electrons leave the positive plate. This current is limited only by any resistance in the wires and battery. As the electrons flow in the capacitor, the difference in electrons between the negative and positive plates creates an electric field between the plates. When the magnitude of this electric field is equal to the battery voltage, no more current flows and the capacitor is said to be charged. If you were to measure this electric field between the plates by inserting a probe, you would find that

the field varies linearly as you move from one plate to the other. In other words when half way between the plates the field would measure half of the full field, referenced to one of the plates.



The number of electrons that a capacitor can hold is determined by the size of the plates, the dielectric material between the plates and the distance between the plates (the closer the plates the more electrons that the plates can hold.)

Here's some interesting facts: A French scientist named Charles-Augustin Coulomb (1736 – 1806) coined the term Coulomb, which is a measurement of electrical charge (or in other words: a known quantity of electrons!) One Coulomb is the amount of electrons that pass a given point when one ampere is flowing. If you're curious, that equals 6.24 million trillion electrons – a very large number to all but a few politicians! A capacitor that will hold one Coulomb of charge when one volt is placed across it has a capacitance of one *farad*, named for British scientist Michael Faraday (1791 – 1867). One farad is a heck of a lot of ca-

pacitance (see sidebar) so capacitors in normal use are marked as microfarads, μf (one-millionth of a farad) or picofarads, pf (one-millionth of a microfarad).

Back in the earlier days of electronics, when *Hertz* were known as *megacycles-per-second* (mcs), or just megacycles for short, capacitors were known as *condensers*, and picofarads were called *micromicrofarads* ($\mu\mu\text{f}$). These terms have all but disappeared, but you may hear old-timers refer to them or see them used in older books. A heated discussion about using "condenser" happened in the late fifties. Many complained that it was an air-conditioning component and not an electrical component!

The capacitance of a capacitor can be calculated from its physical properties. The equation for a two plate capacitor is straightforward:

$$C = \frac{0.225KA}{d}$$

where:

- C = capacitance in picofarads
- K = dielectric constant
- A = the area of one plate
- d = distance between plates

The dielectric constant depends upon the material in between the plates. Vacuum has a dielectric constant of one by definition. Air's dielectric constant is also around one (1.0006). Paper used to be a very common dielectric, but has been replaced with polyester film or similar materials. Other materials provide K in the range of 1 to 7,500 as shown in Table 1. The

Material	K	V/mil*
Free Space	1.0000	75
Air	1.0006	75
Paper	2.5	500
Polyester Film	3.0	1,000
Transformer Oil	4.0	400
Mica	5.0	5,000
Glass	6.0	3,000
Ceramic (BST)	7,500.0	75

*1 mil = 0.001 inch

Table 1 – Dielectric Properties

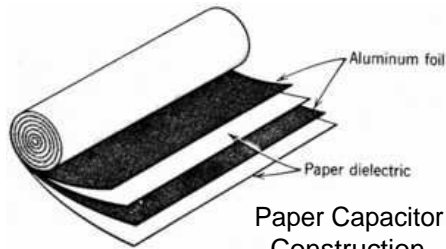
dielectric also acts as an insulator. Some materials resist voltage breakdown better than others, also as shown in Table one. A third consideration for a dielectric is how it varies with external parameters such as temperature, frequency, etc. While stability might not be critical in a power supply, it is in a frequency determining circuit such as an oscillator, a filter or even an IF amplifier. Sometimes, however, a capacitor utilizing a dielectric that changes with temperature can be used to compensate for other components that drift with temperature in a frequency determining circuit. Some ceramic capacitors are made with known temperature coefficients for just this purpose.

Capacitor construction varies; often there are multiple alternating plates. This allows for higher capacitance since both sides of the plates are active areas. Capacitors may also be made of two long strips of foil alternating with two strips of dielectric material and then rolled into a cylinder (See Figure 2). Numerous other types of construction exist, each with its own benefits and drawbacks.

