

The PROPAGATOR

February, 2001

The Monthly Newsletter of South Orange Amateur Radio Association

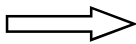
WHY RADIO AMATEURS ARE CALLED "HAMS"

From Florida Skip Magazine - 1959
submitted by Tom Kormanik, W5LON

Have you ever wondered why radio amateurs are called "HAMS"? Well, it goes like this: The word "HAM" as applied to 1908 was the station call of the first amateur wireless stations operated by some amateurs of the Harvard Radio Club. They were ALBERT S. HYMAN, BOB ALMY, and POOGIE MURRAY. At first they called their station "HYMAN-ALMY-MURRAY". Tapping out such a long name in code soon became tiresome and called for a revision. They changed it to "HYALMU", using the first two letters of each of their names. Early in 1910 some confusion resulted between signals from the amateur wireless station "HYALMU" and a Mexican ship named "HYALMO". They decided to use only the first letter of each name, and the station call became "HAM".



In the early pioneer days of unregulated radio, amateur operators picked their own frequency and call letters. Then, as now, some amateurs had better signals than commercial stations. The resulting interference came to the attention of congressional committees in Washington and Congress gave much time to proposed legislation designed to critically

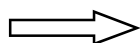


New Members

A hearty welcome to SOARA's newest members:

Alan L. Gallagher WA6LEW

Paul L. Robert KG6DRZ



Understanding Cell Phones

The presentation at the February general meeting will be given by Dennis Smith, KA6GSE, on Cellular phones.



In the presentation he will go over the general operations of the cell system and some of the problems that many don't think of when involved in using it for emergency recovery.

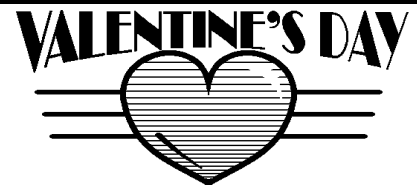
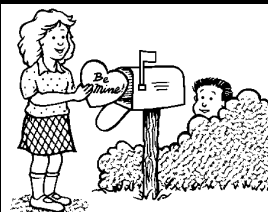
Dennis works as a Field Engineer performing complete maintenance of the cell system on the site level. He trains new personnel and assists in supervision of a staff of 10. His amateur radio activities include serving as an Assistant Section Emergency Coordinator for The Los Angeles Section (ARRL).

"50-50" Award Offered for SOARA Net Participation

This calendar year, SOARA is starting a new award for participation in the Tuesday evening 2 meter net. We're calling it the "50-50 Award." This award of recognition will be given to those amateurs who check in to at least 50% of the 50 2 meter nets we hold during the year. Simply put, check into 25 of the Tuesday evening nets in 2001, and SOARA will recognize you for your loyal participation with a notice in the Propagator, mention at an annual event such as the Holiday Party, and a certificate suitable for framing and posting on your shack wall. The cost of all this: just a few minutes of your time on Tuesday evenings. *Hear you there!*



/ Ray, AE6H



limit amateur radio activity.

In 1911, Albert Hyman chose the controversial WIRELESS REGULATION BILL as the topic for his thesis at Harvard. His instructor insisted that a copy be sent to Senator David I. Walsh, a member of the committee hearing the bill. The Senator was so impressed with the thesis that he asked Hyman to appear before the committee. Albert Hyman took the stand and described how the little station was built and almost cried when he told the crowded committee room that if the bill went through, they would have to close down the station because they could not afford the license fees and all the other requirements which the bill imposed on amateur stations.

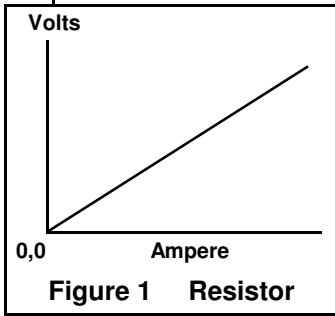
Congressional debate began on the WIRELESS REGULATION BILL and the little station "HAM" became the symbol for all the little amateur stations in the country crying to be saved from the menace and greed of the big commercial stations who didn't want them around. The bill finally got to the floor of Congress and every speaker talked about the "...poor little station HAM". That's how it all started.

You will find the whole story in the Congressional Record. Nationwide publicity associated station "HAM" with amateur radio operators. From that day to this, and probably to the end of time in radio, an amateur is a "HAM".



