

The PROPAGATOR

October, 2002

The Monthly Newsletter of South Orange Amateur Radio Association

WSWSS VHF/UHF Report

This month's presentation will be a review of the papers and presentations given at the October 12th Western States Weak Signal VHF/UHF meeting. This will include information on the following:

A 6 Meter EME System for the Masses
paper written by Ned Stearns AA7A

The Quagi Antenna
paper written by Wayne Overbeck, N6NB

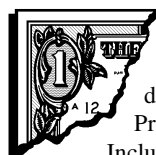
EME
paper written by Bob Kocisko, K6PF

Introduction to Microwaves
paper written by Dave Glawson, WA6CGR

Digital primer for VHF/UHF Weak Signal
paper written by Pat Coker, N6RMJ

Conference proceedings will be available for sale at a special price during the meeting.

The review will be presented by Maloclm KO6SY"



Dues Reminder

You should have received a dues notice for next year. Prompt payment is appreciated. Include any changes in call sign, address, etc., with your check.

Is Ham Radio For Sale?

by Ray Hutchinson, AE6H

No, this article isn't about a radio that is for sale; instead it is about all of ham radio being FOR SALE. But, before you conclude that this piece will be another condemning of some government agency preparing to auction off some of our frequencies, or bemoaning the attempt of some mega corporation making a run at occupying ham spectrum, please read on.

What we're really talking about is the selling of ham radio that could benefit all of us. It is the selling of ham radio that could be going on all over our communities, state, and nation. It is the selling that will help us keep our spectrum and our service.

Who are those that are doing this selling? Quite simply, they are ordinary hams just like you and me. They are hams that are taking an occasional few minutes, or a few hours whenever they can, to "sell" ham radio to their friends, their neighbors, their local officials. They sell ham radio whenever they see an opportunity, big or small.

That's great you may think, but I'm not a salesperson, and I don't have a way or the time required to do that. But you might be surprised to learn how much effect you can have, even in small ways, and with the investment of little time. Here are some examples that come to mind. Take 5 minutes to write that e-mail to your congressman in support of HR4720, or some other future initiative. Spend a few minutes to thoughtfully answer questions from your friends and neighbors about your "CB". Tell those who listen, about the public and emergency service many hams provide. Perhaps you could spend an hour or so giving a short presentation to a scout, school, or civic group. Maybe you can spend a couple of hours on a weekend day participating in a public service event, or a community safety



LINUX Well Received

Matt McKensie, K6LNX, shared his insights and experience with the LINUX operating system at the September general meeting. His presentation was well prepared and quite informative. After explaining the background and features of LINUX Matt went through some of the software available, both for general applications and specifically for amateur radio use.

LINUX is becoming increasingly popular and has become the standard operating system for some applications. Although there are commercial packages (with support), the system is available free from several sources. Matt had free CDs available for those who wanted to try the system on their computers.

Those who missed Matt's talk or who are interested in more information on LINUX will want to visit his web site:
[http://home.attbi.com/~linuxknight/hamlinux/presentation slidea](http://home.attbi.com/~linuxknight/hamlinux/presentation%20slidea)

A wealth of information is available at:
<http://home.attbi.com/~linuxknight/hamlinux/hamlinuxres.html>

services fair. If you are short on time, you could make a small monetary contribution to a group or association that promotes ham radio in the schools and community.

The ARRL provides us with a national voice. This is especially important when the government is considering actions which will affect our privileges. Consider joining the ARRL if you aren't already a member.

In short, there are many ways, big or small that you can be a "seller" of ham radio, and in these days of Homeland Security awareness, you may find that "closing the sale" isn't that tough at all. You might even have a little fun at the same time. Why not give it a try?



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

What is "Weak Signal"?

By Norm Pedersen, KB7KQ

Most define "weak signal" activities as: interest in 50 MHz and above; non-FM mode of emission; largely SSB, and during poor conditions CW. The goal is to take advantage of the various propagation conditions that develop from time to time. Some of these conditions include: line of sight, tropospheric ducting, sporadic-E, aurora, meteor scatter. If you are presently active in FM operation, you are spending most of your time doing line of sight communications. It works but why not experiment with some of the others?

Getting Started

You already know that you will need a radio that has CW/SSB capability above 50 MHz. That's a good start, but what is often missed are some of the other requirements. One of the most important requirements is matching your antenna polarization to that of the other operator's station.