One type of capacitor that is very common is the electrolytic capacitor. It has very high capacitance for its size, and is normally a polarized device. The circuit it is used in must be designed so that the capacitor terminal marked positive is always more positive than the negative terminal.

The electrolytic capacitor is made up of two aluminum plates with an absorbent material between them. The material is saturated with a conductive liquid or gel called an electrolyte. The capacitor is then *formed* during manufacturing by applying a current limited voltage across the two plates. The current that initially flows creates a very thin layer of aluminum oxide at the positive aluminum plate. Aluminum oxide is a very good insulator. The aluminum plates are usually rolled and placed in an aluminum

can that also houses the electrolyte. Electrolytic capacitors may also be made using tantalum instead of aluminum. Tantalum provides an even higher capacitance per unit volume, but is more restricted in its voltage range. One of the major uses of electrolytic capacitors is as filters in power supplies and power leads. They are also useful as coupling capacitors at lower frequencies.



Paper Capacitor Construction
Figure 2

Electrolytic capacitors can be easily damaged by applying excessive voltage or voltage of the wrong polarity. Reverse polarity will go unnoticed at first, with some reduction in capacitance until the oxide plating is used up. The electrolyte will then heat and give off gas possibly causing the capacitor to explode. Most electrolytic capacitors have a vent system to let the gas escape, but the vent is initially sealed and when it opens it is often accompanied by a bang that would make many firecrackers proud! The electrolytic material is corrosive and should be cleaned up quickly if it leaks to prevent further damage. We'll discuss electrolytic capacitors further in an upcoming *TechTalk*. Next month we'll continue our discussion of capacitors.

To review recent issues of the *TechTalk* column go to our website at: <http://www.w6ze.org>

73,
de AF6C

Farad Capacitors!!!

Capacitors in the Farad range are now available! These low voltage capacitors are used primarily for memory backup. The Panasonic "Gold Series" are sold by **Digi-Key**.

Novice Days from page 3.

name of Todd was studying for his ham license and leant me an *ARRL License Manual*. I had also found a 1940 *ARRL Handbook* in my dad's library. My real start began, however, when I visited George, W2CJY, the father of a girl I attended school with. Unfamiliar with the lingo, I really expected to be led to a rundown wooden hut in the backyard, but George's "shack" was a spare bedroom filled with very impressive equipment. Single sideband was quite new in the fifties but George was a pioneer using a Central Electronics 20A exciter, an HQ-129X receiver, and a homebrew linear amplifier in a seven-foot relay rack that dwarfed the other equipment. George made a few contacts, but I was most impressed with the linear. It had a glass window in front of the mercury vapor rectifiers (816's), so you could watch them glow bright blue as he talked. An another window, screened in, that showed the three power tubes with their plates glowing a dull red on voice peaks. I was hooked!

That afternoon I started studying code and theory in earnest. I ordered parts and built a code practice oscillator using one of the first commercially available transistors, the Raytheon CK722. I believe the circuit came out of *Popular Electronics*. By early spring of 1959 I was ready to take my novice test. That day I had ridden my bicycle to Arrow Electronics in Mineola, (a good distance for a young boy!) and just happened to ask the guy behind the counter if he knew of someone who could give me my novice test. He volunteered and the next day I sent to the FCC for the paperwork and test. The day of the test finally came and my dad drove me into Mineola. The gentleman in the store took me back into his office, opened an Ameco code record and, administered the code portion of the test. After that success, the theory part was easy; I remember

See: **Novice Days** on page 7

OCARC - W6ZE

Statement of Receipts and Disbursements with Cash Balances
For the Twelve Months Ending December 31, 2003

Receipts:

Uncategorized	\$0.00
Auction In	1149.76
Badge Income	13.50
BADGE MAILING	2.00
Donation - W6NGO Trust Fund	400.00
Dues, Family	120.00
Dues, Membership	777.00
Equip Sales	15.47
Interest	16.81
Raffle Reg Income	<u>283.00</u>

