EXPERIMENTAL BROADCASTER'S NEWSLETTER

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When you have a computer it seems everyone wants to play with it. A young lady in our rural area started a local, monthly newspaper, last month. Put these two items together, throw in an end-of-month deadline for the newspaper and EBN, and we got trouble right here in radio city. What I'm saying is the EBN is just a tad late again this month.

More about WDIA mentioned in our last issue. WDIA had been flying a skull and cross-bones just prior to being shut down by the FCC. Dave also received comment in Popular Communications Magazine. I believe he was running about 5 watts. I haven't talked with him for some time however.

The LPBN still needs your support and in return will support you. They have a library of music tapes prepared by and for the Low Power Broadcasting Network. For more information you should contact John Dutton, 514 Vincil, Moberly, MO 65270 (816) 263-4781.

We've been receiving mail as a result of an article in Maximum Rock n Roll Magazine. Haven't seen the article yet...anyone have a copy? In any case our thanks to whomever wrote the article.

Another publication of interest is A*C*E, Association of Clandestine Enthusiasts. Subscription information may be had by writing PO Box 452, Moorhead, MN 56560....Thank you John, good to hear from you again.

In the news lately, and on more than just our regular channels, was Captain Midnight. It appears pirating has truely been extended to great heights, not to mention coverage area, when the "Captain" took over the HBO satellite for a few minutes. Its been reported that he presented a nice set of "color bars". The FCC is pulling their hair out...but what else can they do? An uplink to the birds could be ANYWHERE in North America!

Another of our subscribers is planning FM music broadcasts from a satellite in the near future. It appears he will be doing it legally. I don't want to say too much....he promises to let us know all about it shortly. J.D. keep those letters coming!

Speaking of birds and computers, there is a move toward International computer links via satellite. Thanks to Mark for sending me the article. For more information write Hobbyscoop, PO Box 1200, Hilversum, The Netherlands..include return postage or "international reply coupons" available from the post office.

Published By Panaxis Productions, PO Box 130, Paradise, CA 95969

LETTERS

Dear EBN,

Here is an article that appeared in our student newspaper. If you remember Chris ordered an FMA 2000 last year. I helped him get the station on the air. Dave.....

PIRATE RADIO STATION BROADCASTING AT ISU (From the "Statesman")
By Ann Ail, Gary Beauliew and Teresa Gray

An unlicensed radio station is currently operating from a campus residence hall. WQUZ-FM 94 has been broadcasting since mid-February from various locations and on different frequencies. ...Chris Stevens is the pseudonym used by the Valparaiso freshman operating the station, who refused to divulge his real name. ...One of the factors motivating him to begin broadcasting was the lack of current programming on local radio stations. "There were hits that came out two months ago in Chicago and they just came here to Terre Haute," Stevens said. Joe Duncan, professor of communications, said that the FCC regulates the times stations are allowed to broadcast to avoid interfering with other radio stations. Duncan said he didn't know if the pirate radio station is violating FCC regulations. .....if the station is broadcasting to areas outside the residence hall, this could possibly be a violation of FCC regulations. The station may also be violating the federal copyright law by playing copyrighted music without permission. Stevens said the station's operating hours vary, but it generally broadcasts from 10:30 P.M. to 1:30A.M. Stevens said student response has been favorable. However some listeners have been reluctant to go on the air because they feared being associated with the pirate station.

Editor's comment: This is something I don't think we've discussed before - playing copyrighted music. It's true that schools, and other institutions have a blanket permission (for a small royalty fee) to play copyrighted music on campus. Radio stations pay the royalties depending on the size of the audience potential. Payments are made to BMI, SESAC, ASCAP, etc., which are agencies working in behalf of musicians, songwriters, etc. This is of course a problem for pirate or free radio station operators. If they decide they want to pay royalties on the music they play, would they also want to run the risk of having their pirate activities being mentioned to the FCC. Although all the articles state an illegal station operator can be fined up to $10,000 and get 1 year in jail.....The worst that I have heard about is $850 fines, nasty letters, and maybe seizing of the equipment.