The Way I See It: Understanding Radio Theory Without Math

One of the premises of this column is to avoid the burden of math while still gaining an understanding of electronics. If you want to work as an electronics engineer then you will need all of the math — but you also need a more intuitive understanding. Without this understanding you can be led astray by the math.

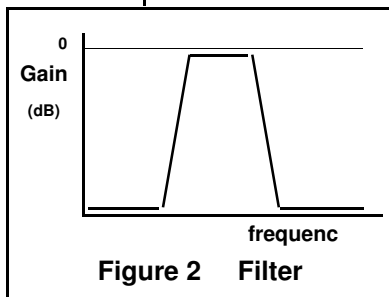


Let's take a look at some of the forms that mathematics can take. The first math that you encountered in school was arithmetic — the manipulation of numbers.

Everyone has gained some facility with numbers and have a good feeling for how they are used and what they mean. Not everyone is familiar with the basics of Algebra. A familiarity with the calculus is even less common.

Even a brief look at an engineering text book will impress one with the extensive use of equations and formulas. You would also notice extensive use of graphs. The purpose of all of those equations is to describe the behavior of some phenomenon. For example Ohm's law ($E = I R$) describes the behavior of a resistor. The voltage developed across the resistor is directly proportional to the current flowing through that resistor (i.e. if you double the current flow you will double the voltage drop), and that constant of proportionality (the resistance) is a fixed property of the resistor.

Another way of conveying this same information is to show a plot of the voltage to current relationship. Figure 1 shows just such a plot. It may seem unrelated to math and much easier to understand. For most



people this is true. It is even true for engineers, that is why the plots are found in engineering books. Perhaps you have never thought of plots (a sort of picture) as being related to math, and I don't mean to give them a bad name.

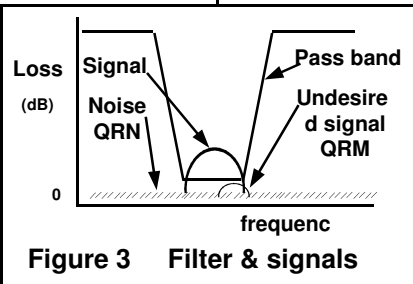
Electronics is not an entirely simple topic. Even with the best of tools (such as the various forms of mathematics and computer programs) we can be led astray.

We need an understanding beyond math, a sort of feeling for how things physical work.

To illustrate, we will look at the topic of a recent article in a leading amateur radio magazine¹ in which the author, an engineer, was misled by his use of math. In this case the math was in the form of plots.

The topic of the article was filtering — separating a desired signal from noise. Noise generally means some undesired signal, either natural or man made, mixed in with the desired signal. Perhaps the most familiar type of filter is the frequency domain. Your receiver only detects signals at, or in the close vicinity of, one frequency. (You could do filtering in the time domain by turning your radio on only when there was something you wanted to hear.)

Most HF rigs have some means of varying the bandwidth of the receiver. SSB signals require much wider bandwidth than does CW. The change is accomplished by switching filters in the IF section. (Not true of some of the newer DSP (digital signal processing) rigs, but the behavior of a filter is not fundamentally different with various implementations.)

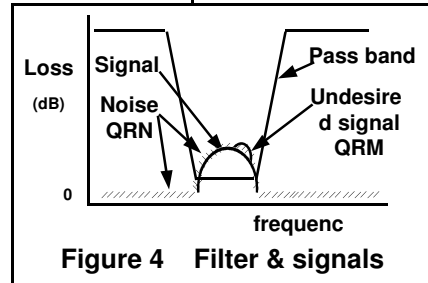


the plot. Signals within the passband show a unity gain (zero dB), while signals outside this region show a loss.

In the article in question, the author inverts the plot for the filter gain (loss) which is perfectly reasonable. He then adds to the diagram plots of the desired signal and noise signals. A replication of his diagram (simplified) is shown in figure 3.

The author concludes that by adjusting receiver gain controls so that interfering signals are below the "bottom" of the passband plot that it will not get through to the detector. The noise (QRN), if it is below this passband floor is eliminated he claims.