Total Receipts

\$2,777.54

Disbursements:

Auction Expense	952.88
Auction Out	60.00
Donation - OC Fair	50.00
Donation- OTHER	100.00
Field Day Food	110.00
Field Day Other	44.23
Insurance Expense	333.44
Mailing Letter	1.85
Miscellaneous Expense	21.00
PO Box Rental	38.00
Program Spkr Exp	18.88
Raffle Expense	348.90
RF Postage Expense	74.00
RF Printing Expense	28.45
Supplies	74.43
Web Page Exp	334.40
World Radio	<u>65.00</u>

Total Disbursements

\$2,655.46

NET

\$122.08

Cash Beginning Balance - January 1, 2003

Checking Account	\$2,095.08
Saving Account	<u>\$25.00</u>

Cash - Beginning Balance

\$2,120.08

Cash Ending Balance - December 31, 2003

Checking Account	\$212.85
Saving Account	<u>\$2,029.31</u>

Cash - Ending Balance

\$2,242.16



**Audit on January 10, 2004
by AF6C, WA6PFA,
KD6DWH, and KG6QVY**

Robert W. Eckweiler

Bob Eckweiler, AF6C
(Audit Committee)

Tom Thomas

Elmer Thomas, WA6PFA
(Audit Committee)

Robert Buss

Bob Buss, KD6BWH
(Incoming Treasurer)

Steven Sam

Stephen Sam, KG6QVY
(Outgoing Treasurer)

(Signed original of audit report is on file with the current Treasurer.)

Novice Days from page 5

drawing a schematic as part of the test. With the paperwork submitted, came the long wait for a license and my own call!

For the next few weeks schoolwork took priority as the school year came to an end. By then my thoughts turned to putting together a station. I had successfully built two PACO kits, an oscilloscope and a signal generator in the previous year, so my dad bought me a Heathkit DX-40 novice transmitter as an early birthday present. The DX-40 ran 75 watts CW and was crystal controlled. However, it could also be used with the VF-1 VFO by Heath. It also had built-in screen-grid modulation for AM. I soon had the transmitter working, brightly lighting a 60W light bulb that was the poor man's dummy load. I also put up a 40 meter dipole from the house to an aluminum pole in the backyard. It was up about 20' and broke many of today's antenna installation guidelines. I spent a lot of time listening on the novice bands while I waited.



The Heathkit DX-40

Still no license nor call in the mail. It was common in those days to find out your call before the license actually arrived by the onslaught of advertising from various amateur establishments that got your information from the FCC. I doubt any new ham considered it junk mail! Many new hams first learned their call from World Radio. Along with a catalog, World Radio would send a plastic display with your new call! What I didn't know was that my mom had been intercepting the mail so I'd get my license first. It

arrived on July 1st, 1959 just as we were leaving on a vacation. C. B. Plummer was signing the FCC licenses in those days. I was officially WV2GUQ; but getting on the air had to wait until we got back from vacation.

Next month: On the air and struggling for the General Class license.

AARL Jr. RADIO CLUB: **A Ham Radio Contest for kids**

The Anne Arundel Radio Club (AARL) near Baltimore, MD came up with a great idea. They started a second club, just for kids called AARL Jr. callsign KI3DS!

As one of their activities, they are sponsoring a radio contest to be held on the first weekend in April (April 3rd and 4th).

"This contest has a slight twist in that it's designed primarily for kids (with or without a license – similar to 'ARRL Kid's Day') although adults are encouraged to participate. A logging program has been developed for this specific contest and is available for free. We've combined various features from several operating events and contests along with the old ARRL 'Novice Roundup', said Bob Rose, AA3RR, AARL member. "This contest is open to kids in the US, Canada and other countries. Licensed adults may participate in the contest. But more importantly, licensed adults and amateur radio clubs are encouraged to help kids get on the air, make contacts and have fun."

