



RF



ORANGE COUNTY AMATEUR RADIO CLUB, INC.

VOL. XLV NO. 5

P.O. BOX 3454, TUSTIN, CA 92781-3454

MAY 2004

THE PREZ SEZ:



We may have an unexpected treat this Field Day. I spoke with Art Goddard and he told me that he

and Huell Howser will be making the rounds to some Field Day sites. Huell apparently has an interest in the history of amateur radio. Although there are no guarantees he will come to our site, it remains a possibility.

Also, if you haven't done so, please e-mail the White House with a brief message voicing concern over the BPL. One other thing you should know. The White House e-mail system will ask whether or not you want a confirmation, say yes. If you answer no, your e-mail will not go through. It is their way of screening our the spam.

For those of us that have an interest, I found a radio club website that had built and sold seismograph kits. I sent an email inquiring if the kits are still available. The club is the New Providence ARA, located in New Jersey. Their call is N2XJ and if you go to the ARRL website and search for clubs under zip code 07974, they will come up. Their website is <http://www.qsl.net/nparc>. If you add /seismograph.htm, it will bring up images of the populated board.

73, de Steve KB1GZ

FCC TO SPEAK LOCALLY:

On Saturday, May 29th, at 3PM at Carrows Restaurant off Chapman Ave, in Orange. Catherine Deaton and Steve Pearce of the (L.A.) Cerritos FCC office will be speaking at the Fam-Comm Repeater Association's monthly meeting.

They will be discussing what the FCC is doing regarding enforcement in general and how Ham Radio has changed in the last 30 years and what they are doing today to keep up with the times. There will be a question/answer period at the end.

Come and listen in on this interesting forum. All are welcome and invited to attend, but please remember, there is a format and we will keep it strictly within this format. More info on our website:

<http://www.fam-comm.org/>

and then go to events.

73, Mark - KB6SRT

Meeting Notice

Due to recent security changes at our meeting place, you may find the door locked if you arrive at the meeting late. This is an automatic lock and the club has no control over it. Please give W6ZE a call on 146.55 MHz, and someone will come down and let you in. Additional methods for our radioless friends are being studied.

MAY PROGRAM:

The May program will be "American Morse Code is Still Alive" by Kathy Stanfill, KS6CW, and Tom Van-Buskirk, K6TV, from the Morse Telegraph Club. Before the commonly used International Morse Code there was the American Morse Code. Tom will give an overview and history of telegraph in the US, as well as a demo of American Morse code. He will be bringing along some of the equipment that was used for landline telegraph.

The next regular meeting will be:

**Friday, May 21st 2004
@ 7:00 PM**

We will be meeting on the 2nd floor in the east bldg.

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**Next Club Breakfast &
Open Board Meeting
Sat. June 5th 2004**

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

P.O. Box 3454, Tustin, CA 92781



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Monthly Events:

General Meeting:

Third Friday of the Month
At 7:00 PM

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):

7.086 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.

A Ham Radio Moment in Time

By Steve, KB1GZ

As years pass, it is funny how things you think you remember, may not be accurate. It is also peculiar how you do remember some issues even after twenty years, as though they happened five minutes ago. This article describes both types of remembrances.

When I was ten or twelve, I recall reading an article in *Life* or *Post* magazine about a young ham 15-16 years old, living in the South. He had received a Morse code call from a sinking ship in the Atlantic. For some reason, he was the first to receive the signal and had the best contact. He did report the incident to the Coast Guard and very much wanted to turn the communications over to someone else. I can only presume he was very concerned and probably very scared.

The Coast Guard though would not let him do that (I don't know the reason why). He stayed with the ship for two or three days and was eventually cited as a hero and written up in one of the magazines. Ham radio received a very positive accounting. That was my first introduction to ham radio, but I knew that I would have to wait for a later date to do something about a license (actually back then I had no idea a license was needed).