QUICKEST BUST IN HISTORY

Just a week or so ago one of our EBN subscribers was dumbfounded! He cranked-up his 2 watt FM transmitter for the first time and put on a little music. Within 2 hours the State Police were knocking on his door. He had wiped out TV for several blocks in addition to interfering with the police band. They said they wouldn't turn him in IF he stopped broadcasting immediately. He did, shoved the unit into a box and moved it to another part of town. If anything else happens he'll let us know. In the mean time he's keeping a very low profile.

IMPENDING DOOM

A long-time low power broadcaster and EBN subscriber ran into a "damned if you do and damned if you don't" situation. Two gentlemen knocked on the door during a broadcast and asked if they could see the station. The operator was not prepared for guests as he was in the shower at the time. Someone else let them in. They could have tracked him down by a number of ways...driving around looking for a stronger signal level; using a reverse listing telephone director to find the address of the phone number that was given out over the air, etc. In any case they were THERE, but THEY weren't FROM THE FCC! Safe? Hardly!

They appeared friendly and delighted with the station. They too worked for a station - a TV station. It was a few days later when the ax fell. They said their program director wanted them to do a story about the low power station. They wanted the operator's cooperation in doing the story. If he cooperated they would attempt to keep the station's anonymity. On the other hand, without cooperation they would do the story anyway with all the facts they had learned. The operator cooperated.

The story appeared on the 11:00 news (TV remember). It included pieces of air checks complete with phone number, references to how illegal the station was, how the TV station had "tracked down this pirate", and even how they determined the station's power by using a field strength meter..."wow, the meter shows it must be at least 10 watts".

The low power station closed up for a cooling off period and then reopened on a different frequency. So far the station is still on the air. The TV station of course thinks it made BIG points in the community for its investigative reporting.

Could this have been avoided? Perhaps. The larger your audience and/or the more exposure via posters, ads, phone numbers, the greater your chances of having SOMEONE call on you. It may not be the FCC. It may just be the kid down the street. Remember, don't panic. YOU DON'T HAVE TO LET ANYONE INTO YOUR HOME. You CAN refuse to comment.

Ask to see identification (don't let anyone just "flash" it at you, make them hold it so you can study it carefully). After the person or persons leave you can disconnect your station and move it if you want. On the other hand you may just want to play dumb with FCC inspectors. See their ID, let them inside and proudly show your station as if nothing is wrong...then throw yourself at their mercy.

STATION OF THE MONTH

Dear Mr. Wilson,

Hello, I'm the "Anonymous KRAM" from KTHC and I would like to share my broadcasting history with you and all the EBN readers. About five years ago a friend and I built the FMS2 and FMA2000. We were located in a small city between Buffalo and Niagara Falls, NY. Our antenna was an existing horizontal VHF TV type, but had a range of about 4 miles, which took care of most of the city.

The format was progressive rock and jazz-rock. We operated about 15 hours a day and started to become very popular. One day when I was pulling into the studio driveway I spotted tow men suits, carrying what looked like a Sony Walkman, approaching the studio (FCC). Well it turns out one of our old enemies, from younger CB experiences, had a friend who was "Engineer-in- Chief" of the FCC. My friend let them see the studio on the grounds that no equipment would be confiscated (I wouldn't have). Needless to say we were shut down and fined $850. The station operated less than 1 month. We submitted a sob letter and had the fine reduced to $150 in $50 a month installments.

Since then I moved to a major city in Texas and had a similar idea for a radio station. I built the FME-250 which sounds great, but lacked the necessary power. That was the raw beginning of KTHC (the station with the hits). Meanwhile a good friend of mine, Jeff, also took an interest toward broadcasting. Jeff and I decided to go partners and Jeff sprang for the FMA- 10K. We've been in operation for 5 months now and the station has been improving nicely. We're running about 12 watts at the lower end of the band. We built a 1/2 wave colinear antenna that's concealed in the attic; it works much better than our existing 1/4 wave dipole.