Most newcomers do not fully realize the loss between stations if their polarizations do not match! If your antenna is vertical and the other operator's antenna is horizontal, figure on a minimum of 20 to a maximum of 30-dB loss between stations. What this means in more simple terms is approximately 4 to 6

"S" units of signal strength loss. Hey, that's a lot! Remember we only see 3 dB of improvement when we double our transmitter power. I think the picture is becoming clear. This is the major reason operators new to weak signal operation get disappointed quickly and often move back to FM after a bad experience.

Equipment Requirements

The equipment list can vary from a little to something that might resemble a NASA tracking station! You do not need a \$3,500 transceiver, 8 Yagi's stacked and a kilowatt to have fun. A more modest system might consist of a 25W transceiver, 140W amplifier and a 14 element Yagi. Yes, there will be times when other stations will outperform you, but you will get your fair share of contacts.

Often it is the little things that become very important. For example the feedline length/loss or the noise figure/gain of your receive system.

Optimizing these systems is part of the fun. One of the best suggestions I can make is this: look at what equipment the other operators are using. There are many products on the market that are vastly overrated. Steer clear of them.

Ask questions, go to other operators shacks. Attend VHF/UHF gathering and read/review what other hams are doing in the various publications. One of the very best suggestions for a newcomer is to read the ARRL Handbook. There is a ton of information unique to VHF/UHF operation — Check it out!

Operation

To me, weak signal operators have always seemed like a big family. We know more about each other compared to other operators. This stems from the fact that we talk to each other more frequently, bump into each other at swap meets, trade equipment and parts, assist each other set up stations, etc.

If you are new, try and locate an "Elmer", a buddy that is knowledgeable and might help answer the many questions you have. But equally important, don't burn him or her out. If you have a good Elmer and are learning, think about things that you can do to help your Elmer out. It's a 2 way street.

As you might already know, we have what are called "calling frequencies" established on each of our major bands. In a stricter sense, these frequencies are designed to establish contact with someone and then move off. It's not uncommon to hear a couple of operators on the calling frequency not paying much attention to distant weak signals trying to get attention. Even if you are not interested in working those distant stations others might be. As a courtesy to others move off the calling frequency. Remember, there is more operating spectrum available on our 2M band than all of the HF bands combined. Spread out. *Most important — enjoy!*

See you on the bands,

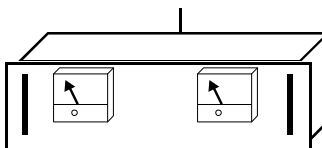
Norm, KB6KQ
Carson City, NV (DM09)

Norm Pedersen is the current Education Chairman and the Carson City Area Director for the Western States Weak Signal Society (WSWSS) □

How do they do that?

This month we have a real life puzzler. For several months the 147.645 MHz two meter repeater had a low level buzz on the audio. Everything seemed to be working all right but the power supply was reading an output current greater than its 70 ampere full scale. Could the equipment (repeater, controller, power amplifier, etc.) be drawing 4 times the normal current?

None of the equipment seemed to be running especially hot, including the power supply. So the only symptoms were the low



frequency buzz on the transmitted audio and the very high reading on the power supply current meter. Eventually the power supply failed (0.8 volt output).

The power supply, an Astron RM- 60M, is rated at 13.8 volts at 50 amperes. It has a large heat sink with 8 pass transistors. The supply has been repaired. All 8 pass transistors had failed and were replaced.

Why was the current reading so high before the supply failed completely? What circuit do they use? □

Year 2002	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
General Meeting 7:00 PM	28	25	18	15	20	17	15	19	23	21	18 Auction	No meeting
Program				DX W6XD	T-hunt W6SQQ	pre Field Day	Show & Tell	RF Safety	LINUX	Contest Station	Auction	
VEC Testing 5:30 PM	28	—	18	—	20	22	—	—	23 Walk-ins	23 Walk-ins	18 Walk-ins	—
Propagator Deadline									FCC testing available before club meetings. Call NZ1M.			
Board Meeting	2/4	3/4	25	22	27	24	22	26	30	28	25	
ARRL Field Day						22 - 23						
SOARA picnic								3				
Fall Auction											18	
SOARA Holiday Party												1

Last Month's Puzzler

During emergency service, a handheld rig could be used at a 10% duty cycle of transmitting vs. total on-time. The rig draws 50 mA while receiving and 1 A while transmitting. Each 8 V NiCd pack has a capacity of 2.5 Ah. How long will each pack last if 80% of its capacity can be used? How many fully-charged battery packs are needed for 24 hours of operation.

Shades of High School Algebra!

Duty cycle 10% i.e. transmit 1 minute of each 10 and receive 9 minutes.