The later date occurred about 8-10 years later when I was visiting a friend living in Salt Lake City, and his kid brother was operating a Heathkit HW-101, talking with someone in Australia (I think). I was hooked and needed to obtain a license, but circumstances again were such that I would still have to wait another 6-8 years. I did get the Novice a year or two after Dorie (now WB1CDD) and I were married in 1971.

Thinking back, I realize that the ham radio hook was secure, but my memory of the supporting causes are not clear.

Now, compare the following to the previous account. Picture this: it was a fine fall day, clear skies, no rain had fallen for more than a week, the leaves were still on the trees, and the temperature was 65 to 70 degrees F. For those of you that might know the road, I was driving north on the Merritt Parkway in Connecticut. The Merritt Parkway was built during the 1930's as part of the old WPA. There are two lanes in both directions and at that time the roads that were built were not banked in turns. The number of cars in both directions were few, in fact, there was only one car behind me, and none in front that I could see.

Ok, the stage is set. For no apparent reason that I can offer, I looked into my review mirror and saw a large car, maybe a Caddy, or Olds leave the roadway and fly up into the air. As it did so, it rolled onto its side changing direction heading for the on coming traffic. It would be an understatement to say that I was amazed to see this, but I did keep self control, got onto my trusty Heathkit two-meter radio and, made contact with a friend who reported the incident to the police.

For a week afterwards, I checked the local newspapers to learn the outcome, but found no report. Approximately, three to four weeks later I did learn that my call saved the other drivers life, because he might have died of severe bleeding and shock if an ambulance was not dispatched as the incident was actually still in progress of occurring.

It still is a nice and safe feeling to have a ham radio in the car, especially after reading the accounts of telephone problems during the World Trade Center attack.

Some of us have had similar experiences, or one that was funny or one that we can all learn from - please share it with us. I for one would like to read about it.

Radio Row, New York:

by Bob, AF6C:

If you were to stand at the entrance to The New York Stock Exchange in the Financial District of Lower Manhattan and look west along Wall Street, you'd see an interesting site. It's the Trinity Church, a gothic structure that seems so out of place among the tall city buildings. The church sits at the junction of Wall Street and Broadway. A short walk up Broadway, about the length of three football fields, brings you to a cross street. To the east the street is named Maiden Lane; to the west it's named Cortlandt St. Cortlandt St. runs for just one city block to Church Street. There it stops and beyond is a large pit. This is the site of New York's former World Trade Center complex, destroyed in the terror actions of September 11th 2001. However, Cortlandt St. didn't always end there. It used to continue all the way to West St. by the docks of the Hudson River. It also used to be a haven for radio enthusiasts, audiophiles, electronic hobbyists and TV and radio repairmen. Cortlandt Street was the spine of an industry containing more than fifty street-level electronics stores, and many more related businesses on the floors above street level.

From the 30's until the mid 60's the two city blocks of Cortlandt Street between Greenwich and West streets were lined on both sides with stores, and except for a few coffee shops and small hotels, just about every store sold electronic parts and paraphernalia. It was a ham's haven and had acquired the almost universal name of *Radio Row*. As Radio Row grew, it expanded into neighboring streets. Streets named Liberty, Dey, Vesey, Fulton, Greenwich all handled the overflow of electronics stores. Even West Broadway, where it merged with Greenwich, about two blocks north of Cortlandt St. was the site

See: **Cortlandt St.** on page 6

Power Factor in Capacitors:

Now that you're an expert on capacitors, let's talk about *power factor* as it relates to capacitors. The capacitors we've talked about in previous columns were considered "perfect" or "ideal" capacitors. Unfortunately, in the real world capacitors also have inductance and resistance associated with them. The inductance is due to the leads and construction and has little effect until you get to the higher frequencies; so we will ignore it. The series resistance is due mostly to the dielectric material. The lead resistance is small; for mica, ceramic and polymer capacitors the dielectric resistance is also small, but for electrolytic capacitors the resistance caused by the dielectric can be appreciable.