To find out more about the contest, check out their website at:

<http://www.qsl.net/ki3ds>

Thanks to Bob, AA3RR via email.



General Meeting Minutes:

January 16, 2004

The meeting started promptly at 7:00 PM with the Pledge of Allegiance. Following that, an excellent program on J-pole antennas was presented by our Vice President Ken Konechy, W6HHC. Anyone who missed the program or missed getting a handout of Ken's presentation may contact Ken for a copy.

After a motion by Lowell, KQ6JD and a second by Ken, W6HHC the minutes of the last Board meeting were accepted as published in the RF.

Treasurer's report The audit was completed and the club has \$2,223.43 in the accounts.

COMMITTEE REPORTS:

New Members: Neil Cavanagh, KG6TGG was welcomed as a new member. Welcome again Neil!!

Audit Committee Chair Bob, AF6C reported that the audit papers have been submitted to the treasurer.

OLD BUSINESS: Bob, AF6C is still looking for someone to print the club QSL cards

NEW BUSINESS: President Steve, KB1GZ is looking for a time to check out possible new sites for club Field Day activities. Discussion was held on this subject with no decisions made.

Program manager and Vice President Ken, W6HHC has programs for March and May 2004 already set. He is open to suggestions from the members for other programs.

Meeting adjourned at 8:40 PM Good of the club held after the meeting.

Respectfully submitted:
Rich Helmick, KE6WWK
Secretary

Feb. Board Meeting Minutes

Board Meeting February 7, 2004

The meeting was called to order at 8:20 AM. Minutes of the last Board meeting were read and approved. The Treasurer reported: \$2001.20 in savings and \$272.42 in checking.

Frank Smith, WA6VKZ, was recognized as being in attendance.

Old Business: Board members who need to be on the signature card for the bank accounts will meet today at the bank to update that form.

Good of the Club: Frank, WA6VKZ, suggested an idea on how to draw more members into the club. He suggested that as a club activity, members get together in teams of about four, and each team randomly draw a location that has been chosen from the Southern California area. The teams would then go to the location

and wait for a message from another team to be sent. After receiving the message, the receiving team would then send the message on to the next team. All bands that can be used would be used to get the message passed. This exercise would get more club HAMS in to the field and generate interest from other HAMS and the community.

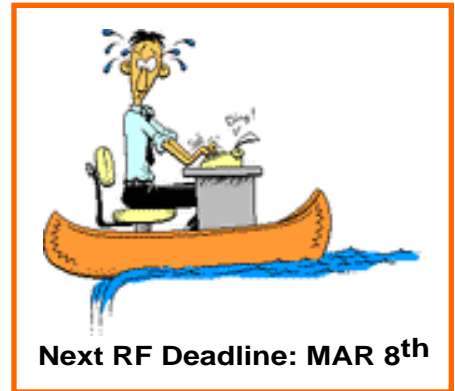
Committee Reports: Membership Chairman, Chris Winter, W6KFW reported that 13 of the 54 club members have renewed their membership so far this year.

Programs: Program Chairman and club Vice President Ken Konechy W6HHC reported he has five programs scheduled so far and is receptive to more ideas from the members. Future programs include *HAMing* in Africa, DXing, DX beacons, American Morse code and Comet antennas. As part of one of the programs, Ken will be emailing the members regarding how many are using log in software and what program they are using.

New Business: President Steve Brody KB1GZ, will be asking the members for a volunteer or two to head up the field day activities. It was discussed and decided the club would use the same park as last year for this year's field day. Ken W6HHC will go ahead with making the reservations for the next field day with the City of Santa Ana.

Meeting adjourned at 8:50 AM

Respectfully Submitted,
Rich Helmick, KE6WWK



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

First Class Mail

***Time Dated Material.
Please Expedite!!***