



the RARA RAG

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VOL. 45

JANUARY 1993

No. 5

Next RaRa Meeting
Friday, January 8, 1993
8:00 P.M.
Henrietta Fire Hall
3129 East Henrietta Road
Getting Wired Up
for
Antennas

Rochester, NY – The season is upon us! What season you say? Didn't we just get over that season?

This is that other season. You know! The one that comes right after the year end holiday when we realize our friends and family did not chip in for an eighty foot tower and five element beam to bring a smile to our face. Yes, this is the **Broke Season**.

If your holidays didn't produce some shiny aluminum **OR** you are just a little short on cash and still want some neat antennas (aerials) in your collection, this is the meeting for you.

Our speaker, Dick Witkowski (WB2TEQ), has been around the antenna scene for over twenty years. He recently told me, "*When I got into this hobby, I didn't have a lot of bucks to spend. So, I had to learn what worked cheaply, easily and well if I wanted to make contacts like the big guys*".

When I asked Dick what he could tell me about cheap, easy to make and install antennas, he told me to pull up a chair and get comfortable. (Not being a very brave guy, I wanted something that didn't need to be forty foot in the air to work well!) Over the next twenty minutes he described the perfect antenna for my small city lot and smaller budget. The materials were available at the local supply houses and I didn't have to buy thousands

of extra feet of material to get the little bit I needed. Needless to say, I think I've got the right idea now! See what you think.

Dick's talk is titled **Getting Wired Up For Antennas!** (*Getting started in wire antennas, a practical, low cost antenna alternative.*) He'll be focusing on the HF Bands but promises to share some of his expertise in VHF and UHF antennas as well. There will also be samples of the practical helpers Dick uses to help him build and erect these antennas. Handouts will be available for those that want to get started right away. Remember, January is antenna weather (according to ancient Amateur Radio wisdom).

See you there!

DE N2BEL

LICENSE EXAM TESTING

by Barbara, AA2CX, and George, AA2FO

CONGRATULATIONS ... to ten members of the amateur radio community who either got their licenses, upgraded, or passed exam elements at the recent RaRa testing session of November 21st. They are: Melvin Loder, Frank Reed, David Loveridge, Rose Stam, John Cronk, Craig Jones, John Biehle, Roderick Roth, Iain Philipps, and Thomas Zillioux.

Enjoy your new privileges.

Our next session will be on January 16th, at 111 Westfall Road starting at 9:00 a.m. Registration begins at 8:30 a.m.

See you there.

CONTEST ADVISORY COMMITTEEMAN

Atlantic Division Vice Director, Kay Craigie, WT3P, announced a new member of the ARRL's Contest Advisory Committee. RaRa is pleased to have one of the areas most active hams, Dave Hallidy, KD5RO/2, of Pittsford, as an area representative for this active and influential ARRL committee. Dave brings extensive VHF/UHF experience to the committee, but is interested in all of your contest ideas and comments.

the *RaRa Rag*

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CONNECTICUT HAM OPERATOR CONVICTED IN CIVIL SUIT FILED BY LOCAL AM BROADCAST STATION

In an unprecedented Superior court judgment, a Milford, Connecticut AM radio station recently won a civil suit against a ham radio operator it claims pirated its frequency. However, absent from the proceedings, was the FCC, which was not able to devote enough manpower to catch the pirate, a Boston field office spokesman said.

On August 4, the Superior Court in Milford, however, was sufficiently convinced by evidence gathered by the station that it found Paul Matar guilty of interfering in business relations, and slandering WFIF-AM, a religious-format station.

Over \$12,000 in damages were awarded to the religious station, which claimed Matar called its staff "born-again scum", and "thieves" over the airwaves. Despite the judgment, the station said the broadcasts have continued. The suit covered a period from January 1990 through August 1991.

Testimony by station staff and other witnesses maintained that the pirate would come on the air on WFIF's 1500 kHz frequency after the AM daytimer signed off. The unauthorized broadcasts made slanderous statements about the religious station, its staff and advertisers, the station charged. Matar denied the allegations and plans to appeal the decision, claiming he did not violate Section 301 of the Communications Act despite the fact that engineers from WICC AM/WEBE-FM in Bridgeport, Connecticut, were able to trace the signal to Matar by using a field strength meter.

The FCC hoped to catch the pirate during operation when FCC field inspectors made visits to the area on other matters but the effort was unsuccessful.

In August 1991, the station again sent a letter to the FCC requesting action as the violations were continuing. On August 8, 1991, the Commission finally sent a letter to Matar requesting that he "cease and desist" broadcasting if he was doing so, in the letter. Matar did not respond to the letter and the illegal broadcasts continued.