Current draw during transmit = 1.0 A

Current draw during receive = 50 mA or 0.05 A

Combining the duty cycle and current draw:

1.0 A 10% if time and 0.05 A for 90% of time

In one hour : 10% of 1.0 Ampere-hour = 0.1 Ah

90% of 0.05 Ah = 0.045 Ah

Total = 0.145 Ah or

an average current draw of 0.145 A.

A fully charged battery pack is useful for 80% of its 2.5 Ah capacity, this is equal to 2.0 Ah.

If we draw 0.145A (average) the battery will last

$2.0 \text{ [Ah]} / 0.145 \text{ [A]} = 13.6 \text{ [h]}$

Two fully charged battery packs will be needed for 24 hours operation.



Mark your calendar, and start sorting out all of that old equipment that you haven't used for over a year. The SOARA fall auction is coming up in November. The date is November 18. What will you do with all of that money you get for your old equipment? That is easy. You can bid on some of the wonderful gear others bring!

2003 Budget Adopted

1 Oct. – The Board approved the fiscal year 2003 budget after reviewing the Associations FY 2002 financial performance. During 2002, \$6635 in income were received from all sources (dues, initiation fees, raffle, auction, donations, etc.). During that same period, SOARA experienced expenses of \$4731 for a net gain of \$1904 which will provide money for future equipment upgrades or acquisitions.

The Board was concerned that last year's dues adjustment might lead to a loss of membership, and so expenditures were limited during the year. Now that we have a year's experience, the Board is more comfortable with this coming year's performance.

Jerry Di Schino and Howard Brown collaborated to develop a recommended FY 2003 budget, which was unanimously approved at last evening's Board meeting. The annual dues are to remain at \$42 and initiation fee at \$50. Family and student memberships will cost 50% of full membership.

Key elements of the budget are:

Current Membership:	140 members
Lost Members:	less than 8 members
New Members:	at least 18 new members

Total Income:	\$7130
Dues & Initiation Fees:	\$6864
Other Income (e.g. auction, interest, ARRL):	\$ 266

Total Expenditures	\$6686
Repeater Operating & Maintenance Exp.:	\$2693
Reproduction (e.g. newsletters):	\$1053
Postage (e.g. newsletters):	\$ 921
Expenses For Activities (e.g. Field Day):	\$ 450
Liability Insurance:	\$ 329
Other Expenses:	\$ 170
Upgrades/Acquisitions:	\$1070
Contingency & Unallocated:	\$ 444



FINANCIAL
NOTES

The PROPAGATOR

South Orange Amateur Radio Association
P.O. Box 2545
Mission Viejo, CA 92690



**Meeting: October 21, 2002 at 7:00 PM
Malcolm Levy, KO6SY: VHF/UHF Conf,**

☛ **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 SOARA meetings every other month. Exams are from 5:30 to 7:30 PM. Walk-ins are welcome. For information call Paul Levey, NZ1M, at 949-249-0121.

☛ **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 and 70 cm repeaters are open to all licensed hams.

SOARA 2m — 147.645 - (110.9)

SOARA 2m — 145.240 - (110.9)

SOARA 440 — 445.660 - (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 Tuesday 8:00 PM 40 meter HF net (7.268 MHz +/- for QRM), Sunday 7:30 AM. PSK - 31 net (28.120.15, 1000 on waterfall) Friday 7:00 PM.

SOARA OFFICERS

President: Ray Hutchinson, AE6H 949-496-8020

ae6h@soara.org

V.P.: Malcolm Levy, KO6SY 949-951-1882

ko6sy@soara.org

Secretary(acting): Mike Mullard, KF6HVO 949-249-2846

kf6hvo@soara.org

Treasurer : Jerry Di Schino, KN6QK. 949-859-8149

kn6qk@soara.org

SOARA DIRECTORS

Repeater: Howard Brown, KG6GI 949-581-2634

kg6gi@soara.org

Publications: Dale Griffith, W8RRV 949-830-3767

w8rrv@soara.org

Membership: Chris Reed, KB6FYG 949-361-1438

kb6fyg@soara.org

Education: Mike Mullard, KF6HVO 949-249-2846

kf6hvo@soara.org

Technical: Bob Grant, W6CIC 909-780-4788

w6cic@soara.org

Communications: Paul Robert, ND6Q 949-498-0392

nd6q@soara.org

SOARA COMMITTEES

Activities: Steve Perluss, KR6CE 949-364-6195

kr6ce@soara.org

Testing: Paul Levey, NZ1M 949-249-0121

nz1m@soara.org

Website: Chris Reed, KB6FYG 949-361-1438

kb6fyg@soara.org