One handy piece of test equipment that's been around my shack for many years is a Heathkit IT-11 capacitor checker. This checker uses an AC Wheatstone bridge to measure an unknown capacitance by comparing it to a known standard. Figure one shows the basic schematic of the bridge when used to measure an electrolytic capacitor. The capacitor C_x is the one to be measured. The standard capacitor is a high quality $2\mu\text{f}$ polymer capacitor and is shown as C_s . The bridge is excited by a low voltage 60 cycle AC signal. The detector, not shown, is a "magic eye tube" preceded by an amplifier and rectifier. When the "eye tube circuit" has an AC signal present, the eye closes. To measure a capacitance, set R14 to minimum resistance and adjust R13 until the eye opens as far as possible. The capacitance can then be read directly from the scale on R13. The ratio of the unknown capacitance to the standard capacitance is the same as the ratio between the two parts of R13. (When measuring large value electrolytics, a resistor is added to one leg of R13 to extend the ratio).

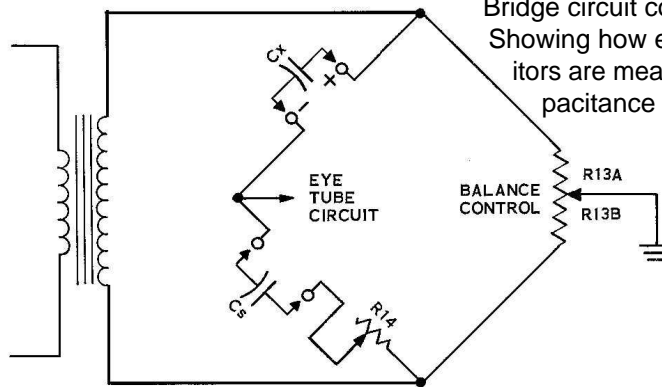


Figure 1: Heathkit IT-11 Capacitor Bridge circuit concept schematic Showing how electrolytic capacitors are measured for their capacitance and power factor.

Now that the capacitance is known, the electrolytic can be checked for power factor. This is accomplished by adjusting R14. R14 further balances the bridge by balancing any series resistance in the unknown capacitor. It should be increased slowly until the eye tube reaches its maximum opening. The power factor as a percentage can then be read directly from the scale on R14. The scale is calibrated for a frequency of 60 Hz, but corrections can be made easily if an external excitation voltage of a different frequency is used.

So what have we done here? And how does that relate to what we've been learning? The definition of the power factor of a capacitor is just the resistance divided by the reactance.

$$\% P.F. = \frac{R}{X_C}$$

$$= 2\pi fRC$$

(remembering that: $X_C = \frac{1}{2\pi fC}$)

Power factor has no actual units (it's ohms / ohms). It may be expressed as a percentage, where 100% is when the resistance equals the reactance – a very bad capacitor indeed! Some capacitor manufacturers no longer use power factor, but specify the *effective series resistance* (ESR) instead.

What's bad about a capacitor with high power factor? Last month we talked about power in a circuit with a capacitor and resistor in

series. When the resistance is zero and only capacitive reactance is present then no power is dissipated. However, if there is series resistance internal to the capacitor then that resistance does dissipate power, commonly in the form of heat. Electrolytics tend to age and the electrolyte may dry out or change from the environment it's experienced. This change will not only affect the capacitance, it tends to also increase the capacitor's power factor.

Heat from a high power factor will accelerate the demise of electrolytic capacitors. Older large electrolytic capacitors used as filters in power supplies at 60 Hz or 120 Hz tend to fail by a combination of high series resistance and a lowering of capacitance. Their big size helps dissipate heat and they also have a built-in vent in case the pressure inside gets too high. Today's miniature electrolytic capacitors have vents too; they also have scribed lines that will open under explosive pressure. These newer capacitors are significantly smaller and by sheer volume cannot dissipate nearly the heat of older capacitors. Luckily, the design has improved over the years, and they tend to have lower ESR. But they can fail with a startling "bang"

Power Factor in Electrical Devices:

Power factor also comes into play in electric circuits. Any load you plug into an AC outlet might appear as either an inductor or ca-

capacitor in series with a resistance to the generator back wherever the power is being generated. While we're talking about capacitors, inductive loads (motors especially) are the more common type of load encountered.

