



The PROPAGATOR

July, 2000

The Monthly Newsletter of South Orange Amateur Radio Association

SOARA's Field Day 2000 a Great Success

by Mike Mullard, KF6HVO

Now that Gilleran Park is again quiet, and we've all caught our breath, I want to take a few moments to recap Field Day 2000. I think this event will go down in SOARA history as the smoothest running Field Day in recent memory. All the antennas went up and down without a hitch. There was no damage to any equipment, nor were there any injuries. The Field Day angels continue to watch over SOARA.

The appointment of a Safety Officer to manage setup and take-down worked beautifully. Ray Hutchinson, AE6H, did a superb job in overseeing these operations. Further, Ray was in charge of procuring the park permit for Gilleran as well as all of the publicity and public interface. Also, his wife Debbie, a great graphic artist, created the design for the Field Day T-Shirt. Thanks to you both for your continued assistance and dedication to SOARA and Amateur Radio.

For the first time, we operated with networked PC's using the Windows based logging software *WriteLog 32*. WriteLog, a popular program, is used by many clubs for their contests. The versatility and networkability is what led us to try it. A thousand thanks go to Chris Reed, KB6FYG, who worked his tail off coordinating the network. He spent countless hours reading the manuals, setting up the network, and troubleshooting it during Field Day operations. There were some minor glitches, but they related more to equipment failure and incompatibility than to the software. Thanks also go to Steve Perluss, KR6CE, Heiko and Patty Peschel, AD6OI and

AD6OH, and Jeff Stai, KQ6VQ, who assisted in the project. Now we must compile the statistics and mail them to the ARRL.

A huge thank you goes to Sherry Kornbloom, SOARA's awesome food coordinator, for organizing the meals. Thanks to Roger Kepner, W6SQQ, for a delicious dinner of beef stew, salad, and bread on Saturday night. I am lusting after the camp stove that Roger brought. Ray Flores, KF6ETZ, and his Scouts cooked up a memorable Sunday breakfast, which I hope they repeat next year. Al Way, KC6LNP, fed the hungry masses at lunch on Saturday, and Sherry and Marty Kornbloom provided the cold breakfast Saturday morning during setup. All of you typify the selfless spirit of Amateur Radio.

Heiko, AD6OI, and Marty, W6MAK, are always working behind the scenes assisting others and rarely get the recognition they deserve. Heiko always brings a ton of equipment, and is also responsible for storing and maintaining the beams during the rest of the year. Marty acted as Radio Coordinator and made sure that all of the radios got there on time.

Frank McDonald, KD6WWF, provided the 10 GHz rigs that gain us an extra 100 points. Carmine Fiorello, WK6C, provided the golden arm and slingshot on Friday night to allow us to raise the 40 and 80 meter dipoles. Many thanks to Carmine and the Friday night crew.

Lou and Muriel Parker, KA6BJO and KA6BJP, and their crew of VEs provided FCC testing at the site. Several people took advantage of the opportunity to get their license or to upgrade.

Our younger crew, headed up by James Dickinson, KF6YIJ, and Rich Railton, KF6JHJ, spent a significant amount of time racking up the VHF, 6 meter, and novice

Annual Picnic Scheduled

by Mike Mullard, KF6HVO

Once again SOARA will host our Annual Picnic on August 5, 2000, at Baby Beach in Dana Point Harbor. It will start at 10:00 AM. SOARA will provide hot dogs, hamburgers, and beverages. Please bring a side dish, salad or dessert. There will be games and prizes for the children and lots of fun. All SOARA members and their immediate families are invited.



Driving directions are as follows: Take I-5 South to Pacific Coast Highway/Camino Las Ramblas exit. Proceed into Dana Point. Turn left on Dana Point Harbor Drive. Pass Golden Lantern. After the divided grass median (approximately 2 blocks), turn left into the parking lot. This is the only place in the harbor for swimming. Hopefully there will be signs showing directions. Talk-in on the SOARA 2-Meter repeater.

contacts. Their work added a significant amount to our total score.

Our CW operators were out in full force. Among the intrepid were Carmine, WK6C, Tak, W6SI, Paul, NZ1M, and Jim, AC6XG. Without them our standings would not be nearly as high.

A highlight for me was working PSK31 for almost 3 hours on Sunday morning. When the totals come in, I believe that we will have gained well over 100 contacts on this new and exciting digital HF mode. Hopefully, PSK31 will be a permanent part of every Field Day from now on.

Continued on page 3 — See Field Day
Other supporting members were Phil Pacier, AD6NH, who brought his APRS equipment, Steve Foglio, KF6TVM, Jeff Stai, KQ6VQ, Kirk Antes, KF6EZW, Bob Hunter,

New Members

A hearty welcome to SOARA's newest member:

Francis Columbus WA2KWR

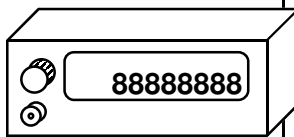


The Way I See It: Understanding Radio Theory Without Math.

