Radio Guide

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May 2003
Volume 11 Issue 5

Radio Roots Discovered at Tampa Bay

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Radio Guide

Radio's Technology Resource

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Columns & Articles

Radio Guide

Volume 11 Issue 5
May 2003

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Page 20 – Tren Barnett completes the initial settings of the server, by setting up a Dynamic Host Configuration Protocol (DHCP).

Past, Present and Future

It has often been said, correctly, that a society can never understand where it is going unless it understands how it arrived at this point and place in time. The same principle is true in regards broadcast technology.

As we move into the more complex transmission issues presented by IBOC, for example, one of the most important keys to understanding our jobs is grasping the concepts that underlie the technology. We need to learn about the technology and techniques involved in tuning our facilities to achieve the best possible air product.

Unfortunately, as has been often lamented, a major effect of deregulation has been a marked reduction in staffing levels at stations all over the country, as well as the loss of many experienced broadcast engineers. That cannot have a positive effect on the level of technical knowledge available at many stations. In plain English: When one engineer is tasked to care for six or eight stations all by himself, there is precious little time to think, study, and learn about the entire system. The workweeks of many engineers are consumed merely putting out "fires."

With fewer and fewer people really understanding things like directional antennas, who is left to train the next generation? Whether the industry is "up to" developing workable solutions is up for debate.

One thing is clear. **Radio Guide** sees its mission to be here to help make sense of the technologies, pressures and needs of the working engineers as we move into the future.

What do you see as the issues ahead? What do you want to know? Take a moment and let us know at editor@radio-guide.com. Let us grow together!

Radio History by the Bay

by Barry Mishkind

Broadcasting Roots Uncovered at Tampa Bay

[Is there time yet to save an historic site where a major aspect of broadcasting started 80 years ago? Ron Rackley has been hoping to get permission for an historical marker to be placed there, before the site and installation which started a revolution in station construction is lost to the developer's blade. Read on for the details.]

[TAMPA, Florida - May 2003] Directional Antennas are common in broadcasting. We use them for signal enhancement or signal reduction. From the yagi type antennas used for auxiliary services to the multi-tower arrays used to "shoehorn" AM stations into markets with ever increasing power, directional antennas permit operation where non-directional activity just could not accomplish the technical requirements.

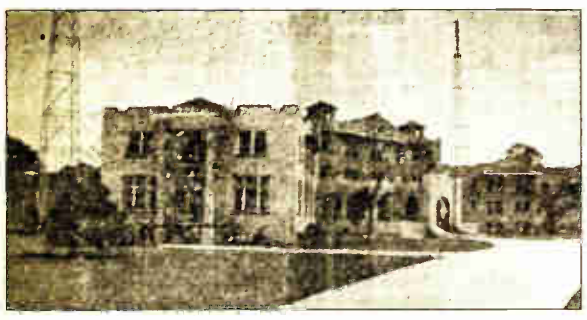
Unfortunately, once installed, most directional antennas seem to be given little attention. They work so well, one consultant suggested we might soon run out of engineers who truly understand them.

Yet in a true "they said it couldn't be done" story, the very first directional antenna used in broadcasting was almost not finished. Nay Sayers thought it was impossible to set up and run; it would be just a vain pursuit.

DUNEDIN DAYS

The story begins in 1925 with George H. Bowles, a Real Estate entrepreneur in Dunedin, Florida. As the West Coast of Florida began to be developed, there was a need to get people to buy property and move down to retire in the sun.

Bowles somehow learned about Walter Tison, a ham operator who had been instrumental in providing the first transmitter for WSB in Atlanta. Tison, no longer attached to WSB, was seeking to sell his transmitter to another potential broadcaster. Bowles brought Tison and his 500 watt transmitter to Dunedin, where it was installed on the roof of the Fenway hotel. Amid appropriate fanfare, WGHB went on the air on December 10, 1925.



Fenway Hotel – 1926 *Dunedin Times*

As with most early stations, at first the studio was on the roof with the transmitter, accessible only via a long ladder. Just in time for the "Grand Opening" a studio was finished at ground level, so dignitaries would not have to climb the ladder. The impact was immediate. During the inaugural broadcast, some 425 telegrams were reportedly received from 36 states and Canada.

Unfortunately, the real estate boom in Florida was starting to falter, which in turn created cash flow problems for Bowles. Forced to sell his interests in the Fenway and the radio station, it was moved to Edward Haley's Fort Harrison Hotel in Clearwater. Re-christened WFHH in early February 1927, the station essentially was operated by the Clearwater Chamber of Commerce. Six months later, a station in Boca Raton died and they got the call sign they really wanted: WFLA – "West Florida."

WFLA did not operate alone for long. Although it had a good allocation on 850 kHz, in addition to the half dozen other area stations like WDAE, WFLA had to justify its existence to the Federal Radio Commission (FRC). Since all stations were essentially non-directional at the time, only a limited number of stations could operate at night without excessive interference. There was tremendous pressure on the FRC to eliminate those stations operating only part time, and replace them with facilities that promised to use the increasingly crowded dial to the full.

The solution at the time was to sell a half interest in the station to a neighboring Chamber of Commerce. The St. Petersburg C of C quickly agreed to pay $6,000 to share the transmitter. Taking the calls WSUN (Why Stay Up North?) to lure visitors, the St. Petersburg station was permitted three days a week, and alternate Sundays for their operation on the new, and better frequency of 590 kHz. From there, the sister stations, now WFLA-WSUN, were moved to 620 kHz with 2,500 watts daytime, and 1,000 watts at night, beckoning Northerners to enjoy the sun and warm Gulf waters.

Although there were few other stations on the 620 frequency, one of them belonged to the Milwaukee Journal. Seeking to increase its signal to 5,000 watts, WTMJ asked the FRC to either abolish WFLA-WSUN, or cut its power. Eventually WTMJ went to court, and the US Court of Appeals directed the FRC to adjust WFLA-WSUN to protect WTMJ's service area. The FRC, an agency with limited control over the broadcast industry, responded by reducing WFLA-WSUN's power to 500 watts daytime and 250 watts night, essentially depriving them of their desired listeners.

THE FIRST DIRECTIONAL ANTENNA

At that point, the future operation of WFLA-WSUN looked real bleak. Without access to listeners in the north, there was little value to the Chambers of Commerce in operating a radio station. They even considered turning in the license. But Walter Tison was not giving up. He approached the situation in two ways. First, he applied for a huge increase in power for the station, WTMJ's court order not withstanding. Then, he contacted Commander T.A.M. Craven, the consulting engineer for WFLA-WSUN, for assistance in designing and constructing a directional antenna.

While there had been experiments on directive receiving antennas, and some transmitting facilities, it was mainly in short wave, point-to-point usage. Furthermore, some engineers derided the concept of using a directive antenna at AM frequencies, suggesting the real problem was the way the WFLA-WSUN signal went across the Gulf of Mexico and "turned" up the Mississippi River Valley, to reach Milwaukee. Others simply said the ionosphere did not have anything like a smooth surface, and the resulting propagation would not be as anticipated.

Craven, who would go on to serve as the first Lead Engineer at the FCC, and later a Commissioner, enlisted the aid of Ray Wilmotte, a British engineer. Wilmotte had done quite a lot of study into the way directional antennas worked, and felt this was the right option for WFLA-WSUN. Wilmotte was so sure of himself that he agreed to be paid only if he was successful. Craven agreed with Wilmotte, and together they undertook to construct the antenna. Calculations were carefully made regarding the groundwave and skywave signals toward Milwaukee.

The tower bases and guy anchors were laid along what would become the Courtney Campbell Causeway in Clearwater in March 1932, and tests began in May of that year. A 200 foot self supporting tower was constructed on either side of the road, a quarter wavelength apart, in line with the bearing toward Milwaukee, 346 degrees. The RF circuit was quite simple, with the transmission lines cut to quarter-wavelength, and routed in a curved way to the towers. One tower was coupled from the transmitter with a coil to shift the signal -45 degrees; the other was coupled with a condensor, to shift the signal +45 degrees. The phase angle between the two towers was 90 degrees. The result was a tight cardioid pattern, with the null at 346 degrees, toward Milwaukee.