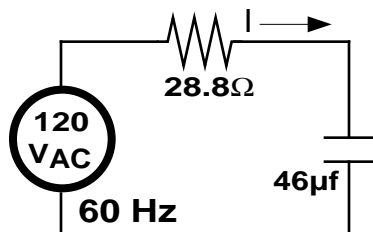


Figure 2 – Circuit for our example

Figure two shows a simple RC load circuit that might appear across your AC line. It's composed of a 28.8 ohm resistive load in series with a 46 μf capacitor. At 60 Hz the capacitor has a capacitive reactance of:

$$X_C = \frac{1}{2\pi fC}$$

$$= \frac{1,000,000}{2 \cdot 3.1416 \cdot 60 \cdot 47} = 57.6\Omega$$

The total impedance of the circuit is:

$$Z = \sqrt{R^2 + X_C^2}$$

$$= \sqrt{28.8^2 + 57.6^2}$$

$$= \sqrt{829.44 + 3317.76}$$

$$= 64.4\Omega$$

The series current is then (from Ohm's law):

$$I = \frac{E}{Z} = \frac{120}{64.4} = 1.86 \text{ amps}$$

Let's look at the power in each component. For the 28.8 Ω resistor:

$$P_R = I^2 R = 1.86^2 \cdot 28.8$$

$$= 100 \text{ watts}$$

And for the capacitor, which you will recall from last month stores power from the circuit for part of each cycle and returns it back to the circuit for the remainder of the cycle (and thus does not dissipate

power), we get:

$$P_C = I^2 X_C = 1.86^2 \cdot 57.6$$

$$= 200 \text{ var}$$

Since the capacitor cannot dissipate power, engineers use the term **var** for *volt-amperes reactive* to show that it is reactive power. Remember that the voltage across the resistor is in phase with the current, but the voltage across the capacitor is lagging the current by 90°.

The total power supplied from the AC line can be determined by:

$$P_{VA} = I^2 Z = 1.86^2 \cdot 64.4$$

$$= 223.6 \text{ VA}$$

Since this power incorporates both the real and reactive components, it is given the term VA which stands for *volt-amperes*. You'll see a lot of appliances marked with VA instead of watts, especially devices with motors. Figure 3 shows the relationship between the power, var and VA given in the above example.

Power factor (PF) in AC circuits is sometimes expressed as an angle. That angle is shown in figure 3. It is more often given as a number between 1 and 0, which is just the cosine of the angle. A PF of one says all the power is being delivered to the resistance.

In the example we're effectively using only 100 watts. But the power company must deliver the full 1.86 amps of current to produce that

power. Many new appliances have devices built in that correct the power factor to save energy and add to the product's reliability. While our example used capacitance, a majority of the high PF devices are inductive. The power company can correct the PF to some extent by placing capacitors in the line. You can often spot these large capacitors on high voltage power poles.

This pretty much concludes capacitors and power factor. I haven't decided on a topic for next month. Any ideas? I have one, and it will be a change of pace for this series. Till next month, I'll keep you guessing.

Bob, AF6C

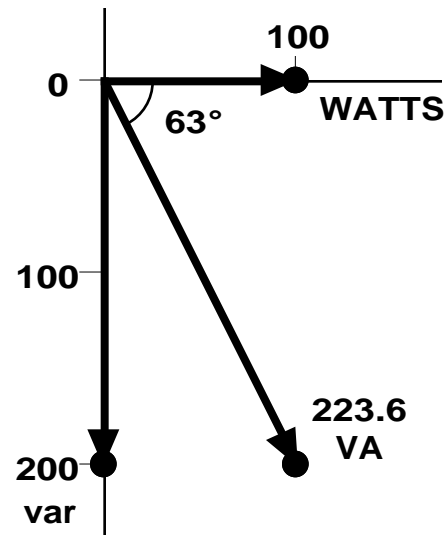


Figure 3: Point 'A' is the power in the resistor. 'B' is the power in the capacitor and 'C' is the overall circuit power

APRIL MEETING PICTURE - Tnx W6HHC



Arnie, N6HC, talks on ARRL's *Log Book of the World* program.