Why a Sine Wave?

If you want a single “pure” frequency you must generate a sine wave. With all of the waveforms to choose from why that particular one? A frequency counter will give you the same count whether fed a sine wave, a square wave, a triangular wave or any regularly repeating wave form with the same number of “repeats” per second. The counter doesn’t care about the shape of the wave.

A spectrum analyzer, on the other hand, will give different results for these



different waves. All of the frequency components will be displayed simultaneously. The sine wave, if it is undistorted, will show only the one (fundamental) frequency component. (Does this mean that *any* distortion of a sine wave will show up as additional frequency components? Yes!)

We will address the question of why the sine wave is given the honor of representing a single frequency below. Before going on, let’s look at the behavior of the three basic passive circuit components: the resistor, the inductor and the capacitor. You will recall, I hope, that a resistor will develop a voltage across its two terminals which is directly proportional to the current flowing through it. This is true for D.C. (direct current) and for A.C. (alternating current). Ohm’s Law is a statement of this relationship.

An inductor develops a voltage which is proportional to the rate of change of current and in a direction to oppose that change. It may help to think of the inductor as analogous to a flywheel. A rotational force (torque) is required to either increase or decrease the rate of rotation. If we look at a plot of the current through the inductor (or of

the rotational velocity of the flywheel) then the voltage (torque) is proportional to the slope of the plot.

Finally, consider the capacitor. The voltage across the terminals of a capacitor is proportional to the charge stored on the plates of the capacitor. Current flow is just the rate of change of the charge. Thus if a current is flowing into (through) a capacitor, then the voltage will change at a rate directly proportional to the current. Put another way, the current is proportional to the rate of change of the voltage.

A mechanical analogue to the capacitor would be a spring. Imagine a spiral spring which is stretched by rotating a wheel. The further the wheel is rotated the more the spring is stretched (or compressed) and the more rotational force is applied to the wheel.

The behavior of the inductor and the capacitor both involve rates of change. The two components are complementary in their relationship between voltage and current.

A resonant circuit is a simple arrangement of a capacitor and an inductor. If these two components are connected in parallel (really an anti-resonant circuit - a distinction we will ignore), then at some special frequency the circuit will exhibit a very high impedance. Consider a wave (at that special frequency) impressed across our circuit. The current through the capacitor will be proportional to the rate of change of the voltage. The

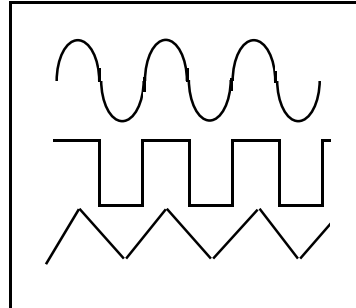
voltage across the inductor will be proportional to the rate of change of the current through the inductor.

We now have a relationship between current and voltage for

both components. The same voltage is applied across both components. At the resonant frequency, the combination presents a very high impedance. This means that for a given voltage, the total current will be very small. But the external supply current is just the sum of the two currents through our components. In order for these two currents to add up to a very small result, they must be

equal and opposite.

Recapping: 1) the voltage across the inductor is proportional to the rate of change of the current; 2) the current through the capacitor is proportional to the rate of change of the voltage; 3) the same voltage is across the inductor and the capacitor; and 4) the two currents are equal and opposite. Therefore, the current through the capacitor is equal to *rate of change* of the current through



the inductor.

Mathematically this has a name (second derivative) but it represents the curvature of a plot. What we need to find is a waveform whose curvature is equal and opposite to its instantaneous value. The sine wave is the *one* waveform which has this property. That is what is special about the sine wave.

The waveform that is obtained by taking the slope of a sine wave is a sine wave 90° out of phase with the original — still a sine wave. If we do this twice, we obtain a sine wave 180° out of phase — an inverted wave relative to the original.

This business of successive relationships which depend on the slope of a waveform arises in other places. Maxwell’s equations which describe electromagnetic propagation exhibit exactly this property. A changing magnetic field will induce an electric field, and a changing electric field will induce a magnetic field. The dependencies are just those we have been discussing — they depend on the rate of change. So the waves which propagate through space are sine waves (or combinations of sine waves).

Jean Baptiste Joseph, Baron de Fourier (born in 1768), while studying heat flow problems, showed that any of a large class of mathematical functions (waveforms) could be completely described as a sum of sine waves of the proper amplitude, frequency and phase. All physically realizable waveforms fall into this class, so all real signals can be described as a sum of individual frequency component waves. This is a very general result which is not confined to radio or electronics.

Year 2000	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
General Meeting 7:00 PM	24	28 PSK31	20 T-hunt	17	15 Auction	19	17	21	18 Hosp.	16 Gordo	20 Auction	No meeting
VEC Testing 5:30 PM	24	28	20	17	15	26			18	18	20	
Propagator Deadline	8	12	4	1	4/29	3	1	5	2	9/30	4	2
Board Meeting	31	3/6	27	24	22	26	24	28	25	23	27	
Spring Auction					15							
ARRL Field Day						24 - 25						
SOARA picnic												
Fall Auction											20	
SOARA Holiday Party												3

July Meeting: Show &

This month's general meeting will be a "Show and Tell". Please bring along any gear (key, keyer, mic, rig, etc or antenna (portable), a picture of an antenna, a book, a qsl card, or anything you enjoy that helps with your ham radio experience!

