E B N e w s l e t t e r . . . . . .

October 1, 1987 Vol. 4, No. 10

EDITOR'S OPENING COMMENTS

We received quite a few short letters for this issue as well as some other goodies. To get it all in while its current forced us to cut our mini-lesson a little short. Still, there is enough to give everyone some "food-for-thought" about loading coils (if you have snowshoes).

Your editor climbed up on the old "soap box" again. If you don't agree or have something to say, let us know. The EBN welcomes responsible rebuttals and opinions.

RNI REVISITED

Further reports about the RNI incident reveals the pirate station's equipment was not damaged nor confiscated as first believed. The ship and its contents have apparently been returned to Weiner and Rothstein. We understand that federal charges have been dropped also after they promised not to do it again.

Upon returning to their ship, "Sarah", Weiner and Rothstein apparently found only two things missing - their Honduras and their skull-and-crossbones flags.

Both men maintain that they did not consider their activity as illegal, but were only trying to establish a "legal" off-shore station such as Radio Caroline in Europe. The station was transmitting at 103.1 MHz with 5 kW and also on longwave at 190 kHz and shortwave near 6 MHz.

Allan Weiner at the controls of RNI

Bill Coleman was good enough to lend us his personal photograph of the RNI studio with Allan Weiner at the controls. The back of the photograph has written:

To Bill, 8-19-87 The Master Control Room aboard the Vessel Sarah. Me at the controls.

Allan H. Weiner

Peace Thru Radio

If EBN readers would like to contact Allan Weiner just call his answering machine at (207) 538-9538.

Published by PANAXIS PRODUCTIONS, PO Box 130, Paradise, CA 95967-0130

WHAT'S NEW (AND OLD) AT THE FCC

Perhaps listening to the voice of the people has prompted the FCC's latest proposal. It appears that some Rule changes could allow small radio devices to perpetuate into cordless stereo speakers, short range TV transmitters, etc. These devices would fall into the same category as garage-door openers, wireless mics, cordless phones, etc. Up to now manufacturers of such devices had to seek "certification" from the FCC's Office of Engineering and Technology. This takes up to 90 days, but actual "approval" by the Commission could take years.

"What we're saying is that what really matters is the interference,"

The long wait has prompted several manufacturers, most notably those of small TV transmitters, to start marketing early - before actually obtaining certification or approval. Bruce Franca of the FCC's Office of Engineering and Technology said "We know that people have been wanting to do that for a while," and some have - illegally. Everyone wants a device like this but it's been illegal to use it. All that may change.

"What we're saying is that what really matters is the interference," Franca said. "Under the proposal . . . as long as they (product sponsors) meet the technical rules, they can market whatever they want.

The FCC issued an inquiry in April of this year asking for comments on permitting directional antennas for FM stations. Directional systems would allow shorter distances between some stations. The result would be a greater number of stations which could be accommodated on adjacent and co-channel allotments.

There is also a proposal to permit all Class A FM stations, now limited to a maximum power of 3 kW, to upgrade to 6 kW. Upgrades would of course be limited in congested areas or where interference conditions might result.

NICE TO KNOW STUFF

Chris Holtegardt of WQNR - carrier current, Selden NY, is back with us after taking some time off. Chris is now offering a "broadcasters" computer bulletin board. It promises to offer many interesting features. These include Biographs of "MADONNA", "BUDDY HOLLY", TV History, and much more. Chris is just getting it going and needs all the encouragement we can give him. All suggestions for BBS materials will be considered. Most of the material can be down-loaded for use by your station. Parameters are: 1200 baud, no parity, 40 column, use XMODEM protocol. Access number: (516) 698 7456

REPENT!

Remember Captain Midnight? He was the pirate who hit the big time by breaking into HBO's satellite signal last April. John MacDougall (Captain Midnight) broadcast a message protesting the network's cut-off of non-paying viewers.

Well,..... someone is at it again only this time it's the Playboy Channel. The message was simple enough and too the point .."repent your sins" Channel officials had no estimate of how many viewers across the country saw the message, but they certainly weren't pleased about it.