Now this is simply not the case in the real world — where did the author go wrong? There are two errors. We will treat them separately. First, it may well be obvious that there is only one value of the instantaneous voltage at the antenna terminals. That



voltage is due to the superposition of all of the signals received by the antenna. Although it is useful to categorize the various sources of signal and noise, they do not remain separate voltages in

the receiver. There is no way that a filter can discriminate between the various sources — it can only respond to the total signal voltage. Figure 4 illustrates the case with the total signal.

A second error is in plotting a "gain" and a "signal" on a diagram in a way that the gain appears to "clip" the signal. The gain is a factor which multiplies the signal. It doesn't matter how small a signal, it still gets multiplied by the gain. A small signal may be hidden by noise but it doesn't simply disappear.

These are simple concepts. We must not lose sight of them in the process of doing the math — with formulas or with plots.

¹ QST, Feb. 2001, P. 42

Year 2001	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
General Meeting 7:00 PM	22	26	19	16	21 Auction	18	16	20	17	15	19 Auction	No meeting
VEC Testing 5:30 PM	22	—	19	—	21	23	16	—	10	—	19	—
Propagator Deadline	6	10	3	1	5	2	1	4	1	9/29	3	2
Board Meeting	29	3/5	26	23	TBA	25	23	27	24	22	26	
Spring Auction					21							
ARRL Field Day						23 - 24						
SOARA picnic								4				
Fall Auction											19	
SOARA Holiday Party												2

ECHOES FROM THE PAST:

*Revisiting My World War II Journals
Fifty Years Later*

by Sten Gould, [WA2MRO]
Writer's Showcase, New York, NY, 2000,
197 pages

What would the person you were at age eighteen think of the person you are now? If you find that to be an interesting question, you will probably enjoy this introspective reflection of a septuagenarian looking back on a diary of his service as a member of the gradually disappearing "greatest generation". World War II was the defining event of the last century, and in any war how a person was affected varied a great deal with where, when, and how they served. When eighteen-year old Sten Gould arrived in war-damaged Germany in a 40 & 8 railroad car a month before the end of the war, he joined a radio intelligence unit. No dogface in the mud, he was a technical specialist who found it easy to identify German transmissions based on the excellence of their radios. Tiring of copying code for long hours, he "bucked for" a position running the supply room, dispatch, and PX which provided variety and a fresh challenge to the bright and energetic GI.

What most concerned the young soldier writing in the diary was his co-dependency

with civilians in US-occupied Germany during his year following the war. He did not see an evil nation, only apparently normal human beings, who all disavowed responsibility for the crimes committed by their government. The diary focused on the symbiotic relationship between lonely servicemen needing intellectual and physical companionship, and hungry fräuleins with families to feed. Cigarettes were the currency of the time. He was eager to get on with his life back in the USA but was also enjoying much of life in occupied Europe. It was unthinkable at the time to bring a foreigner perceived to be a "Nazi" back to a Jewish family in the Bronx. Struck by the irony of a Wehrmacht belt buckle inscribed "Gott Mitt Uns" (God is with us), he had conflicting feelings about Germans as normal people versus the actions of the totalitarian Hitler regime.

The now matured and wiser retired science teacher offers compelling observations about the diary entries of "The Kid" who was starting the obstacle course of adult life. Credit Richard Coyne, WW7D, with encouraging Mr. Gould to write this book. If he writes a book about his thirty-five years teaching science in New York City, I will read it. You can buy Echoes at www.bn.com for \$11.95 (Average customer review rating: four stars).

Reviewed by Keith Soesbe, KG6CGT



Loose Wires

License Classes

Mike Mullard, KF6HVO, has taken over the reigns of Education for SOARA. You will be hearing news about license classes which will be offered this year. If you have an interest in taking a class or know some one who would, let Mike know so he can better plan. We would like to get the word out to youngsters (Middle School / High School). You can help someone get into the hobby.

Special Event Station

The Leisure World Amateur Radio Club, W6LY, is conducting a special events station to celebrate the 2nd birthday of the City of Laguna Woods. It is being held 1400Z 24 March to 2000Z 25 March. Frequencies are 7.250, 14.250, 21.380 and 28.380 MHz. A special commemorative QSL card will be sent to stations that QSL.

submitted by Ernie, W6ETS

The PROPAGATOR

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**Meeting: Monday, 2/26/01 at 7:00 PM.
Program: Cell Phone System**

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

SOARA 2m — 147.645 - (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 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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