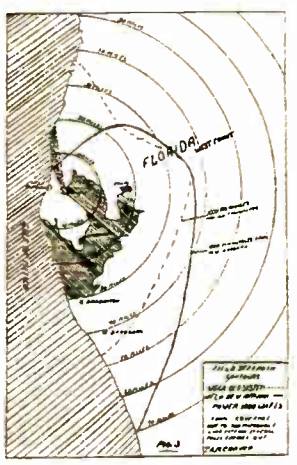
An engineer was sent out in the field with such meters as existed then, as well as radios. Even with such a simple array, the tune-up did not go as quickly or as easily as expected. It soon became apparent the constructors had not fully taken mutual impedance factors into account, as even the relatively primitive bridges available showed different antenna base impedances. So, much of the "tuning" was done by making adjustments until the signal "faded out" at the location of the monitoring engineers.

In the end, it turned out Wilmotte was right in his calculations, and a deep minima was obtained. In fact, the antenna worked so well that the FRC inspector in Atlanta, who was to measure the frequency of the station, instead had to ask if WFLA-WSUN had authority to be off the air. He could not hear the station at all!

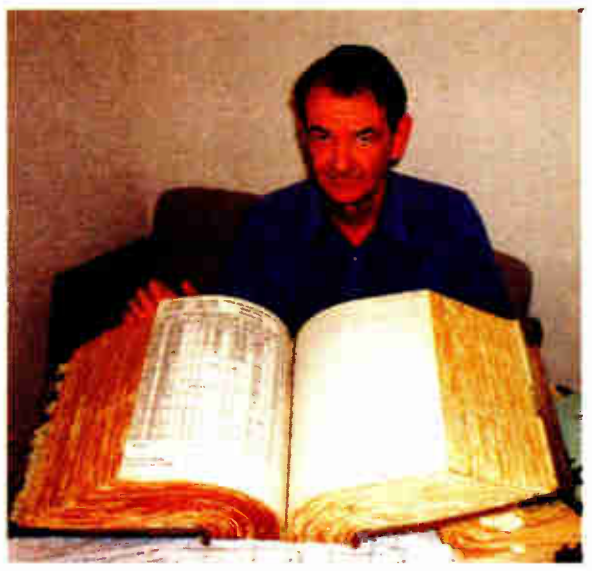
WILMOTTE'S SUCCESS

The two tower WFLA-WSUN directional antenna was a real success. And it operated for 18 years from the site on the causeway, accompanying the entry gate as a sentinel marking the entrance to Clearwater. The cardioid pattern sent a strong signal to the north while reducing the signal toward Milwaukee well below required levels.

Quite a few transmitter logs have been saved from the operation of the plant, and the stability of the antenna can be seen today.



Craven's drawing of WFLA-WSUN radiation pattern.



Wilson Welch, Clear Channel DE with WFLA-WSUN logs from 1934-1939.

Of special interest is some of the terminology used in the logs. Engineers carefully noted the operating parameters, and special situations.

(Continued on page 6)

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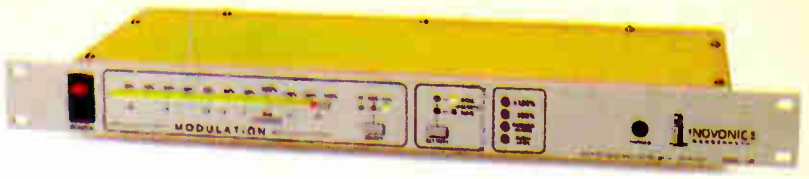

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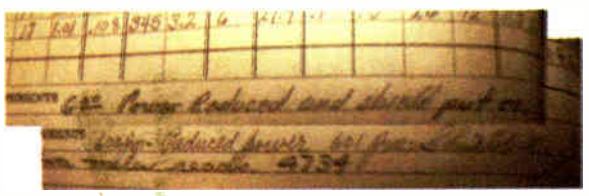
Radio History by the Bay

Continued from page 4.

Among the logs are notes related to repairs done, even the reduction in power used during the later stages of World War II. Perhaps to describe the effect of the directional array in terms better understood in 1932, Tison often referred to it as a "shield" or "shielded transmission," to indicate a "shield" kept the signal from going to Milwaukee. Dutifully, the engineers noted each day when the array was "shielded" or "shield put on." I did look at quite a few of the logs, but none of them said "shields up." Apparently, no Starfleet officers worked at WFLA-WSUN!

The two stations continued to send joint southern



Portions of the WFLA-WSUN logs.

greetings to folks up north for about 8 years. By 1941, the Clearwater Chamber of Commerce had had enough, and sold its half interest to the Tampa Tribune, which promptly changed the station's "home" to Tampa. With both entities wishing fulltime operation, separation was not long in coming. WFLA moved to a 940 plant (later 970) in Tampa, while WSUN stayed on 620 when they finally split in January 1941. In 1950, WSUN moved into St. Petersburg proper, at the site shown on the cover, along the Gandy Causeway.

Today, both facilities are owned by Clear Channel Communications. The call letters on 620 are now WDAE, a call sign long used in Tapma by the station on 1250. The Gandy Causeway site saw an increase to 10,000 watts in recent years (to combat interference from Cuban broadcasts), still without sending excessive radiation toward Milwaukee. Over on 970, the WFLA calls continue, with the power recently increased to 25,000 watts day/11,000 watts night, into five towers of a six tower array shared with WHNZ (1250).

THE SEARCH

Ron Rackley, the consulting engineer for the stations, has long had an interest in the history of these stations, but especially in the WFLA-WSUN 620 facility from 1932. As noted, this was the first directional antenna used for broadcasting in the world. Although he knew the original location was along the Courtney Campbell Causeway, the exact location was not readily apparent. Rackley, and Wilson Welch, Gulf Coast Director of Engineering for Clear Channel Radio, wondered if any of the original site remained. They sought any information available as to the exact location, and hunted for clues.

Finally, Ron discovered an old picture of the site near the causeway, and using the photo as a guide, Welch finally discovered the right location. A sewage plant now stands on the site of the south tower, however, the original base for the north tower of WFLA-WSUN was hidden in a clump of trees in a field next to a gas station. Clearly visible was the date "Mar 8 '32," when the tower bases were poured.

Rackley and Welch, along with others, are seeking to have an historical marker placed on this site, to commemorate the start of this first of all directional antennas, and the men who conceived and built it. Currently, a sponsoring agency is being sought. An announcement will be made in **Radio Guide** if and when permission is granted, for those wishing to contribute to the proposed marker.

I wish to express my sincere appreciation to Ron Rackley of du Treil, Lundin & Rackley, Wilson Welch at Clear Channel, and Vincent Luisi, Director of the Dunedin Historical Society and for their kindness in sharing their time and information in search of the history of the WFLA and WSUN.

Little Did I Know

by Donald E. Kimberlin, NCE

[TAMPA, Florida - May 2003] Little did I know all those years ago that I would return to Tampa Bay, traveling with Barry Mishkind to visit and research sites involved with the world's first DA.

Forty-six years ago, when a new, state-of-the-art, picturesque 1950 DA of (then) WSUN straddled the highway entrance to St. Petersburg, I was in college, and really proud to have been accepted into the small coterie of broadcasters around Tampa Bay.

At the time, having been issued First Phone license number 531 at Tampa meant more to me than knowing its connection with names like Tison, Mitchell, Holey and Wilmotte. I had heard WSUN had "the first something-or-other." But, little did I know the "first" at WSUN had been a DA. And not until forty-odd years later did I find out it was not only the first in the US, but the first AM DA in the world.

Walter Tison was quite a fellow. After serving as a WWI Navy radio operator, and a stint in the Merchant Marine, Tison built the first broadcast station in the southeast (WSB in April, 1922). Over time, Tison had spawned about half the AM's around Tampa Bay: stations with callsigns like WFLA, WALT, WTIS, WTAN and others.

Walter Tison

A couple of years later, Tison brought his 1922 WSB transmitter to Dunedin, Florida, to set it up in a hotel full of Florida bootleggers and real estate promoters, and become a significant part of Florida's real estate boom and bust. As manager of WFLA and various other stations, Tison inspired awe from us young guys. Tison was Tampa Bay Broadcasting.

Until discovering the whole WSUN/WFLA DA story, I never knew the illustrious background of my own station's (WTSP) consulting engineer, Walter Holey. Holey had been part of the FRC's team of engineers who observed and measured the success of the world's first DA from Atlanta. He certainly had first-person relations with Tison, Mitchell, Wilmotte and even the illustrious Commander T. A. M. Craven, a Washington, DC area consulting engineer who went on to become the FCC's first lead engineer, later rising to the office of FCC Commissioner.