THE STATUS OF C-QUAM/KAHN & FM2

The FCC has maintained that the "standard" for AM stereo should be decided by the market place. A bitter fight between the remaining contestants, KAHN and C- QUAM has prolonged that decision. Former Mass Media Bureau Chief McKinney believes a defacto standard has finally been reached - C-QUAM appears to be taking the lead. Australia, Brazil and Canada have already adopted the C-QUAM system and Japan is close to finalizing their decision.

Many proponents of AM stereo are concerned it will die if something isn't done soon. The demise of Quadraphonic FM broadcasting a few years back is a good example of what could happen. The lack of available receivers, and the hesitation on the part of manufacturers to invest in an unknown outcome has been a major factor also. Most are not willing to produce a multisystem receiver without some reassurance that it would sell. Which system is best, or what the people really want, is perhaps being overshadowed by what equipment is available and the individual preferences of each broadcaster.

Something must be done soon to put some life into the slowly dieing AM market. The battle is not over yet. The NTIA (National Telecommunications and Information Administration has asked the FCC to protect the C-QUAM pilot tone from interference in the interim. This may be the only action the FCC will take on the subject but in doing so it may stabilize a shakey industry.

The battle over an AM stereo standard is bad enough, but now we have FM2 too! FM2 is a proposal before the Commission asking to open a 5 MHz segment of the spectrum between 225 and 230 MHz. The original petition asked for a slot between 220 and 225 MHz which was rejected. A second petition requesting 225 to 230 MHz was rejected by the Commission in March of this year.

Larry Tighe, president of RNJ (Radio New Jersey) is spearheading a petition to reconsider the March decision. RADIO WORLD and BROADCASTING, two well known trade magazines are currently running ads promoting the new campaign.

Proponents maintain that such an action would create 25 new 20 kW FM channels. The primary purpose of FM2 would be to allow AM broadcasters presently restricted by their facilities to establish a new home. The AM channels would become less crowded, large and cumbersome directional stations could be eliminated, and the number of "daytime only" AM stations could be reduced.

Opponents to the proposal include Radio Amateurs and the Military. Amateur radio operators have a slice of the spectrum between 220 and 225 MHz. They use it for FM repeater service, digital, and packet radio transmissions. Novice class hams were just permitted to use voice on the band starting in March of this year. The Military use is officially undisclosed but some feel they may be using these or nearby frequencies for missle tracking, over-the-horizon radar, and other weapons systems control.

For more information about FM2 contact Larry Tighe at (201) 850-1000. For the opposing view contact Ron Castro (707) 584-1058

WE GET LETTERS & OTHER STUFF !!

Dear EBN,

I am finding that the EBN is fast becoming an asset to our organization, as it contains equipment suppliers and those in need of equipment that are on the same level as ourselves. It also keeps us in touch with the rest of the experimental broadcasters, and events that concern us. To my knowledge this is the only publication of its kind. Keep up the good work and keep'em coming this way.

Doug B.

Dear EBN,

Right now the Panaxis stereo generator is doing a fine job on-line in my 89.3 MHz pirate radio station, W.... I am using a professional broadcast exciter that puts out 12 watts. It is a Sintronic SI-10E. Unfortunately, I am having some problems with it. It is interfering with television reception (non-CATV) all over town. The worst interference seems to be on channel 7, in both the audio and video. Other neighboring channels are also affected, but interference with other FM stations is not apparent.

My guess is that I am transmitting spurious harmonics along with the center carrier frequency, and a remedy would be to attach a high-pass and/or a lowpass filter(s) between the RF output and antenna cable. I have had no luck in finding a supplier for these accessories, so I'm asking for your advice. Can you supply filters or refer a supplier to me?

Also, when this problem is solved, I wish to add a linear amplifier to boost the 12 watt RF output to 100-500 watts or more. I am once again looking for a supplier of linear amplifiers too.

Frank. L.

Editor's reply to Frank L of W...

Dear Frank L.

First of all get that transmitter off-the-air! It appears to have problems which may not be cured by simply attaching output filters. The quickest way to get the FCC on your case is to cause interference to legally operated stations. The second quickest way it appears is to use an unseemly vocabulary, the third is to be on-the-air at all without a license. Whether you return to the air after repairs is of course up to you.