Cortlandt St. from page 3

of two very well known radio stores of the 50's era.



Looking West on Wall Street at the Trinity Church

A Bit of History:

Radio was still in its infancy when in 1921 Henry Schneck opened City Radio on Cortlandt St. The area quickly blossomed into New York City's (and possibly the nation's) center for electronics. A majority of the four to six story buildings, with their narrow street fronts, housed stores selling electronic components, and lot's of vacuum tubes. The upper floors began collecting small radio and audio companies who could literally go downstairs to purchase almost any type of part they needed. Upper floors were also used as warehouses for stock. Many major electronic firms started on or near Cortlandt St. Companies like Arrow and Avnet Electronics have roots there.

During The Depression, hams, who could still afford to, purchased parts for their stations there as little manufactured equipment was available. As the economy recovered and automobiles started to sport radios, auto radio stores opened on Radio Row. Kits to turn bumpers into car radio antennas

were sold. Audio equipment stores, and speaker and cabinet makers opened as the Hi-fi market began to grow. Ship radio operators in port at the nearby docks frequented the area and bought and sold equipment adding an international flavor to the products.

World War II brought the growth of Radio Row to a temporary halt as hams were silenced and rationing made parts hard to come by. The radio industry was focusing almost all its resources into the war effort. However, World War II was also a large contributor to the later growth of Radio Row. After the war ended, the government released hoards of military electronics onto the surplus market. The stores of Radio Row received tons of war surplus electronics including ARC-5 radios, J-38 keys, transmitting and special purpose tubes, etc. Prices were just pennies on the dollar of what this equipment cost the government. Hams and electronic enthusiasts came in mass to purchase the equipment. The competition was fierce among store owners. Equipment was stacked up outside along the sidewalk and sellers were hawking their products. Prices seemed to decrease as one shopped from Greenwich Street down towards the docks. A J-38 key could be found for about a dollar, still sealed in its box. Used J-38s were in the 25¢ to 50¢ range. [A corroded one at the TRW swap meet had a price of \$50 last month -ed.] ARC-5 transmitters were going for between \$5 and \$10 in good condition; add a few bucks more for a new one, still sealed in its box. Surplus tubes were very inexpensive. One could buy a full set of four tubes for an ARC 5 for under a dollar. Two of those tubes were 1625's which are a 12V filament version of the famous 807. The set also included a 1626 and a 1629. The 1629 is one of those "Magic Eye" tubes that recently have begun to command high prices. Radio magazines and books were published giving details on how to modify the rugged surplus

equipment onto the ham bands. The postwar TV industry was growing quickly and many of the modifications discussed a new technology for radio amateurs, TVI and its prevention.

As the postwar electronics growth continued, many of the stores took on specialties such as TV sales and repair, test equipment, audio Hi-fi, amateur radio equipment, military surplus and even appliances. These weren't like the stores of today; parts were as readily available as finished products, and the stores were staffed with knowledgeable help. Clerks could recommend a part or diagnose a problem. Enthusiasts gathered inside the stores and shared stories and information. The window front of each store was jammed with items to interest customers; each item was marked with a description and price. The price of surplus items was often negotiable. The ARRL books of those days were featured in many of the stores. The neighborhood seemed to carry the musty odor of that yellowish clear antifungal coating used to protect the military electronics of the era. Yes, it was *Ham Heaven!*

Cortlandt Street also boasted at least three places a hungry shopper could have a meal. There was the Terminal Coffee Shop at 83 Cortlandt Street, next door to Terminal Radio; Ben and Joe's Luncheonette on the other side of Terminal Radio and MacInnes Restaurant one block further east on Cortlandt Street next to Leonard Radio. On nearby Greenwich Street was a barber shop next door to a store that was named "Radio Row". The barber shop had a heavy trade from all the men who told their wives that they were going out for a haircut, and spent much of that time browsing in the stores. See the map on page 8.