Now attorneys for the station are asking for a contempt charge against Matar including monetary fines and a period of incarceration. If the Superior Court again rules in WFIF-AM's favor, Matar could very well be the first person to face imprisonment for conviction of piracy by a state court.

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Amateur Radio News Service

Coming Events

Winter Family Fun

at

Mendon Ponds Park

Saturday, February 13, 1993

Food, Fun and Activities for
Kids (Adults Too) from 1 to 92!

We'll be gathering at
Hopkins Point Lodge
at 11:00 a.m.

The fun will continue late into the
afternoon! Plan on joining us with the
whole family!

JANUARY CALENDAR

- 8 - RaRa Meeting - 8:00 p.m.
Henrietta Fire Hall, East Henrietta Road
- 16 - RaRa VEC Testing Session
111 Westfall Road

GETTING A LICENSE TO OPERATE IN MEXICO

Getting licensed to operate amateur radio in Mexico certainly is not as easy as operating in Canada! The U.S. has a bilateral treaty arrangement that allows any FCC licensed amateur to instantly operate in Canada by simply appending his/her call sign with the appropriate VE location. (For example: W5YI/VE1). Note that the VE1 appears after your call sign. There is no paperwork to prepare what-so-ever.

There is a reciprocal licensing arrangement between the U.S. and Mexico, but it is expensive and cumbersome! Supposedly there is a new easy-to-obtain reciprocal licensing arrangement coming, but the Mexican offices do not seem to know anything about it and the old system still applies.

To operate in Mexico, you must apply to a territorial telecommunications office of which there are fifteen. You also have to pay 211,000 pesos (about \$70) for a six month operating period. Your temporary license may be renewed, but it costs \$70 for each 6 month period. Once approved - and the approval can take anywhere from a couple of days to weeks ... or even months to obtain.

You ID your station with the Mexican prefix and region in which you are operating before your call sign. (For example: XE2/W5YI.) The quickest licensing can be obtained from the Mexican Authority (Delagacion de Comunicaciones y Desarrollo Tecnológico) in Tijuana. Ask for Oscar.
Tnx W5YI Report

M. ORNSTEIN

WB2YYB

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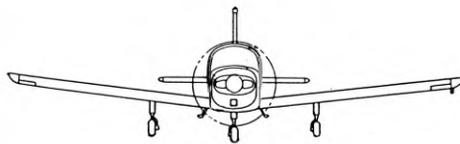
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THE PRESIDENT'S CORNER

by Lloyd R. Caves, WB2EFU

It doesn't seem possible but here we are, starting another new year. I hope that everyone had a very happy holiday season and is ready for 1993. I am not sure that I am but I guess I don't have any choice in the matter. It seems like each year goes by faster than the last.

As I look back over 1992 I found myself involved in just as many things as ever. Ham radio activities, however, still gets a lot of my time. I still enjoy getting to all the hamfests in the summer. This year I was involved in working not only at the Rochester Hamfest but also at the Buffalo, Batavia, Elmira, and Syracuse hamfests. At Rochester and Buffalo I worked for the hamfest committees to help setup and bring the hamfest to you. At the others I worked in the K2JD engraving booth making call badges along with a lot of other RaRa members. This is also a function of RaRa and another service that is provided to the ham community. I did get to see some of the hamfest though as it is not all work. I also made it to a few others where I didn't have to do anything but enjoy them.

There were a lot of other activities going on this past year to keep me occupied too. There was always the public service events to go on. I don't know if I remember them all or not but I know that there were at least a couple of Ginna drills, two pony rallies, two triathlons as well as the road rally held in Pennsylvania. It looks like everything has to be done in two's. At least there was no real emergency in the county this year that needed our support and only one in the public service events. The public service events are excellent training for when something real does come up and they are also a lot of fun to be on. You should think about joining us in 1993.

All this as well as being the president of RaRa has cut into my on the air time. Even so I managed to find my way onto packet this past year. I am still trying to read all the books on the computer to learn how to turn it on. Even at that I am learning about what packets capabilities are and how to use them. Now I am installing the Ham Windows program onto the computer to keep all my HF log activity on. By the time I learn how to use it I hope I remember how to turn the rigs on.

Looking ahead to 1993 I see lot of activities coming up during the year. Once again there will be the hamfests and public service events as well as other activities of RaRa. The first of these activities that everyone should mark on your calendars is the Winter Funfest to be held on February 13th. This is an outing that is for the

whole family, not just the hams. So mark it down and plan on being with us this year. You will find further information on this Funfest elsewhere in the *Rag* and there will be more details in next month issue. I hope that you will all join us this year. I also hope that you will join us on some of the other outings this year. It is not as time consuming as it may sound and is a lot of fun. See you all in 1993, HAPPY YEAR!!!