Testing and alignment of your equipment from a technical education standpoint, should be done into a dummy load and if possible while within a "screen room". I suspect you have serious mis-tuning of the transmitter.

A screen room is simply a small area within which to work where RF signals can't get out. Its ceiling, walls, and floors are covered with metal screen. This can be copper or aluminum screen wire, perhaps even chicken wire (1" holes"), or aluminum foil. The "screen" should be "grounded" and be fully enclosed to keep any signal from leaking out. Under these conditions you shouldn't cause interference.

We can't recommend suppliers of linear amplifiers. Another letter herein suggests that radio amateur 2 Meter FM amplifiers may be adaptable, however we have no data on the modification required. Commercial amplifiers are available of course from various broadcast equipment suppliers.

Most "Pirates" seem to agree that a low-power, non-interfering, low-exposure, and all-around "clean", station has the greatest longevity.

Editor

Dear EBN,

In 1984 when I moved to the U.S.A. I found out that there is no station or a reasonable program for our community. So I decided to open a small station for our people. In our city they average 350,000.

I tried and tried to get at least a non-commercial license but no luck. After a year of disappointment I met a guy who gave me the idea of Free Radio. I decided to go with it. I started with 40 watts and upgraded to 1 kW and now am planning to use 2 transmitters at 2 locations.

I've been on the air 2 years with the help of professional people who dedicated their time and money. Two years it took to get the cost of equipment, electric bill and phones. It was hard but worth it.

We are now off the air for a vacation but will be back soon to our regular time on the air (12 hours a week).

We are not playing, we are trying to meet all standards (as much as budget will allow). In a way we don't like what we are doing but the duty to home land asks us to do it (for our people here). For two years we did not bother anyone and I hope no one will bother us.

"E.T."

To Whom It May Concern:

I am aware of your newsletter publication and I am very interested in receiving it. Perhaps I could even make a contribution to its content.

My associates and I have been successful in starting our own project. We have a loyal audience which continues to expand.

I am acquainted with "E.T." - an operator whose "set up" recently appeared in the newsletter. I hope that this short letter can be the beginning of a dialogue between us and you and between us and other operators. I am looking forward to your reply.

Sincerely,

KSUX Radio "The Dad"

Editor's Soap Box (revisisted)

E.T.'s studio and transmitter were shown in last month's EBN. While technically a "pirate" E.T.'s motives are honorable - he's trying to provide programming for a minority group which is not serviced by our present broadcasting industry. Several such stations exist, most notably in Brooklyn serving Haitians, Puerto Ricans, Italians, and Blacks, just to name a few.

A few issues back I commented on maintaining some dignity on the airwaves. My opinions centered on certain types of "shock" programming and the vocabulary used by some D.J.'s. in an attempt to raise their ratings.

In one of my books about starting radio stations (both licensed and no-license-required types) I commented on the selection of call letters. It's fine, I said, to be "cute" with calls like KFOG (San Francisco where it's foggy), KOOL, KALM, KJAZ, KLAS - these are all self-explanatory and somewhat creative.

I just have a hard time accepting crap like KRAP, KRUD, and this latest lack of imagination KSUX. Sorry "Dad" but I find it a bit juvenile. Commercial, non-commercial, and yes, even "pirate" broadcasters should show some class and have respect for their listeners.

I'm not trying to make enemies, I'm just stating my opinion. If anyone out there, including "Dad" wants to submit an article of rebuttal the EBN will be glad to print it. We reserve the right however to edit language not essential to the interpretation of the message therein.

Ed.