Craven was the link between Tison and Raymond Wilmotte, a British expatriate who had been instrumental in developing direction finders. Wilmotte brought his brilliance and innovation to bear in designing a "shield antenna" for WFLA-WSUN as the first practical application of Sommerfield's Theory. Until retiring in 1995, Wilmotte continued to distinguish himself working for the US military, RCA, and the FCC, on projects as diverse as UHF TV, mobile and satellite communications, and HDTV.

Today, almost a half-century later, I finally can realize what all these men and their colleagues contributed to the art and science of broadcast engineering. Hence, I am humbled to be able to view even such a minor remnant of their work as a dated cement tower base. I surely hope the world will remember their work for a longer time than my memory.

Don Kimberlin is a NARTE Certified Engineer, based in Landis, NC. He has written on many technical topics, both current and historical, and loves to go hunting for history.

Radio Towers

Everything You Wanted to Know, But Were Afraid to Ask

by Richard Haskey, CPBE

Part 2: From Contract to Delivery

[MESA, Arizona - May 2003] Last time we talked about selecting a tower (or towers) for your new or re-located AM array. Since I am not sure that FM (like TV) will ever really catch on, we will leave consideration of FM towers for another time. There are some basic similarities, but usually they have a bigger face width, especially at the bottom, and present a whole lot of different problems. Watch for this discussion coming to a newsstand near you.

Meanwhile, you have ordered what you think will be a tower (or towers) suitable for your purposes. Once that is done, there are a number of things you can do prior to the arrival of the steel. First, of course, will be to select an erection crew. They are NOT all alike and equally competent. Many of the erectors of today do a fine job with cell/PCS towers, but probably well over half have never dealt with a guyed tower. This same half probably does NOT have a gin pole, a proper hoist and the knowledge to use this gear safely and effectively.

Furthermore, there are dozens of tower firms specializing in hanging antennas, changing tower lights, doing various roof-top installations and the like. I know from experience that, when questioned, they will mostly all tell you they can do the job for you. They see $$$ in their eyes and a single tower erection job will probably net them more than hanging 15 antennas, running 1,250 feet of coax and installing a half dozen grounding kits.

Be sure you ask your potential erector *who* will be doing the actual work. Are he and his crew going to do it or, will they bring in Arapaho Screen Door and Tower Service, a friend of your potential crew's owner. You may laugh, but it happens every day.

Once you have narrowed your field down to two or three firms, it is time to get serious.

CONTRACT SMARTLY

DO NOT start a tower job with a handshake and a contract scrawled on a Dunkin' Donuts napkin. A tower job is an expensive undertaking and your employer probably deserves not to be "taken."

First and foremost: Are they properly insured? Demand to have a copy of their insurance certificates faxed to you from the insurance carrier/agent's office. A coffee stained, folded and almost unreadable form from the glove box will not do. In today's "everybody sues everybody when the music stops" world, a one million dollar umbrella policy, in addition to workmen's compensation, bodily injury, etc. may not be enough. Your attorney will advise you and should inspect their contract to be sure you and your station are properly protected.

Just as a point of interest, our firm has an arrangement to quickly put in place a three million dollar umbrella policy which is mandatory on certain jobs. We do not keep it in force at all times due to the expense. Ordinarily, we carry all of the other required insurance and a one million dollar umbrella.

And, verify their vehicles are properly insured as well. Most smaller tower companies will have a minimum of three carriers: Workmen's compensation, auto/vehicle liability and general liability. Be certain to have coverage declarations from *all* of them. Your attorney will advise you if you should demand to be named as an additional insured. In some states this is often mandatory. The larger tower companies, by the way, may well have all of their coverage through a single carrier.

Look at the crew's equipment. Are they using demolition derby surplus vehicles? Look at the safety harnesses they are using. The old telephone lineman's belt is no longer a viable option according to OSHA. Additionally, 100% tie-off is the rule of the day. This means that the climber has two lanyards, one of which is always attached to the structure. A third lanyard, often called a positioning lanyard, is used to secure the rigger to the tower when he gets to his work station.

Lest we beat this safety discussion to death, suffice it to say you probably will have a pretty good idea if you can work with a particular crew after a one-half to one hour interview. Among the questions you should ask is whether his firm is a member of NATE (The National Association of Tower Erectors). If so, they subscribe to – and are supposed to abide by – all applicable safety Rules.

After your attorney blesses your decision on a tower crew, it is time to move on to some other important matters.

X MARKS THE SPOT

Where will the tower be placed? Years ago, tower locations were spotted on topographic maps, scaled and field measured using tape or rope. Even many directional antenna arrays were done this way. Perhaps you have worked for a station that was sited this way. Let us hope the tower location was within a few seconds of where the license says it was supposed to be. Many are not. One clown, confronted with a tower quite a ways off, tried to take the position that "this was earthquake country" and *that* must have caused it. The FCC did not buy it.

After the days of the topographic map and field measuring, a surveyor's shot of Polaris (North Star) became very popular. The surveyor used a table called an ephemeris to determine when Polaris was directly overhead. At the exact time, using WWV, the lead surveyor would sight the star and yell out, "get ready" to his rod man. He would plunge his 'scope toward the ground, ask that a point be set and quickly plunge further and set a second point.

These two points would define a north-south line from which everything else was laid out. In the early days this was still done by measuring. EDM (Electronic Distance Measuring) became popular and affordable and the hand measuring was then merely a memory.

Even with GPS now so common, there are many consultants who will accept nothing but a Polaris shot. Ask what method your consultant prefers.

I have built several arrays using DGPS (Differential GPS) and the accuracy is phenomenal. If you consider all of the machinations the other methods require, you will find many chances for potential error. If these are all in the same direction, you might be fair bit off.

With DGPS, the surveyor will utilize at least two highly accurate units and will have the ability to eliminate the built-in degradation from the satellites even though it is far less than it was several years ago. Rather than just send these guys out with a plot or map, find the time to go with them. You will be amazed, as I was, over the way this all comes together.

A couple of years ago, we were doing an array and the owner's director of engineering showed up and asked where the tower bases were located. I took him out to one base and showed him the wooden stake. He was not impressed. Then, I called his attention to an 8d nail in the stake and he felt much better.

Then I asked him if he could see the "dimple" in the nail. He saw it and said, "That's it? Wow!" I had previously asked the surveyor what accuracy he strove for. He replied that they were looking for *better* than 2 or 3 hundredths of a *foot*. (That is an eighth of an inch or so!) Then, *I* said, "Wow!'

In addition to the stake, be sure the surveyor sets an iron post at each point. That way, should the stake be stepped on or otherwise mutilated, it will be a quick job for the surveyor to consult his notes without having to run all over the field. Particularly with directional antenna systems, time spent carefully laying out the towers, will be well worth the effort down the road.

If you really want to help your riggers, have the surveyors set off-set points at each excavation. That way, once the dirt is dug away and the exact marker is gone, there will be an easy way to check to make sure everything is back in its exact location.

DELIVERY DAY

When the trucks come rolling down the road with the steel package, what will you do with it? It has to be placed somewhere convenient to the tower location(s), must be where the over-the road truck can traverse without sinking into a quagmire and someplace where the stack of steel does not present an attractive nuisance.

In addition to the steel, there will be boxes, canvas bags or even a barrel or two with hardware. All this hardware should be kept inside until needed. Guy wire on large wooden spools is usually safe if left outdoors.

Unless you are in a small town where everybody knows everybody, the trucker is responsible only to bring the material to the site. He/she *will not* unload and usually not even help – except in the "small town" situation above. Possibly, you can get the rigger to bring in a small crane and off load the material.

I have seen it happen a dozen times: People forget to get the proper off-loading equipment, the rental yard will not have anything until morning and the trucker is due in Ashtabula in the morning. The station engineer rounds up all the help he can find. Then, they start pushing the sections off the truck. The really fun part is when they push the guy wire spools over the side and the centers of the spools come loose from the sides. The wire is all on the bottom of the spool and 13 high-school athletes cannot budge it.

The rigger will *not* be happy with this state of affairs.

Get the proper equipment, or hire somebody who has it – and can use it. Sure, you are not unloading fine watches or Swiss Clocks but the sections are a bit fragile and the steel can be bent. More than likely, the sections are loaded two or three high with 4" x 4" "cribbing" between the layers. (The trucker may want the cribbing, but it is yours. You paid for it when you bought the towers. Use it as you wish.)