VEHICLE GENERATED RFI

Here is yet another concern for amateurs to investigate when purchasing a vehicle – that is check for internally generated RFI on the bands you intend to use.

The case in point identifies a problem experienced by Lee, KG7OW, with the purchase of a 1991 Cutlass Ciera and the installation of a mobile rig. When the set was tuned to 146.82, the RFI was so bad it could not be squelched out. Tuning to other frequencies did not detect any RFI. The dealer could not suggest a solution but countered that the 2m equipment was a non-standard item. No satisfactory response was forthcoming either when the ham suggested what would happen if the car was purchased by a police department and the interference was on their channel.

Tests were conducted to establish the source of interference using a handheld radio. The RFI was traced to the ignition module and was most intense when the set was oriented vertically (most man-made noise travels vertically). It could be completely nulled out when the set was turned horizontally. By the way, this problem only exist after the vehicle has warmed up. Is this an isolated case? Apparently not. Lee mentioned a friend of his noted the same problem when a non-ham visitor with a similar car visited him and the 2m rig was used to detect the interference. Another ham observed a similar problem with a 1990 Chev S-10 truck.

What is the cause of this RFI? Could it be a defective oscillatory circuit within the module or is it an inherent circuit design fault? The proliferation of electronic gadgetry on new vehicles has created a whole new problem for the amateur (and other vehicular radio users). Perhaps the day is coming when a purchaser will have to shell out a few extra thousand dollars for a vehicle immune from spurious emanating electromagnetic emissions. And likewise not be affected by RF energy from installed transmitters. In the meantime, buyer beware, take the hand-held with you when shopping for a new chariot!

*Edited version from Mike and Key ARC
and World Radio, Oct. 1992*

JANUARY VHF SWEEPSTAKES

Remember these dates for the biggest VHF/UHF Contest of the year. It starts and ends:
1900 UTC Saturday January 23 (2:00 p.m. for newcomers)
0400 UTC Monday January 25 (11:00 p.m. Sunday local time)

Your log **MUST** be in UTC and need only show the band you are on, i.e. 144, 222, 440 and the exchange made with the other station. You do not need the exact frequency or a signal report. Find out **YOUR** Grid Square, used as your part of the exchange, before the contest – most of you will be in FN13. You may work a station **ONCE** per band but remember that if a station changes grid squares (a Rover) you may also work them **ONCE PER GRID SQUARE** on a given band. So if you worked KA2XXX in FN13 and he now is in FN12 ... work him again!!

Many local clubs will be competing for the Rochester Cup and they will all appreciate **YOU** being on to help them on any band you have available. Most of the crowds will be on 2 meters FM, so remember these frequencies for less crowding: 147.51, 147.54 and 147.57. P.S. 146.52 **CAN-NOT** be used.

Hints to make your score better:

1. Listen for Rovers and work them.
2. Listen to the frequency before calling CQ.
3. Listen for stations outside our immediate area, especially Canadians and the Syracuse area. You may get a bonus grid square.
4. Remember the other station can't hear you when they are transmitting.
5. If you have CW & SSB capabilities: **USE THEM!**

Good luck, have fun and turn in a log for **YOUR** club.

THE RaRa RAG YEARS AGO

by Ed Gable, K2MP

20 YEARS AGO – JANUARY 1973: This issue had many photographs, a nice touch we're not seeing too much of lately. On the front cover was a very surprised Bruce Kelley, W2ICE, receiving the Houck award from Dr. George Brittain of the Smithsonian Institution. This national award recognized Bruce for his outstanding work in historical radio documentation. Cappy Capauldy, K2UXF, announced the RaRa Dinner Dance which will feature "*fun with Dunn*" after the meal. Eddie Dunn, W2ECH, was a popular WHAM announcer. Hansauf DerFinal, W0RRY, wrote of the Code and Theory classes. RaRa President, Ed Holdsworth, WA2EKR, had several articles on RaRa's increasing pledge of service in support of Civil Defense. Jim Collinworth, WB2EDT, was EC and Marv McIntyre, K2ZAA, CD Communications and Warning officer. From the want ads you could buy a 2 Channel Motorola HT-220 VHF handheld from Mel Stoller, K2AOQ, for (only) \$350.