Dear EBN,

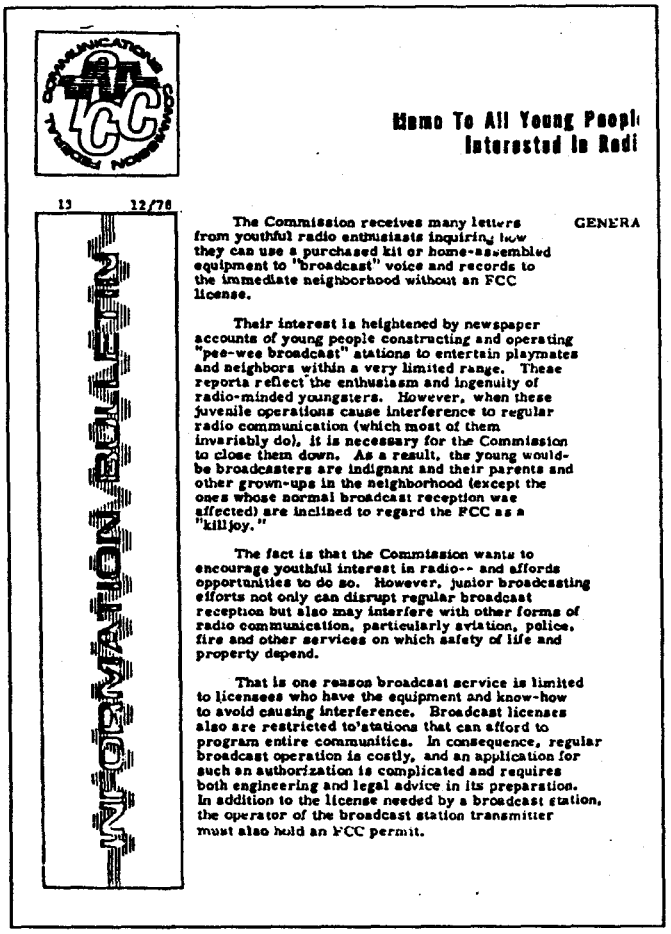
I have enclosed a couple of items that should be of interest. One is an AP story about FCC monitoring stations and the other is a memo to "Young People Interested in Radio" from the FCC.

Also I thought I would tell you about some changes and improvements made at WBNO since my last letter. I have successfully modified an 2 Meter ham amplifier to work on 107.9 FM. When driven with 5 watts I get 30 watts output, this, however causes a hum on the mixing board and also give me a little more range than I want so it sits idle except for special occasions.

I also have just obtained a Kahn-AM stereo exciter built by Brian H of WBDS. It is not in full time service yet, but will be as soon as I get a good antenna set up.

My studio equipment is as follows: Kenwood KD-21RB and Realistic Lab-390 Turntables, Fisher AD-823, Sony CDP-200 compact disc players, Sharp RT-10 and Sanyo RD-7 cassette decks, AKAI GX-280D and TEAC a12505 reel-reel decks, Pyramid PR-2750 Mixer, DBX-118 Dynamic Range Enhancer, and a Panaxis MMC Compressor.

Robert O.



Memo To All Young People Interested In Radi

13 12/78

GENERA

The Commission receives many letters from youthful radio enthusiasts inquiring how they can use a purchased kit or home-assembled equipment to "broadcast" voice and records to the immediate neighborhood without an FCC license.

Their interest is heightened by newspaper accounts of young people constructing and operating "pee-wee broadcast" stations to entertain playmates and neighbors within a very limited range. These reports reflect the enthusiasm and ingenuity of radio-minded youngsters. However, when these juvenile operations cause interference to regular radio communication (which most of them invariably do), it is necessary for the Commission to close them down. As a result, the young would-be broadcasters are indignant and their parents and other grown-ups in the neighborhood (except the ones whose normal broadcast reception was affected) are inclined to regard the FCC as a "killjoy."

The fact is that the Commission wants to encourage youthful interest in radio-- and affords opportunities to do so. However, junior broadcasting efforts not only can disrupt regular broadcast reception but also may interfere with other forms of radio communication, particularly aviation, police, fire and other services on which safety of life and property depend.

That is one reason broadcast service is limited to licensees who have the equipment and know-how to avoid causing interference. Broadcast licenses also are restricted to stations that can afford to program entire communities. In consequence, regular broadcast operation is costly, and an application for such an authorization is complicated and requires both engineering and legal advice in its preparation. In addition to the license needed by a broadcast station, the operator of the broadcast station transmitter must also hold an FCC permit.

The three page information sheet "**Memo To All Young People Interested In Radio**" has been reduced for inclusion in this issue. It IS readable but a magnifying glass might be helpful. For your full-size copy contact your local FCC field office.