Being in a city with a population over 3 million gives us a large potential audience. The format is non-commercial progressive rock/jazz fusion; rhythm & blues, ranging from band X to Buddy Holly. We operate 7 days a week, 24 hours a day. I'm around the studio most of the time (because it's my bedroom) and keep the music running without much dedication to D.J.ing. Jeff comes in and not only keeps people entertained by his witty commentaries and D.J.ing, but organizes albums and tapes, and keeps the music selection from becoming stagnate.

Here are some pictures of the station. We have 2 turntables (Sansui ad Technics), Technics double cassette deck, Teac 10 1/2" R-R, Sanyo CD player, M-500 Carver amp, 15" Sound Dynamics speakers, 2238B Marantz receiver which drives the transmitter directly. We hope to be in stereo soon. We pride ourselves at having the best sound quality on the air, with uncompressed dynamic range and no frequency filters. Our range is 6 miles average with nulls as much as 13 miles away! We're running into people at clubs and concerts that are dedicated listeners.

Of course friends like to guest DJ if Jeff or I can't. Very late at night, or when we can't DJ, we utilize the disk repeat feature on the CD player. We will be taking the set up to the beach soon, which reminds me of a perfect "mini-lesson". How about "Building a mobile 5/8 wave antenna for F.M. broadcast band" ? Keep up the excellent work at Panaxis and thanks for all the helpful advice.

We owe it all to you Ernie, thanks for making KTHC possible. Jeff.

P.S. KTHC has an Atari 800 XL, a modem, and many programs. Would like to be part of telecommunications link with other low power stations, also would like information on"building a 120 watt out/5-10 watt input, linear for 3 Meters. Perhaps we can use those Ethiopian based, 109% efficient transistors for $20 mentioned in the April issue of EBN!

MINI-LESSON Varying signal strengths

I've been asked to explain why signal levels at different distant points from a transmitter can be different from one day to the next. There can be many reasons, some very odd, some explainable, and some that have boggeled even great engineers. But, I'll do my best.

First of all consider conditions which can affect an antenna system. These include wet weather, snow, dust, smog, wind, and even temperature. Ground conductivity changes with moisture content. Antenna elements can be partially detuned and/or radiated energy may be absorbed by dust, wet dust (mud), fog, dew, rain, snow. Elements can be detuned by contraction (extreme cold) or expansion (very hot) weather. These are the rather apparent causes.

Some causes are strange and not at all apparant. Multiple signal pathes may create "hot" spots and "dead zones". A portion of the signal may travel a direct line to the receiver, another portion may reflect off a building, hill, water tank, aircraft, etc., and arrive microseconds later at the receiver. If the two portions of the same signal arrive in phase with each other they add to create a "hot spot". If they arrive out of phase they tend to cancel causing a "dead zone". In any given area there can be hundreds of direct and multiple signal pathes, hence hundreds of "hot spots" and "dead zones". These zones may be related to wavelength also. For example, at 1500 kHz a rapidly moving auto radio might witness a "picket fence" fading as it travels through zones about 600 feet apart.

The FM frequencies are essentially line-of-sight. These signals are affected by all of the above as well as the "shadow effect" caused by solid objects. Buildings, hills, aircraft, vehicles, etc., are simply in the way of the signal. Metal objects, guy wires, wire fences, etc., which have a length close to that of a resonant antenna can re-radiate the signal. The affect might be that of a multi-element antenna with an odd coverage pattern.

Even atmospheric pressure can affect wave speed through the medium (air). Although the difference in speed is extremely slight, some timing differences might be witnessed over long distances. This is especially true when the weather produces a "temperature inversion layer". You've probably witnessed this phenomenon at one time or another. Smoke from a winter fire floats straight up and then flattens out going sideways as if it hit a glass ceiling. That point is called an "interface" and can have the properties of a mirror. Light or radio waves hitting the interface at just the right angle will be reflected. This then is another not-so-apparent reflector.

You can perform some simple experiments to see for yourself how signal levels can be affected. The most common is just moving your body around a room while listening to a radio, or watching a tv with rabbit ears antenna. You can find points within the room that will increase your received signal, or decrease it. Often only a few inches one way or the other can make a very noticeable change - try it!