40 YEARS AGO – JANUARY 1953: If you have modulation trouble the answer will be found at the next meeting when "*Dr. Modulation*" aka Fran Sherwood, W2QCF, speaks on the subject. New calls on VHF were Mac, KN2CEH, and Bill, W2VZV. FCC changes: Generals get phone on 75 and 20 meters while Novices change to 7175-7200 kc CW. Civil Defense has donated VHF FM rigs to RaRa for fixed emergency sites. These 147 MHz FM jobs were set up by Ken, W2UAD; Linc, W2QY; and Milt, W2QYT. Mac, W2THK, and Dick, W2ZEL, have started new ventures; repairing those new fangled TV sets. From the want ads you could buy a RME VHF-152A converter from Dick, W2OTW, by calling Glenwood 8623-J.

Patrick C. Moyer, N2AIW Attorney & Counselor-at-Law

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THOSE DARN DEE BEE'S

by George F. Ledoux, K1TKJ

Have you ever needed to know what the power gain of an antenna was? The spec. says 8dbi. Now just what does that mean? What about that mobile amp on 220 MHz that has 13db gain? Well here is a little trick that you can use to get just about any "db" number reduced to a ratio without a calculator. Let me say up front for the purists among us that these numbers are not accurate to the fourth decimal point, but they are close enough for our work.

Every time you add 3db to something you are saying that it is twice as powerful as it was before. For instance, if a "gain" antenna has 3db gain over a dipole, it has the performance of a dipole with twice as much power applied to it. So you could operate the gain antenna with 10 watts and sound as good as if you operated a dipole with 20 watts. Exactly the same results would occur if the gain antenna had 6 kilowatts and the dipole had 12 kilowatts. The amount of the power in watts is not relevant to this discussion, only the **RATIO** between them. **3DB** is **TWICE** as much, or **HALF** as much if we are speaking of 3db **LOSS**. We have a **RATIO** of "two" whether we are speaking of gain or loss. If we had an amplifier with 3db gain, then it would double the output power that came into the input. What about an amplifier with 6db gain? Well we have already seen that 3db doubles the power, if we add another 3db, we double it again. So, 6db means four times as much. $3db + 3db = 6db$ is the same as 2 times 2 = 4. If we add another 3db to the 6db will it double again? Of course, now our 6db amp gain is 9db, so amplifier gain has gone to 2 times 2, is 4, times 2 = 8 times.

OK, so now you see how every time you add 3db it doubles but what about large numbers like 60db for example? Fortunately there is a very simple way to do these. In all of the following examples we are talking about power ratios, voltage ratios are different but we will get to that later. 10db is a ratio of 10 times, 20db is a ratio of 100 times, 30db is a ratio of 1,000 times, 40db is a ratio of 10,000 times.

Do you see the pattern here? 20db is 100 times. 100 has 2 zeros (20). 30db has a ratio of 1,000 times, 1,000 has 3 zeros (30). So does 60db have 6 zeros? Yes, 60db is 1,000,000 times ratio. Here is a little chart to help in conceptualizing this.

db = ratio
 10 = 10 X
 20 = 100 X
 30 = 1000 X

40 = 10000 X
 50 = 100000 X
 60 = 1000000 X
 70 = 10000000 X

So, 60db is a ratio of one million (6 zeros).

Does that mean that 63db is two million? Yes, 60db is times one million, add 3db to make it 63db and now you double it to two million. Then 66db is 4 million, and 69db is 8 million, and 70db is ten million (7 zeros). Well that's fairly easy if we are talking about numbers that can be divided by 3 easily or are multiples of ten, but what about some other numbers?

Well, remember how I said that 3db is double OR half depending on how you looked at it? That means that if 10db is times 10, the 10db minus 3db or 7db, would be times 5 right? Right. And 5db minus 3db is 2db, so 2db is half of 5db or two and one half times. You can use this method of adding 3db and doubling or subtracting 3db and halving any number. 20db is X 200, so 17db is X 50. 40db is X 10,000, therefore 37db is X 5,000. Do you see the pattern here?