The tower package is on the ground at your site. The surveyors have set all of the points where bases and anchors will be. It is time to call in the riggers for the next chapter in your extravaganza. When you get all of this finished, the rigging crew is on-site and you are ready to move on, let me know. I will be around to share more of what I have learned the hard way over many years.

Mr Haskey claims he was with Marconi when radio was invented. Marconi, of course, got all the credit because he sent Haskey out to the 7-11 to buy beer. Have a question? Communication may be possible at rhaskey@extremezone.com

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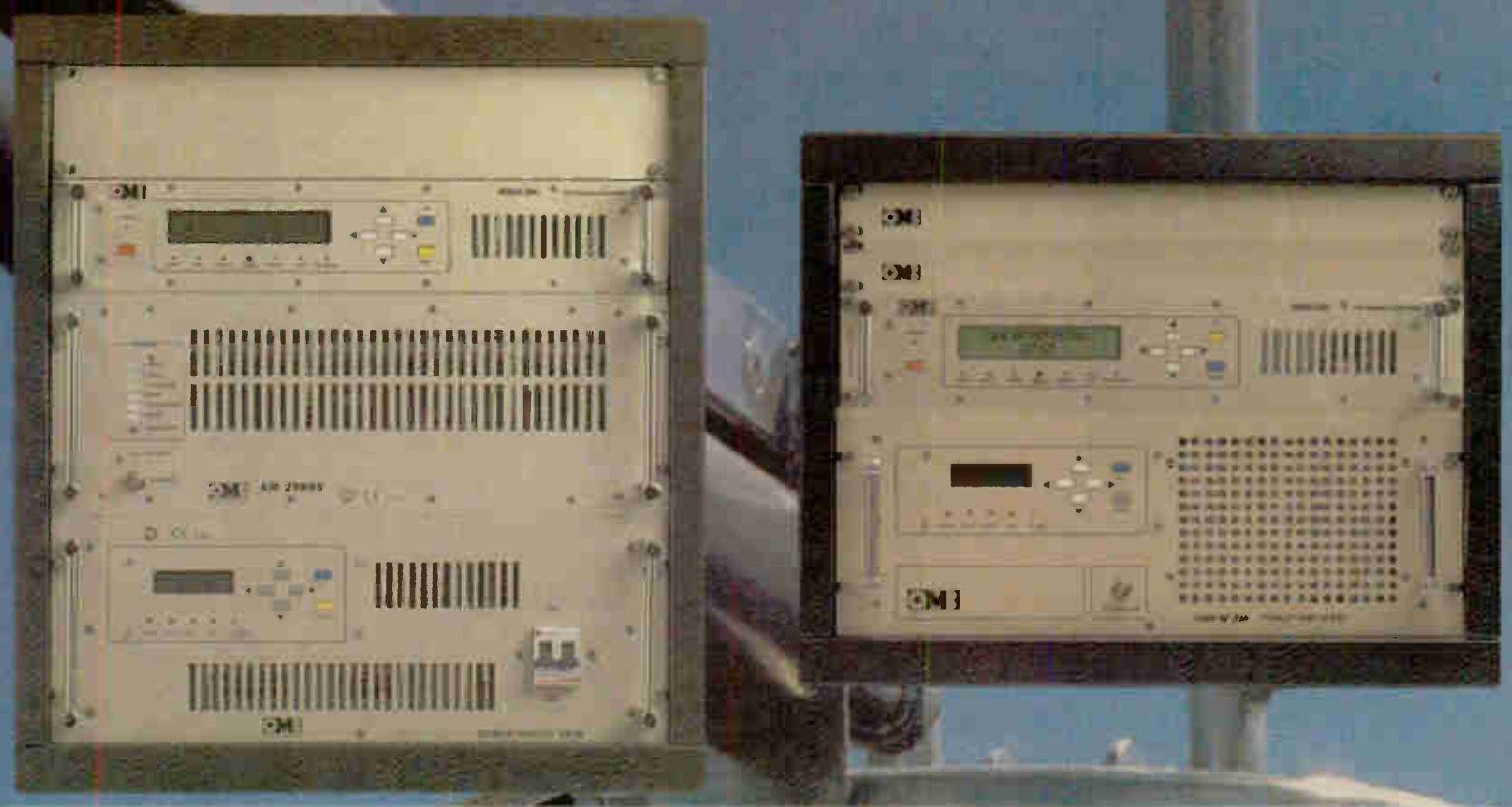

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Tower Topics

Part 1: So You Have a New Neighbor

by Bix Bixby

[LYKENS, Pennsylvania - May 2003] It is a little after nine o'clock on Monday morning; you have been on the phone since you got to the office, and your coffee is already cold. And now there is some clown on the phone who says XYZ Cellular is going to build a tower near your AM directional array. He says you need to "sign off" on their plans. It looks like this is going to be a great week. Yet, it could be worse: More than a few station engineers have arrived at their transmitter sites to find something like the tower shown here, already erected nearby.

In this series, we will talk in detail about how best to deal with this situation. First, we will look at the pertinent FCC Rules and policies, what is required of the cellular operator and what information you should expect in the initial coordination contact. In Part 2, we will discuss how cellular towers affect AM antenna patterns and suggest some guidelines for predicting the effect of the tower on your station. Finally, in Part 3, we will cover the tower detuning and measurement techniques applicable to these situations.

FCC RULES

Until 1995, there were no specific FCC Rules covering non-broadcast towers erected near AM stations. Instead, the FCC had a policy applicable to all Commission licensees. This policy was published in several Public Notices, and stated, in part:

> ... the Commission's policy is clear. Whether by imposition of specific conditions or by operation of law, a licensee building a new facility is obligated to take all the necessary steps, including the financial burden, to correct interference problems caused by the new or modified construction[1].

But, since the situation was not addressed in the Rules themselves, many cellular operators were unaware of the policy until they got a complaint from the radio station, or, worse, a letter from the FCC. In 1995, the FCC adopted an extensive revision of Part 22 of its Rules pertaining to cellular operators. Of particular interest to us is the addition of Section 22.371.

Sec. 22.371 Disturbance of AM broadcast station antenna patterns.

Public Mobile Service licensees that construct or modify towers in the immediate vicinity of AM broadcast stations are responsible for measures necessary to correct disturbance of the AM station antenna pattern which causes operation outside of the radiation parameters specified by the FCC for the AM station, if the disturbance occurred as a result of such construction or modification.

(a) Non-directional AM stations. If tower construction or modification is planned within 1 kilometer (0.6 mile) of a non-directional AM broadcast station tower, the Public Mobile Service licensee must notify the licensee of the AM broadcast station in advance of the planned construction or modification. Measurements must be made to determine whether the construction or modification affected the AM station antenna pattern. The Public Mobile Service licensee is responsible for the installation and continued maintenance of any detuning apparatus necessary to restore proper non-directional performance of the AM station tower.

(b) Directional AM stations. If tower construction or modification is planned within 3 kilometers (1.9 miles) of a directional AM broadcast station array, the Public Mobile Service licensee must notify the licensee of the AM broadcast station in advance of the planned construction or modification. Measurements must be made to determine whether the construction or modification affected the AM station antenna pattern. The Public Mobile Service licensee is responsible for the installation and continued maintenance of any detuning apparatus necessary to restore proper performance of the AM station array.

For the most part, the new Rule simply codified the requirements of the old FCC policy as set forth in the various Public Notices. The most significant exception is in the area of required measurements. The old Public Notice required partial proofs of performance conducted both before and after the tower construction. The new Rule refers generically to "measurements." In the Report and Order, the Commission made it clear this was not an oversight. Rather, their stated intent was to allow the flexibility to employ a measurement program appropriate to each situation.

COORDINATION REQUIRED

Both the Public Notice and Section 22.371 require coordination *in advance* whenever a tower is to be constructed or modified within 3 kilometers of a directional station or within 1 kilometer of a non-directional station. The Rule does not specify the form of the coordination, whether verbal or written.

Frequently, the first contact will be by telephone. This allows the cellular carrier's representative to locate the individual at the station or group that he should be talking with, and it allows for a convenient exchange of information. A prudent cellular operator will want a paper trail to document his compliance with the Rules, but that often comes at the end of the process in the form of a written final report.