I recall an engineer in San Francisco that had terrible sound in one direction but ok in another. He had a well-tuned 3 tower AM array. He traced the problem to the array itself - it was tuned TOO WELL. The bandwidth of the array was too narrow and was attenuating some of the upper sidebands. The stronger lower sidebands combined differently in the array changing the coverage pattern somewhat. The attenuated upper sidebands arrived at receivers a little bit later causing audio distortion. The fix was simple, just detune the antenna a little bit to get a broader band width.

Another AM station engineer was having trouble keeping his antenna array tuned from week to week. The transmitter and antenna were located at the edge of San Francisco bay. Each Monday he would have to readjust antenna currents and phasing to stay within licensed parameters. The cause? A week-end fisherman had discovered what he thought was old copper cable laying on the floor of the bay. Each week-end he would go out and cut off 10 or 20 feet and sell it for salvage. The "old copper cable" was the AM station's ground radial system!

At KWUN in Concord, CA the 5 tower AM array would suddenly change from time to time. When one tower went completely dead the underground feed coax was dug up and replaced. Why? Gophers had eaten through the 1 5/8" Heliax direct burial cable!

For engineering students who wish to study radio wave propagation I recommend "Ionospheric Radio Propagation" U.S. Department of Commerce, National Bureau of Standards. Library of Congress Catalog Card Number 64-60061.

MINI-LESSON Modification of the Panaxis MMC to an ALC

This is a simple modification which could be made switchable if desired. The + lead of capacitor C13 is first lifted from the pc board. A short wire is soldered to the capacitor lead to lengthen it. Resistor R2's lead is disconnected from the swinger of potentiometer R1 and is connected directly to the input jack (hot end of R1). Now connect the wire from C13 to the swinger of R1. R1 now sets the ALC (automatic level control) threshold. Output level is still controlled by R7.

WHAT'S HAPPENING AT THE FCC?

It looks like they may be in trouble from the recent budget cuts. A total hiring freeze is in effect. This means as employees retire, quit, or whatever, new ones will not be hired to fill the vacancy. This may leave some field offices short handed. That might put a crimp in their investigations of pirate stations.... They also appear to be getting tough on license applications - returning unprocessed, any application that has even a slight error.

FOR SALE, TRADE, BARTER, EXCHANGE, & BULLETIN BOARD

For Sale: Custom made solid walnut cabinet for AKAI 4000 DS open real recorder. This is a professionally made cabinet that will replace the original perfectly. Mint condition, just $50.00. Joe Nechanicky, University of Minnesota, Technical College, Waseca, Library A/V Dept KUMW cable radio, Waseca, MN 56093.

For sale: GATES YARD with power supply. $300.00 plus frieght. Contact John Hart,4437 Jeanne. Virginia Beach, VA (804) 499-8146

For Sale: Heavy duty switching type power supply. Brand new and still in the box. +12, -12, +5, -5, all at 4 amps plus a 36 volt output at 2 amps. Regulated. Excellent for 24 to 28 volt, 50 watt MOSFET amplifiers Just $75.00 (includes shipping by UPS) Joan Wilson, Box 4028, Oroville, CA 95965

Wanted: Contact with Carrier-current and Cable FM stations. Write to Bill DeFelice, 621 Bishop Ave. Bridgeport, CT 06610

Wanted: Contact with FM stations using an external antenna. Please write or call John Dutton, 514 Vincil, Moberly, MO 65270 (816) 263-4781.

Wanted: Air checks, yours for mine. Also want to make contact with anyone using CD players. Paul Kriegler, 423 N 47th St. Omaha, NE 68132, (402) 551-2124 evenings.

Give-a-way to a good home: IBM System 3 mini-mainframe computer with line printer. Whole thing on casters. Total weight 2000 pounds. You pay freight or pick up. Jerry Truax, 48 Kenvil Ave. Succasumma, NJ 07876 (201) 584-3743

NEXT ISSUE ATTRACTIONS

Circuits used by Pirate Radio enthusiasts in Europe. NOT written in English but are still understandable. We'll also try to include a simple SW AM transmitter.