By starting at 3 you can get the following db ratios very easily. 3, 6, 9, 10. Now if we subtract 3 from the numbers starting at 10 we can get 10, 7, 4, 1. That only leaves us with 2, 5, and 8 to figure out. But what if we started at 20db and reduced the ration by 3db then we would have: 20db = 100, 17db = 50, 14db = 25, 11db = 12.5, 8db = 6.25, 5db = 3.125, 2db = 1.5625. Now we have them all. Lets look at a table and see what they all look like.

db	Ratio	Exact numbers
0	0	0
1db	1.25	1.258925412
2db	1.5625	1.584893192
3db	2.00	1.995262315
4db	2.50	2.511886431
5db	3.125	3.162277660
6db	4.00	3.981071705
7db	5.00	5.011872336
8db	6.25	6.309573445
9db	8.00	7.943282347
10db	10.00	10.000000000
11db	12.50	12.58925412
12db	15.625	15.84893192
13db	20.00	19.95262315
14db	25.00	25.11886431
15db	31.25	31.62277660
16db	40.00	39.81071705
17db	50.00	50.11872336
18db	62.50	63.09573445
19db	80.00	79.43282347
20db	100.00	100.00000000

Notice that when we change the number in the "db" column by 3db, the value in the ratio

changes by a factor of 2. Twice as much if we add 3db or half as much if we subtract 3db. You can use this "trick" to mentally obtain any "db" value.

All of these ratios are valid for power only, voltage ratios are a little different. It takes 20db to increase the voltage by a factor of ten. It takes 6db to double the voltage. 3db for power, 6db for voltage. You can use the same method for voltage, just use 6db instead of 3db to double or half the ratio. Also notice that the difference between the first ten numbers and the second ten numbers is only where the decimal point is. This pattern is repeated every decade. i.e., 6db & 16db have the exact same digits, only the decimal point is different.

So, if you can learn how to get the first ten numbers, you can get any number.

For those folks with a calculator the formulas are:

In calculations of power: $db = 10 \text{ Log}^{10} P$
 $P = \text{power output divided by power input.}$

In calculations of voltage: $db = 20 \text{ Log}^{10} V$
 $V = \text{voltage output divided by voltage input.}$

So, the answer to my first question is that 8db is an equivalent power multiplication of 6.25 and my 13db gain amplifier increases power by a factor of 20.

NEWS — NEWS — NEWS!

Some interesting items....

MAGNETIC LIGHT

Intersource Technologies, based in Silicon Valley, California, has announced its new RF light bulb, the E-Lamp, due for release in 1993. Pierre G. Villere, president of the company, says the E-Lamp will last up to 20,000 hours. Normal incandescent bulbs blow out after about 1,000 hours.

The new bulb also runs much cooler than incandescent bulbs, due to its resemblance to fluorescent lamp technology. The E-Lamp's interior "filament" consists of a high frequency radio signal, sent out by a wire coil. The radio waves excite a mercury gas inside the bulb, thereby creating ultraviolet light. The UV light then strikes phosphors coating the inside of the bulb, which emit visible light.

The E-Lamp is said to last even longer than normal fluorescent lights, and can be used in standard threaded sockets normally occupied by incandescent bulbs.

What obstacles are there? First is price. A new E-Lamp will cost \$12 - \$15. The second is RF interference. Manufacturing an RF producing light bulb has always been tricky because it is usually guaranteed to knock out other nearby radio waves on the same frequency. Intersource Technologies claims to have solved that problem.

A bulb with the same brightness as a 100 watt bulb requires only 25 watts of RF power. Amateurs are understandably concerned since its operating frequency is 13.56 Mhz - near the 20 meter ham band. Financial backing for the project came from American Electric Power, based in Columbus, Ohio.

According to the company, a 100 watt incandescent bulb costs about 30 cents to operate for about four hours a day, for a full week. The E-Lamp, operating at only 25 watts, will provide the same amount of light for only 9 cents. If this new

RaRa JACKET

orders taken

January 1993 Meeting.

FOR SALE - CDE-AR22 rotor & control - \$50.00; Commodore C-64 & Magnvox M10 monitor & microlog ART-1 TNC - \$125.00; National NC300 receiver w/manual - \$100.00; Hammarlund HQ180 w/spkr - \$100.00; Sonar BR2911, GM-PA 100W w/ps - \$125.00; Henry C100CBO 6M-PA 100W - \$150.00. Contact "WA2ZNC", 1-229-5470.

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lamp works, filament based lamps in the home today might someday wind up in museums.

WHITE (TOWER) LIGHTNING

Broadcasting tower owners are slowly changing red light beacons to white strobe lights. There are many reasons for this, including:

Optical Power

The red fresnel lenses covering incandescent lamps disperse the light during the day so it cannot be seen. Strobe lamps can be seen clearly at all hours.

Longer Life

Red beacons need to be replaced as often as twice a year. Climbing a tower to replace a light bulb costs about \$1000.

Paint

Curiously, sometimes the Federal Aviation Administration will allow a tower owner to install a white strobe beacon in place of painting the tower orange and white. Towers built today don't like paint and shed it almost as soon as it is applied. *From the W5YI Report*

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