Similarly, the Rules do not specify the information to be provided. Clearly, however, the coordination is meaningless unless it provides enough accurate and detailed information to allow the AM station to make its own evaluation of the proposed tower's effect. Therefore, the coordination should include:

1. The exact location of the tower. It should be given in latitude and longitude with the reference datum, of course, along with whatever additional verbal description or street address that will help station staff locate the site.

2. The tower type (self-supporting, monopole, or guyed) and the overall height of the tower. If the tower will have one or more substantial antenna platforms, details, including the height and nature of the platforms, should be provided. Antenna platforms top-load the tower, making it appear taller than its physical height.

3. The carrier should disclose what impact the tower will have on the station based on their analysis of the station's radiation pattern(s) and the tower location in those patterns.

4. Based on their impact analysis, the carrier should indicate whether or not the tower will be detuned, and what measurements are proposed to comply with the requirements of Section 22.371.

TOWERS BEYOND THE COORDINATION DISTANCE

The Rules are quite clear with respect to notification of stations within the specified distances, but sometimes the tower locations fall just beyond. The FCC-specified distances establish a zone within which it is reasonable to expect some impact on the AM station. Within those distances, cellular carriers are required to pro-actively notify the stations and mitigate the tower's impact. Beyond the coordination distance, it is less likely, but not impossible, that the tower will disturb the AM station's pattern.

In those cases, it seems likely the FCC would encourage or even require cellular operators to take the appropriate steps to mitigate the impact of his tower based on the long standing policy discussed in the Public Notices as well as Section 22.371. Stated simply, the cellular operator isn't "off-the-hook" just because his tower is a few meters beyond the coordination distance.

NON-CELLULAR TOWERS

So far, we have referred specifically to towers erected or modified by cellular carriers. Cellular carriers are regulated under Part 22 of the FCC Rules and are covered by Section 22.371. However, not all of the folks we tend to lump together as "cellular" are such. Personal Communications Service carriers such as Sprint PCS are regulated under Part 24 of the Rules. NexTel is a Specialized Mobile Radio carrier regulated under Part 90.

At present, there are no provisions in either Part 24 or Part 90, analogous to section 22.371. After years of working with these carriers, my experience has been that usually they recognize their obligation with respect to nearby AM stations and they tend to follow the procedures called for in Section 22.371.

A bigger problem appears to be the growing trend of structures owned by service companies that build towers or buy existing towers for lease to wireless providers. The landlord companies are typically not FCC licensees and therefore are not subject to Section 22.371. However, the addition of cellular antennas to a tower would seem to be a modification within the meaning of the Rule or policy.

Therefore, the tenant cellular carrier would have an obligation to coordinate with nearby AM stations. But, if the tower requires detuning, the tenants probably have no way to require the landlord to do so.

FCC ENFORCEMENT ACTIONS

The FCC is willing to enforce its Rules when necessary. In 1997, the Enforcement Division issued a Memorandum Opinion and Order[2] confirming a monetary forfeiture of $4,000 against the Fayetteville Cellular Telephone Company, L.P. for violation of Section 22.371 by failing "...to give directional AM broadcast station WIDU(AM) prior notice before constructing a tower within 3 km..." of the station's array. In fact, the tower was less than 1 km from the station, and approximately 110 degrees tall at WIDU's frequency.

The carrier detuned the tower when the AM station complained, a fact which the FCC "...considered in proposing the initial forfeiture amount..." The penalty related specifically to the failure to coordinate the tower in advance. Detuning the tower may have mitigated the penalty, but it did not get the carrier off the hook.

A similar situation happened more recently in Rapid City, South Dakota involving WWC License, LLC the cellular licensee of KNKA721. In this case, although detuning apparently was not an issue, WWC did not coordinate in advance with two nearby AM stations. The FCC issued a Notice of Apparent Liability for forfeiture of $4,000, citing violation of Section 22.371.3

NEXT TIME

In the next issue, we will look at reradiation, the means by which cellular towers create problems for AM stations. The ability of a structure to disturb an AM station's pattern is determined by the magnitude of the reradiation from the structure. This is, in turn, a function of the height of the structure and the illuminating field, that is, the AM station signal impinging on the structure. We will consider how these factors might come together to cause a "disturbance...which causes operation outside the radiation parameters specified by the FCC for the AM station."

[1] FCC Public Notice, Common Carrier Public Mobile Services Information, August 11, 1987

[2] FCC MO&O DA-97-208, Adopted Jan. 28, 1997, Released Feb. 4, 1997

[3] FCC Public Notice, DA 01-2818, Released December 4, 2001, Action of 10/19/01

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	25 kW	1986	Harris FM25K
	35 kW	1989	Harris HT35
	40 kW	1978	2-RCA BTF-20E1 *(combined)*
	50 kW	1982	Harris Combiner *(w/auto exciter-transmitter switcher)*
AM Xmtrs	1kW	1980	Harris MW1A
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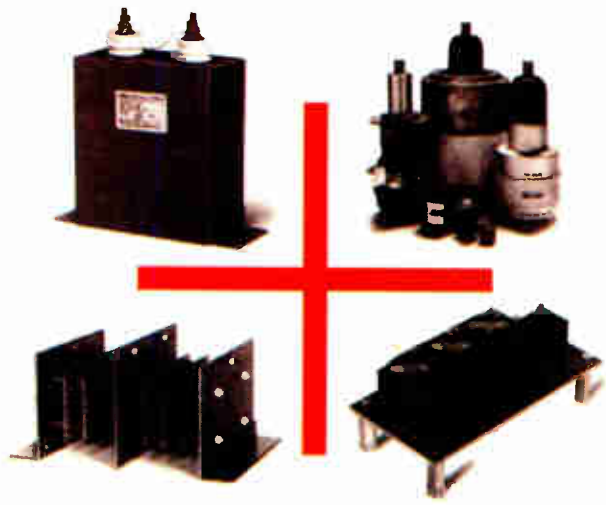

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Automation on a Budget

by Donna Halper

How to Find the Right System

It was not so long ago when choices of affordable automation were limited, and most PDs and CEs would share horror stories about how their system froze for no apparent reason. These days, as the April issue of **Radio Guide** discussed, there are a multitude of choices, in nearly every price range, and while it goes without saying that nothing is perfect, today's automation is far more reliable.

But how can you find the right system if you are on a limited budget? I took an informal survey of nearly fifty people, talking not only to engineers, but to program directors and operations managers in small and medium markets about what automation system they chose and why. I noticed a few systems received frequent mentions; these included BSI's Simian (formerly known as the WaveStation), ENCO System's DADpro, Scott Studios, Smartcaster, Digital Jukebox, Raduga, TuneTracker, RDS Phantom, and OtsDJ (formerly Ots Juke).

The only thing nearly everyone agreed on was: The ideal system does not exist. As Aaron Read, a Boston-area technical consultant, told me, "Something most everyone who buys an automation system forgets about is that *none* of these systems are 'set it and forget it' systems. They *all* require system maintenance on a regular basis, including someone to update the playlist."

The systems mentioned most frequently were relatively easy to use; once the product was installed and the bugs were dealt with, these systems performed with great reliability. An owner of several small stations in the Northeast told me he really liked the Digital Jukebox for that very reason: simplicity and dependability. Others who use the system say it sounds just as good whether it is in live assist mode or full automation; it even has a built in music scheduler, a feature not all automation systems have.

A drawback for some is the Antex audio cards, and several people mentioned that the system was designed for Windows 98, rather than the newer versions of Windows. But a plus is good tech support, and a commitment to making changes and improvements.

The OtsDJ system received similar praise. Several small market PDs told me it was easy to learn and does a good job of mixing the music (it can play CDs and MP3s). I must admit I was surprised by how many people mentioned this system: I knew some club DJs who had used it, but I did not know it was suitable for small market radio stations. Yet, Phil Alexander of Broadcast Engineering Services and Technology explained why stations on a budget like it: "...because it is easily used by inexperienced personnel and can function as either fully automated, or as live assist with equal ease. In the full auto mode, it sounds better than most inexperienced board ops thanks to a very robust segue capability."

One criticism of OtsDJ was that although it seldom crashes and produces very good sounding audio, it only has two play decks. The website for OtsDJ says it will run on any Pentium 233MHz and above, and can use Windows 95, 98, ME, 2000 or XP; it needs a soundcard with a DirectSound or WDM driver.

SMARTS was also singled out for being reliable and easy to use. Rick Sellers, owner of KMRY in Cedar Rapids said, "It's easily set up for satellite or local music; can be adapted easily to load an entire music library and let it do your programing ... [and] it's got a nicely, simply laid out live screen for when the station is local and totally live."