Although the FCC's appeal is worthy perhaps it's missing the target. This "Memo" appears to be directed at 14 year olds and younger. I would think that 10 to 14 year olds would be immediately turned-off to the message when reffered to as "*juveniles*", "*youngsters*", "*young*", "*junior*", "*youthful*", "*teen-ager*", "*children*", "*boys and girls*". Do "*youthful broadcasters*" really consider their "*pee-wee*" broadcast outlet entertainment for their "*playmates*".

Pages 2 and 3 are on the following EBN page.

Perhaps the FCC should reword the Memo substituting "persons", "people", "individual", "group(s)", etc. instead of "children" and "juvenile". I doubt if a 10 to 14 year old thinks of him or her self as a "child". Simple rewording would cover a greater range of ages without anyone feeling "put down".

Most low-power broadcasters range in age from 16 to 80 years. Some of which are radio amateurs, professional broadcasters, religous groups and churches, high school and college students, doctors, lawyers, businessmen and woman, etc.

Memo to All Young People - 2

RULES

The Commission's rules (in Part 15 which deals with incidental and restricted radiation devices) do permit what are called "low-power communication devices" to be operated without a license in the AM broadcast and certain other bands, but under strict curbs to prevent interference to licensed radio services. These rules were established to enable individuals, for their personal convenience primarily, to use wireless telephones, phonograph oscillators, electronic "baby sitters," indoor communication systems, and to control garage-door openers model airplanes, etc., provided the operation is extremely limited and does not interfere with regular radio communication services. These rules were not intended to cover "pee-wee" broadcasting.

The requirements are highly technical and involve a complicated formula which, in effect, limits radiation to less than 300 feet. This is not sufficient distance to cover a residential block or even a group of adjoining houses.

Keeping within such a small radius requires engineeri knowledge that most young people do not possess. In the hands of the uninitiated, a slight lengthening of the antenna modification of equipment can, unwittingly, cause radiation far in excess of the prescribed minimum. This excessive radiation is certain to collide with authorized transmission in the congested radio lanes.

INTERFERENCE

Consequently, FCC field engineers are having mountin difficulty with objectionable interference caused by "home broadcast stations" operated by teen-agers. The field staf spends many manhours investigating complaints that juveni broadcast efforts adversely affect regular radio services. There is increasing evidence that such activities cannot be pursued in the crowded AM broadcast band without causing trouble.

Many grown-ups, as well as children, do not seem to aware that certification by the manufacturer or skilled technician is required before low-power communication devices can be used on the air. Consequently, sale by som mail order and retail stores of uncertified equipment can get an unsuspecting buyer in trouble and result in closing h operation. The Commission continues to seek the cooperat of makers, sellers and users to see that such apparatus is certified as meeting the technical requirements, thus preventing interference before it starts.

Memo to All Young People - 3

Because unlicensed radio operation is a potential threat to vital radio communication, especially to the safety services, the Communications Act provides fines up to $10,000 and a year's imprisonment, or both, for serious offenders. Radio transgressions by young people are due mostly to ignorance of the law in pursuing a commendable interest in radio. So, in warning unlicensed juveniles to cease interfering radio operations, the FCC field engineers explain the reason for so doing and cite opportunities for pursuing radio as a hobby, convenience or avocation through licensing in other radio services.

AMATEUR RADIO SERVICE

A boy or girl can further an aptitude for practical radio experience by qualifying in the Amateur Radio Service. There are no age limits in this service, which provides a means to communicate with fellow "hams" not only in this country but also abroad and, in so doing, to obtain knowledge of actual radio operation. Many persons prominent in electronics got their basic training in the amateur ranks. The six classes of licensees in this service range from "novices," some of whom haven't reached their teens, to "advanced class" seasoned old-timers. A fact sheet about the Amateur Radio Service will be furnished on request to the Commission's Washington office or to any of its field engineering offices.

Young people desiring to pursue the study of radio can write to the Government Printing Office, Washington, D. C. 20402, for lists of available Government publications dealing with electricity, radio, electronics and related subjects. The U. S. Office of Education, Washington, D. C. 20202, can advise about colleges offering radio and other special courses.

Those interested in operating radio transmitters for employment can start by qualifying for a restricted radiotelephone operator permit. No written examination is required and this grade is open to those as young as 14 years. This is a step toward three higher grades for radiotelephone or radiotelegraph commercial operators. The Commission's "Study Guide and Reference Material for Commercial Radio Operator Examinations" is sold by the Government Printing Office.