This is the first time we have tried this, and it's success will depend on you coming along to share with others. Remember some of the items you enjoy others don't even know about. Look forward to an interesting and eclectic (no not electric) meeting in July.

Malcolm, KO6SY

California PRB-1 bill update

California's pending "PRB-1" legislation, Senate Bill 1714, has been voted out of the California Assembly's Local Government Committee on a 9-0 vote. The bill already has passed the California Senate by a 39-0 vote. Once it clears the Appropriations Committee, it requires a vote by the full California Assembly before going to the governor for signature. You can help ensure its passage by contacting your Assembly representative. For more information see <http://www.leginfo.ca.gov/>, click on "Senate Bills" and scroll down to "SB 1714"

Field Day Continued from page 1

KB6ARV, Jay Center, AD6AT, and Dave Drury, KB6CQK. There were too many others to name who assisted by making contacts and in helping to set up and take down equipment.

In summary, our scores were certainly better than last year. The propagation was rocking and rolling with 6 Meter openings as far east as Ontario, Canada, and as far west as Honolulu, Hawaii. Our CW QSO's were up significantly. PSK31 added about 300 total points to our scores. Further, we achieved bonus points in every category except the satellite contact.

All in all, we should do very well this year compared to other clubs in the 3-A class. We are almost assured to win the Orange Section. Hopefully, we will win the State as well. With some luck, we will again be the best club west of the Rockies.

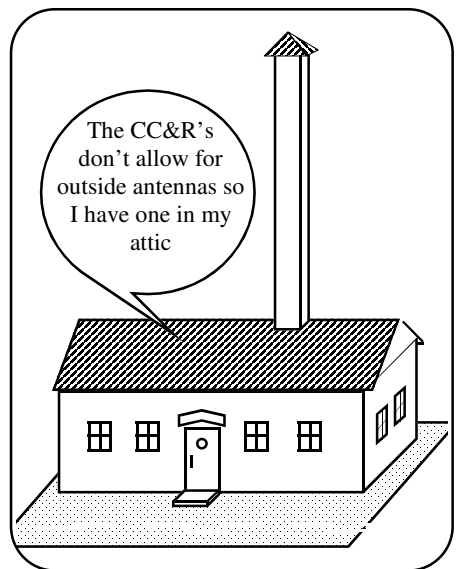
Thanks to all members and guests who participated in this year's event. If you did not come up, you missed a really great time. Please consider coming next year. We will be even bigger and better than ever.

Equipment Available

Two SOARA members have equipment for sale. It sounds as if they both have some pretty nice equipment — so if you are in the market, contact them for a detailed description and asking price.

Earl Reed, KF6EUO, has a complete HF station available. Contact him at kf6euo@soara.org.

Phil Pacier, AD6NH, has 2 meter mobile rig and some antennas available. Contact him at ad6nh@soara.org



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South Orange Amateur Radio Association

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Mission Viejo, CA 92690

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Meeting: Monday 7/17/00 at 7:00 PM "Show & Tell" Night

☛ **SOARA** meets at the Mission Viejo Community Center, 26932 Veterans Way, Mission Viejo, the third Monday of every month at 7:00 PM. Changes to the meeting time or place are announced in this newsletter and on the two-meter repeater.

☛ **License Exams:** Amateur License Exams are given prior to most SOARA meetings. Exams are from 5:30 to 7:30 PM. You must make an appointment at least a week in advance. Call Lou Parker, KA6BJO, at 951-0336. (No calls after 9:00 PM please.)

☛ **Contacting SOARA:** Questions about SOARA? Send e-mail to: info@soara.org, or leave a message at 949-249-1373.

☛ **Web Site:** SOARA maintains a web site with current club information. The URL is: <http://www.soara.org>.

☛ **Repeaters:** The SOARA 2-meter repeater is open to all licensed hams. The SOARA 440 repeater is for club members only.

SOARA 2m — 147.645 - (110.9)

SOARA 440 — 447.050 - (110.9)

The SOARA 220 and HROC 440 repeaters are shared by members of both clubs. Each machine is subject to the operating rules of its respective club. Call KG6GI for details.

SOARA 220 — 224.100 - (110.9)

SOARA 220 — 224.640 - (123.0)

HROC 440 — 447.180 - (131.8)

☛ **Nets:** SOARA 2 m repeater open net is held on Tuesdays at 8:00 PM following the Laguna and M.V. emergency nets.

40 meter HF net (7.262 MHz +/- for QRM), Sunday 7:30 AM
PSK-31 net: 28.120 USB 1 KHz meets Fridays at 6:00 PM.

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