The one drawback Sellers noted was, "The SMARTS won't 'overlap' spot audio – for example, blending the end of one spot into another. It's make or break audio (though it *will* blend liners over satellite-fed music). It can't 'pause' in the middle of a spot cut. If you stop the spot, you must start over at the beginning, or go on to the next spot." KMRY's operations manager, Rick Sampson, agreed that for the money, Smarts has a very good product. "We are on our third Smartcaster automation system. It is not nearly as fancy or all-encompassing as some systems, but it is also not nearly as expensive!" Interestingly, a few OMs told me they still use their older Smartcasters, which have lasted for years; the older models are DOS-based and more difficult to use, but might be okay for an all-satellite operation.

There are some fans of the former WaveStation who now use its next incarnation, Simian; they told me nothing can beat it for reliability. One consultant told me he even uses Simian to demonstrate the formats his consultancy offers. Simian can run unattended for long periods of time, and another good thing about it is how – when in live-assist mode – the on-air person can make changes even while the system is running. Simian is able to voice track, and there is compatible software which permits remote control. It is also reasonably priced. (On the other hand, I was told by several owners who liked their WaveStation and while it still worked well, they could no longer get support for it.)

Another older DOS-based system still working for some stations is the Scott Studios' AXS; Tom Barclay of WKCX in Rome GA told me his is still running fine after eight years. But a lot has changed in the state of the art. For one example, the AXS does not support multiple audio streams, (unless you want to purchase extra audio cards), and it cannot make changes from a remote location.

Like many users of older systems, Barclay is researching the newer models, hoping to find one allowing 3-4 days of "walk-away operation" at a time, something else he cannot do with his current system. (In fairness to Scott Studios, AXS was not a product they designed – Scott acquired the company that made it, circa 1996. And Scott recently acquired another company, Digital Universe, which although it only plays uncompressed audio, has many features and can be purchased for under $2000.

Several votes named the Phantom Automation System from Register Data Systems. Typical were comments by Florida-based consulting engineer Alan Alsobrook: "I currently have 7 stations using [this system]. I have been very pleased with its operation. I would think of it more as a small market station system. The way I have been setting it up each system is pretty much stand alone. It's still a DOS based system and is extremely reliable. On the hardware side there is nothing in the Phantom (excepting the audio cards) that I can't go down to the local computer store and replace. Nothing is proprietary; no special formatting is used. Off the shelf equipment works just fine."

He also said the system seldom if ever breaks down. Don Niccum of KBIM in Roswell NM agreed. "Have yet to have a problem [with both of mine]. The one running a satellite music format just sits and runs. The other one runs satellite talk radio, using two Broadcast Tools switchers controlled with a serial link. That one took some extra programming, but it, like the FM sister unit, just runs and runs."

Among the least expensive products, there was some positive comment about the TuneTracker, which I was told is very versatile and offers a surprising number of features; on the downside, it has its own operating system (BeOS), and several people told me it was difficult to install. Raduga was another low-priced option which was easy to learn, and those who used it stressed it was perfect for staff with no expertise in automation systems.

It is a basic system and lacks certain features, but is able to play a variety of file formats and does very nice segues. A consulting engineer remarked that the lower price version (under $300) will not run the top of the hour ID exactly when it is supposed to; but the more expensive version ($649) will. Raduga does not have a music scheduler included, although one can be purchased separately. It does permit voice-tracking, but since it lacks a dedicated module, it requires some rather cumbersome procedures to make it happen. Also, version 3.6 will not run on Windows NT at this time.

The lowest priced of all comes from Arrakis, which offers a scaled down version of Digilink for free, but most of the engineers with whom I spoke had few good things to say about the Digilink. Comments like "you get what you pay for" were typical, and the general feeling was the Digilink has had a history of reliability issues, with erratic tech support. In fairness, some of the problems mentioned have been corrected by the company, and several engineers said they have had no problems at all with the Digilink. Still, the perception remained among the engineers that there are other better, more reliable systems.

Of course, those who could afford the higher priced systems such as ENCO's DadPro or AudioVault said they were well worth the cost. Scott Patrick, Program Director at WCXO was very enthusiastic about the Scott Studios, saying he can do a week's worth of programming in advance, and it is easy to make any changes. He told me the version WCXO has is DOS based (Scott upgraded to Windows 2000, but many of the DOS units are still being used with no problem), and since it does not come with a music scheduler, he uses MusicMaster.

Like many fans of Scott, he agreed that the user interface is simple and easy to learn. Similar enthusiastic comments were made about ENCO; CE Andy Armstrong of Saga told me five of their stations in Maine use the ENCO system (12 workstations, two servers). He likes the way both ENCO and Scott handle the interface between traffic and music (several Saga stations use Scott Studios).

The majority of small stations may lack the budget for the big name systems (although there are scaled down models which might be more affordable). But every CE mentioned that no matter what you buy, do not try to save money by skimping on training. It may cost a little, but in the end, a station saves money by knowing how to use the equipment properly, making a major crash less likely.

Planning ahead is the most crucial phase. When looking towards automation, be sure to have a meeting with the Production Director, PD, MD, CE and all other parties. Ask them what *they* expect from the system. What *they* want it to do. Make a list and present that to the vendor for quotation. What features are 'must-have' (voice-track, remote control operation), as opposed to what you could live without right now and maybe upgrade later? If possible, visit stations using proposed systems, or talk to PDs and CEs in markets similar to yours. Ask the practical questions:

How is tech support if things go wrong? Did the system perform as advertised once it was up and running? How long can it run unattended? How easily did the staff learn to use it?

This last item is crucial, since in some smaller markets, the PD has to train new announcers on an ongoing basis. And when I have to recommend something, I prefer products with brochures and manuals written in English the average person can understand!

There are even automation systems you can build yourself (a number of college stations told me they pursued this option). Other options include inexpensive software where you supply the PCs, as well as a few offering a complete turnkey operation for under $3,000. Clearly there is no "one size fits all." Nevertheless, by searching carefully, the chances are good even a small station will be able to find capable automation at a price they can afford.

Donna Halper is a programming consultant based in Boston, Massachusetts. She lectures at Emerson College, and has written extensively on many aspects of broadcasting. Donna can be reached through her website at www.donnahalper.com

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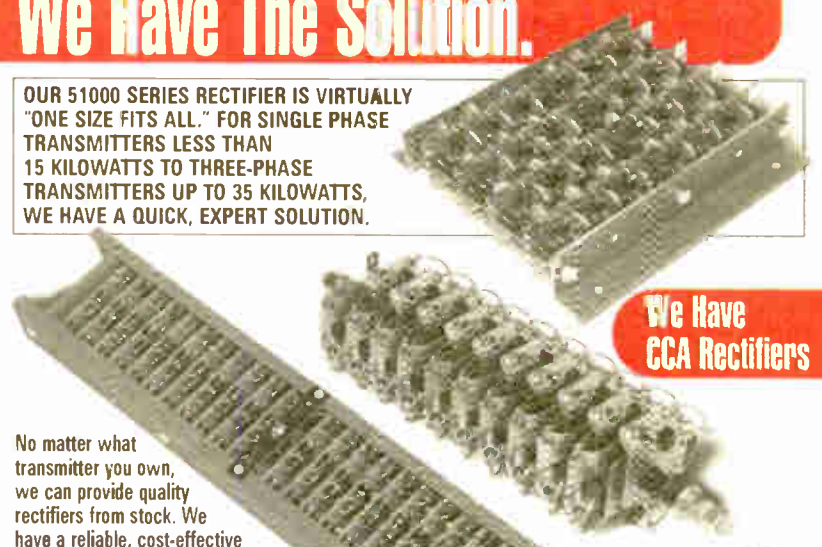

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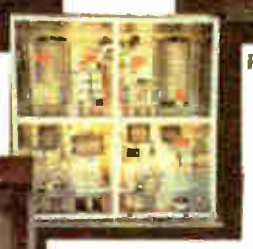

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Audio Processing From the Ground Up

by Cornelius Gould

Part 5 – Bandwidth Limiting

Our series of articles on the building blocks of an audio processor moves along as Cornelius describes just how wide a broadcaster's "elbows" can be. [Ed]

[CLEVELAND, Ohio - May 2003] Last time out, we talked about the various types of modulation limiting, and their impact on audio. This month we will talk about a different kind of limiting: Bandwidth Limiting.