Next month: The Death of Radio Row.

de AF6C

General Meeting Minutes:

April 16, 2004

President Steve Brody, KB1GZ, called the meeting to order at 7:02 PM.

After the pledge of allegiance, visitors were asked to introduce themselves. There were no visitors. Ken Konechy, W6HHC vice president and program chair, introduced Arnie Shatz, N6HC, who presented an interesting program on the ARRL *Logbook of the World*. This can be a no cost to user program for those who access the ARRL web site.

Roll was taken and there were 7 board members present. In total there were 16 members at the meeting.

Treasurer Bob Buss, KD6BWH reported that the club has \$2,628.52 in the accounts. Membership chairman Chris Winter, W6KFW reported that there are 41 paid members.

Committee reports; Field Day committee chair Bob Eckweiler, AF6C, is still obtaining commitments for band captains. Ken, W6HHC, reported that the attempt to get permission from the city of Santa Ana for use of the park is going along nicely. David Mofford, W7KTS, has volunteered to be in charge of food for field day. Once again it was reported that the club secretary would be sending a letter to the residents closest to the park regarding field day activities. Ken, W6HHC, reported that next months program would be on American Morse Code. The June program will be presented by Ken and will be about field days past. In the future Don Darling, K6RIX, from OCCARO will present a program about the dismantling of the KFI tower.

OLD BUSINESS:

President Steve discussed the May 27 "Antennas in the Park" event. Members showed little interest.

NEW BUSINESS:

Bob, AF6C said he would like to see the club hold a social event to take the place of a regular meeting, and invite past members. Ken, W6HHC stated this event would be held in September 2004.

Bob, AF6C, informed the group that he would be bringing the laminating machine to next month's meeting so members can laminate their license if they want to.

Ken, W6HHC, reported that the Baker to Vegas run is next weekend and several HAMS from the club are assisting Orange PD and Cypress PD with communication.

GOOD OF THE CLUB:

Cindy Hughes, KC6OPI, reported that her daughter and club member, April, KG6CJI will be graduating from a US Army school soon and then be shipped to Virginia for a short time. After the stay in Virginia April will go to Iraq. Cindy had a card for April and asked that the members sign it.

The meeting concluded at 8:23 PM

We want to thank Doris, WB1CDD, for filling in for Activities Chair Carl Schmid, WA6BSV, and keeping everybody's money and tickets in order.

Respectfully Submitted

Rich Helmick
KE6WWK
Club Secretary

GET YOUR FCC LICENSE LAMINATED AT THE MAY MEETING!

OCARC will once again offer to laminate a copy of your FCC license in one of our badge pouches. Fasten it on the same clip with your badge and it'll always be handy.

Cost is \$1.00. Bring a clean untrimmed Xerox copy of your license to the May 21 OCARC meeting.

Board Meeting Minutes:

May 1, 2004

Due to travel and illness among the board members, no board meeting was held in May.

Upcoming 2-Meter Foxhunt

The next southern California on-foot foxhunt will be Saturday, May 22, at Tri-City Park in Placentia. The hunt is open to anyone of any age. There is no charge for participation, and parking is free (but limited). No experience in needed.