Except for the transmitter operator, the FCC does not license broadcast station personnel--announcers, disc jockeys, etc. The Bureau of Labor Statistics, Department of Labor, Washington, D. C. 20210, will advise about general employment opportunities in radio, electronics and other fields.

MINI-LESSON (Loading Coils)

In our last mini-lesson we discussed the 1/4 wave length Marconi (vertical) antenna. We saw that the antenna is "resonant" when its height (length) was 1/4 of wavelength. A shorter antenna can be made "resonant" by adding additional wire to it in the form of a coil. Because a coil concentrates the radio frequency magnetic field within it it requires less wire and space than an equivalent length of wire. This is called a "loading coil"

A vertical antenna which is shorter than 1/4 wavelength is said to be "capacitive". In other words it isn't long enough to have enough self inductance to resonate. If we can determine just how "capacitive" the antenna is then we can calculate the amount of extra inductance needed.

The effective capacity of the vertical can be determined by:

Length is in Feet.,Frequency is in MHz, and diameter is in Inches. C is in picoFarads. Assuming a 50 foot TV mast which is 1.25" average diameter at a frequency of 175 kHz (.175 MHz) the formula shows about 146 picoFarads of effective capacitance..

$$\frac{17\,\ell}{\left[\left(2.3\,\text{Log}_{10}\,\frac{24\,\ell}{d}\right)-1\right]\left[1-\left(\frac{5\,\ell}{234}\right)^2\right]} = C$$

Continued on page 8

FOR SALE: 10 watt FM stereo transmitter, PLL exciter, all solid-state, 3 1/2 x 19 inch rack panel enclosure. $350.00 and worth every penny! Also Panaxis MMC compressor/limiter, $40.00. Contact Jeff (201) 933-2661

WANTED: AM Carrier-Current type transmitter up to 5 watts. Operating or in reparable condition. Write: Harvest Productions, PO box 463, Kadoka, SD 57543

BULLETIN: For all of you that use your computer modems a lot, consider the latest FCC proposal. Computer users of telephone access services may be be slapped with new and higher access fees. These fees are to apply to enhanced data services such as Dow Jones, Compuserve, BIX, etc. I can't afford any more access fees...how about you? Call the FCC at (202) 632-7000 and inquire about the "Interstate Access Charges Exemption for Enhanced Service Providers CC Docket 87-208".

NOTICE: I'm keenly interested in corresponding with anyone in the U.S.A. or Europe and exchanging air checks (prefer cassettes) of land or sea based hobby pirates. I have a vast amount of U.S.A., European and New Zealand recordings of pirates. Also will trade interesting commercial or non-commercial stations. I'm able to receive the Nashville, TN. FM market from this location. Anyone in the area is always welcome to stop by for a visit. We are located nearby the famous Loretta Lynn Dude Ranch, just off Hwy 4, Exit 143. Write to: Bill Coleman Jr, c/o WIST-FM 94.3, PO Box 460, Lobelville, TN 37097. Personal Phone (615) 593-2978 (prepaid calls only and let it ring awhile). Best time to reach me is from 8 p.m. to 4 a.m. Central Time. Tips of pirates always welcomed.

Mini-lesson continued.

We can now determine the amount of inductance required to make the 50 foot mast resonant at 175 kHz. L is in Henries, frequency (f) is in Hz and C is in Farads. "Pi" is 3.14.

$$L = \frac{1}{4\pi^2 f^2 C}$$

See if you can come up with an answer for the example. We'll give the solution in the next issue along with the formula for determining the number of turns required for the coil. Remember, all of this is applicable for frequencies higher than those in our example.

NEXT ISSUE

We've received a video tape from England of a broadcast about Pirate radio activities there. We also received a booklet **"Radio Is My Bomb" - A Do It Yourself Manual for Pirates**, plus European sources of Pirate books and equipment., and several news articles. We'll pass along the information contained therein as we have a chance to sort it out. Our thanks to P.G. for his generous contribution.

It's interesting that the last 8 pages of "Radio Is My Bomb" are photo-reductions of the Panaxis RFI supressor/Filter and FM Antenna Plans.