The reasons for bandwidth limits vary for FM and AM, but such limits are a very critical part of audio processing, and *must* be considered in the audio processing equation! In many ways, this article really is a direct continuation of the article from last month, so you may find it worthwhile to review that one again.

AM broadcast audio signals in the USA must conform to the specifications developed by the National Radio Systems Committee (NRSC) to maintain legal operation of an AM transmitter. These specifications, usually referred to as NRSC-1, call for extremely tight attenuation of audio energy above 10 kHz to help prevent interference to adjacent AM signals. Exceeding this bandwidth will cause "spits," "ringing" and "splattering" on those adjacent stations whenever high frequency content is on the signal.

Over on the FM band, broadcast audio signals have to protect the FM stereo pilot tone from interference from program audio. Since the pilot tone is at 19 kHz, in practice the actual audio processor bandwidth for FM is scaled to whatever the designer feels is necessary to protect the pilot. Generally speaking, this means the audio bandwidth of FM Stereo is 15 kHz. Failure to protect the pilot tone results in many bizarre sounds which occur whenever there is significant high frequency content in the program signal at or near 19 kHz.

EARLY BATTLES

In the early days of my home-brew audio processing, as I got into FM Stereo I had my share of wonderful "birdies" either from the lack of filtering of the energy above 15 kHz, or from the filters not being steep enough to fully protect the pilot. It became a chronic problem when I developed effective final limiters (FM Clippers). This is because, by its nature, final modulation limiting using clipping diodes creates audio rich with high frequency overtone harmonics.

Aaaah – I can hear them all now! The nightmarish aliasing tones created by the high frequency "bling bling" notes in Madonna's "Material Girl;" the bizarre, fuzzy, out of phase distortion all over the high frequency percussion instruments of Michael McDonald's "Sweet Freedom;" and all those various albums with something going on outside my audible range, but causing all kinds of interesting and *very* audible tones by the time they got decoded by any FM stereo receiver.

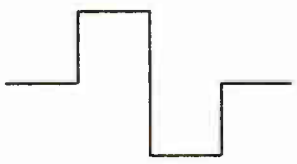
Even to this day, merely recalling all those frustrating problems sends shivers down my spine! I would have to say one of the more interesting things I have heard in this regard is from the ending of the Beatles "Day In The Life." In that ending, as the orchestra fades, there is some inaudible tone that sweeps around. Well, it is inaudible until it is decoded by an FM Stereo radio, which emits the familiar heterodyning type tones you get when you tune through the AM band.

These problems were all caused by the ineffective 15 kHz lowpass filter designs I originally used. Finally, it all forced me to buckle down and learn how filters work and how to get them to "play nicely" with the final limiting preceding them. So, that is where we will start.

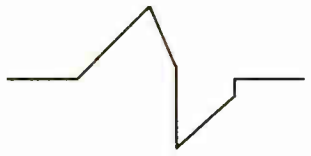
LOWPASS FILTERS

One of the biggest problems encountered from connecting lowpass filters to the output of final limiters is the fact that filters of any kind have a tendency to really "undo" the extremely tight peak levels built up by the final limiter. In effect, "you can't live with 'em, and you can't live without 'em." This is due to the Gibbs Phenomenon. An official definition of this Gibbs effect reads as follows: The ringing near a discontinuity in a signal that is caused by (incomplete Fourier synthesis, or) missing frequencies.

With this definition in mind, let us jump right into the fire.



A Normal Square Wave



Square Wave Altered by Gibbs Phenomenon

What literally happens when following a final limiter with a filter is this: The square wave output of the audio clipper is applied to the filter. For a square wave to remain "square" at high frequencies such as, say, 4 kHz, it takes a much higher bandwidth than 4 kHz to reproduce faithfully.

With a lowpass filter, the square wave will distort due to the fact that (for, let's say, FM) the harmonics above 15 kHz that make up the 4 kHz square wave are removed by the bandwidth protection filter ... hence *"the discontinuity in a signal that is caused by ... missing frequencies"* part of our definition.

For FM stereo, this waveform transformation that happens around 3-5 kHz, is a pretty nasty transition. The square wave will rotate into a peaky triangle wave with overshoots of 9% or greater. After going through the transition (at about 10 kHz on out to the cutoff point), the waveform settles down to sine waves that will never change in amplitude regardless of how "hard" you clip.

So, the trick for the audio processing designer is to come up with a way to compensate for this transition effect to preserve all the loudness gained by a kick-butt distortion controlled clipper system, and still protect the FM stereo pilot, or - for AM - keeping adjacent channels clean. By the way, the transition point for AM broadcasts happens at a much lower frequency since the bandwidth is only 10 kHz.

There are many schemes out there to "fix" this overshoot problem. One scheme simply adds another final limiter after the lowpass filter, which just re-introduces some out of band spectra which was removed previously. This means the bandwidth protection is not as good as it can be.

A much more clever scheme creates a "pre-distorted" signal which, in turn, causes sort-of the opposite to the Gibbs Phenomenon waveform distortion. When this pre-distorted signal is fed through the main bandwidth filter, this "pre-distorted" signal will mostly cancel the effects of the Gibbs phenomenon.

The best of today's audio processors deal with the problem using the latter method in some form. It is usually handled in a very elegant way – by being built into the distortion canceling system. So, not only do you cancel obvious audible distortion, but you also cancel the overshoots. Pretty clever, eh? But we are not quite home free, though.

SAFETY CLIPPER

The canceling of the Gibbs effect can introduce some residual overshoots, so typically a "safety clipper" is employed. This clipper is placed after all of the filtering, and is usually just before the input of the FM stereo generator. For AM processors, this safety clipper is placed just before the output amplifier stage of the processor.

If the complete distortion canceling and overshoot compensation system is designed correctly, the residual overshoots requiring a safety clipper will be very brief, or very minimal, so there will be no compromise in bandwidth restrictions.

This aspect of audio processing is very interesting to follow from a historical point of view, as different designers at different times developed different parts of this entire distortion control/overshoot compensation scheme. Over time, the latter day designers were able to improve on these individual ideas and roll them all together into the systems we have today.

I have spent several years digging around and finding some of the early stages of these schemes in some pretty obscure (as well as mainstream) audio processing designs over the years. By watching the evolution, I was able to fully understand this beast.

In many ways, the distortion control/overshoot compensated filters turns into the area where the real "meat" of a very well designed audio processing system can be found!

Next month, we will look at how AM and FM Stereo works, and how audio processing comes into play. We are coming close to wrapping up this phase Aof the series and then we will be moving into a lot of newly created areas of our lives in radio, and we will look into the best way to use audio processing to help you there.

I also plan to write some articles inspired from some of the e-mail conversations I have been having with some of our readers during this series. So, please keep the e-mails coming, folks!

Cornelius Gould has had a life long interest in the insides of audio processors. He is the Senior Staff Engineer for Infinity Broadcasting in Cleveland, Ohio as well as Chief Engineer for WJCU 88.7 FM in Cleveland. You can reach him at: cg@radiocleveland.com

FCC Focus

The Public File

by Ken Benner, NCE

[TUCSON, Arizona - May 2003] The average number of requests to review a station's Public File by a member of the public is approximately one every four years. Indeed, several major market TV stations I have inspected have never had such a request that they can remember. Eighty-five per cent of the requests to view a public file are politicians wondering what their opponent is spending on political ads.

With such little public interest, many wonder why we are required to maintain this file. The primary reason is a properly maintained Public File clearly serves to illustrate the station's responsibility to its community of license and its dedication to serve the public interest, convenience and necessity. It also serves to provide a standardized means for defending the licensee in the event of a challenge to the license during the application or renewal process.

Please note, every broadcast station now must have a complete Public File even if they are all operating off separate computers from the same broom closet. Some stations tend to put anything and everything in their Public File. This can end up getting them in trouble because inappropriate personal information that should remain confidential may end being displayed.

In fact, when inspecting stations, I suggest they maintain four general files: First is the required Public File. In addition there should be a Manager's File, an Engineer's File, and an Historical (or Scrapbook) File. This system allows a proper place for everything, especially what does not belong in the public file.

For examples: Once an application is finalized it goes to the historical file, unless it contains technical information of value to the engineer, which would place it in the engineer's file. Public files inquiry sheets, once finalized, go to the Manager's file for future reference. After two years political files should go to the Manager's File for possible future sales use. Obsolete license items go to the Historical file for future use during the 50th, 75th ... anniversary celebrations. You get the idea.