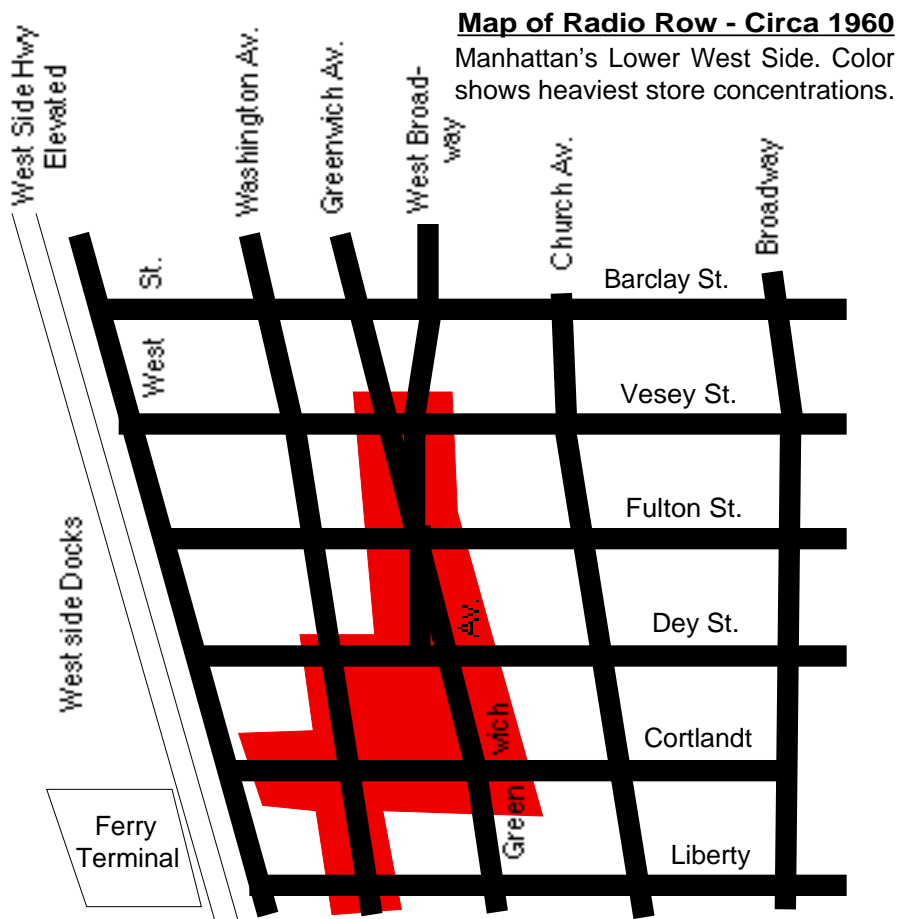
If you are a beginner, there will be some practice two-meter fox transmitters just for you. A limited amount of radio direction finding gear will be available for loan. Experts will be on hand to teach you the basic techniques of on-foot direction-finding. For advanced radio-orientees, there will be a 5-fox two-meter course of about the same length as typical national championship courses. There won't be lots of hills for endurance training like there were in Griffith Park, but you will still have the challenge of planning an efficient route and performing RDF on the run. An optional 80-meter fox transmitter will also be on the air.

Practice transmitters will go on the air around 11:30 AM, and the main multiple-fox hunt will begin soon thereafter. You may start the course at any time before 1:30 PM. The Tri-City Park entrance is at the corner of North Kraemer Boulevard and East Golden Avenue in Placentia. The hunt will be in reserved picnic shelters at the south end of the lake.

Talk-in is on the K6QEJ repeater, 146.97(-) MHz, PL 136.5. For further information go to:

<http://www.homingin.com>

Tnx to: Joe Moell KØOV



Upcoming 3 - Day No-Code Technician License Class

Classes:

May 21 (Fri) 6:30 PM – 10:00 PM
 May 22 (Sat) 8:00 AM – 8:00 PM
 May 23 (Sun) 8:00 AM – 3:00 PM

FCC Exam:

May 23 (Sun) 4:00 PM

Cost: \$50.00

Contact: David Mofford, W7KTS,
 (714) 285-0693 (home)
 (714) 665-8000 (work)
 (714) 785-1760 (Mobile)

Hurry – Time is short!



Next RF Deadline: June 7th

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

First Class Mail

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