During the past eight years that we have doing alternative inspections, without question the major concern from almost every station we visit is the Public File. Who can look at the file? When can they see the file?

What to file? How much to file? What not to file? How long to keep it in the file?

The first two questions are pretty easy: The Public File is public, therefore anyone who comes and asks to see it may do so – whether in person, by telephone, fax, or email. Yes, the public is *not* required to appear in person to get information from the Public File. Stations are required to respond, if asked, by telephone, fax, or email.

Furthermore, the Public File must be accessible any time during normal business hours. This means more than one staff person needs to know how to interact with the public regarding the file, and the methods of fulfilling their requests. You may not deny a member of the public access to your Public File just because the manager or other appropriate person is unavailable

Furthermore, contrary to "common wisdom," those seeking the Public File *do not* have to identify themselves in order to access the materials. However, if someone wants a hardcopy of something in the file, it is proper to charge a modest fee per page prior to supplying photocopies or faxes of any part of the file.

For those of you who have suffered through one of my visits, you know before I leave that you have a proper Public File, or at least a set of required folders waiting for the appropriate documentation to be added. On the front of each folder under clear cellophane tape is a description of what goes in and for how long. The key to maintaining a proper public file is to keep it as simple as possible so even an inexperienced person can step in with full confidence of doing it properly.

FIRST THINGS FIRST

To get started and become fully up to date, go to the FCC's website, download and print the appropriate AM or FM *"Broadcast Station Self-inspection Checklist."* The complete URL is **http://www.fcc.gov/eb/bc-chklsts/**

Next, go to: **www.wcsr.com** and print out the "EEO Regulations for Broadcasters – A Primer on Current FCC Requirements" and print it out. Now you have all you need to produce and understand a proper Public File.

Start with sixteen folders individually tabbed:

1. WELCOME TO OUR PUBLIC FILE
2. APPLICATIONS
3. AUTHORIZATION
4. CITIZEN AGREEMENTS
5. CONTOUR MAPS
6. OWNERSHIP REPORTS
7. POLITICAL
8. NON-CANDIDATE/ISSUE ADVERTISEMENTS
9. EEO FILE
10. PUBLIC AND BROADCASTING
11. LETTERS FROM THE PUBLIC
12. INVESTIGATIVE MATERIAL
13. ISSUES-PROGRAM LISTS
14. DONOR LISTS
15. TIME BROKERAGE AGREEMENTS
16. LOCAL ANNOUNCEMENTS

As an aid to remembering what goes into each folder, I recommend that once you have the sixteen folders tabbed, use the text from Section I-F of the Self Inspection Checklist, and paste the official FCC wording on the file folder.

For example, in the FCC Checklist, Item 16 refers to applications, and says: "Does the public file contain copies of all applications, exhibits, letters, initial and final decisions in hearing cases and other documents pertaining to the station which were filed with the Commission and which are open for the public inspection at the FCC? This includes applications granted pursuant to a waiver. [See 73.3526(e)(2) or 73.3527(e)(2)]." Just print the appropriate paragraph, tape it to the second folder, and you will always know what belongs in there. Proceed similarly with the rest of the folders.

It is quite likely some of these files will be empty some, or all of the time. For example, the "application" and "local announcements" folders are empty if no applications are pending. Also, "Donor Lists" would be empty for commercial stations as well as (in most cases) "Investigative Material" and "Time Brokerage Agreements."

For such unused folders, it is appropriate simply to place a single letterhead sheet that reads in big bold print: "This file folder is not applicable to this station at this time."

FOLDER CONTENTS CONSIDERED

Please note that although trained by the FCC in the process of inspecting stations, I am not a lawyer, and certainly would never seek to direct you against the advice of your Communications Attorney. In fact, sometimes the lawyers get and understand FCC Rule changes before the inspectors; so feel free to check with your Counsel any time you are in doubt as to what is correct. With that in mind, let us chat a bit about what goes into these file folders so the inspector will continue smiling at you.

WELCOME TO OUR PUBLIC FILE: While not required by the FCC, the form in this file facilitates the proper handling of any inquiry from the public in person, by telephone or fax. The folder should contain several blank copies of this form. It is self-explanatory and simplified such so even a new person on staff can accommodate any public file inquiry. Once processed these completed forms are not returned to this folder but should be retained in the Manager's file.

Why have the form if persons are not required to identify themselves to get information from the public file? First, it provides basic information the public needs to know as they seek information. Also, it provides a record for the station of the fact of the request itself.

Welcome to our Broadcast Operation and our library of Public Files.

These files are available for review and for copying at any time during normal business hours. A staff member will be pleased to assist you in locating any item of interest. To prevent mis-filing, only one file is made available at a time. None of the items in any file may be removed, however, you may have copies made for 25¢ per page. Please note the items you wish copied in the space below.

We will appreciate your care in the handling and proper re-filing of these important documents following your review.

This station operates in full compliance of the Rules and Regulations of the United States Federal Communications Commission, and is proud to serve the public interest, convenience and necessity. We welcome your comment and suggestions. Thank you for your interest.

The station management and staff.

Items I wish to order copies of include:

1. _____
2. _____
3. _____

Total pages ____@ 25¢/page = ____

Please mail to:

Name: _____ Address: _____

City: _____ State: ___ Zip: _____ Phone: _____

APPLICATIONS: I look for the current applications filed with the FCC, and correspondence related to these filings. If the FCC asks you to provide additional information to complete the processing of a current application, that exchange of letters belongs in this file.

What you do not need is a copy of the renewal application from 1975. At some stations, I have found faded, dog-eared applications dating back to the original one. That is just a slight "overkill." One TV station I inspected hauled four 55 gallon drums of obsolete material I identified from their files to the dump. They had saved everything and in fact had a full-time employee maintaining it.

AUTHORIZATION: It is not unusual to find several versions of licenses, dating back through several ownerships, or an illegible copy ... of a copy of a copy. But as long as the renewal card addressed to the proper call and current ownership is posted, and all of the technical information on the license is proper, I can accept this file as proper. Do not forget to include the auxiliary licenses.

On the other hand, when I question why the posted license states 1 kW and I calculate the power at 5 kW, or my GPS meter indicates the location of the tower other than what is stated on the posted license, it is time to punch up the FCC website and determine if these changes have been incorporated for the current licensee. Most often, this can be traced to a properly updated license at the corporate headquarters which failed to get forwarded to the station.

By the way, it is my strong recommendation that a copy of the license and/or its renewal card be posted, with the originals stored off-site in a fireproof vault.

CITIZEN AGREEMENTS: Smart managers avoid these with a passion and most stations simply have a note filed in here stating: "This file folder is not applicable to this station at this time."

One reason for this is that if you enter into a good faith written agreement with one citizen group to run their public service spots, chances are that once the word is out, you will have every citizen group in the area beating a path to the station demanding equal time.

There are still more folders to consider, and we will take a look into them next time out. In the meantime, as a way to help you get started, the 16 file folders titles, the official FCC instructions, and a copy of the form I mentioned earlier in the "Welcome to our Public File" folder will be posted for download at:

www.radio-guide.com/pubfile.html

Ken Benner, a retired broadcast engineer, resides in Tucson, Arizona. He continues to perform Alternative FCC Inspection Certifications for hundreds of stations under several state broadcaster association sponsored programs. He can be reached at: bennerassociates@aol.com.

Answers to Your Questions on EAS

EAS Q&A

by Clay Freinwald with Barry Mishkind

[SEATTLE, Washington – May 2003] This month Barry and Clay conclude their discussion of the LP stations and Relay Networks, and their effect on the distribution of emergency messages. [Ed]

Barry - Clay, you feel pretty strongly about the proposition that local broadcasters should not originate EAS messages. If this is indeed implemented, it would mean each governmental entity issuing an EAS message must have an EAS encoder, true?

Clay - Yes, that is the case. Every source of EAS messages really must have their own encoder so they can create the complete EAS message.

Barry - So, how do you convince bureaucrats to purchase the necessary equipment for Relay Network and EAS Encoders?

Clay - This process starts with the leadership within SECC or LECC committees understanding the necessary steps toward the creation of viable EAS systems. In today's world of terrorist threats and color coded levels of concern, every governmental entity, State, County or City should be very aware of the need for a public warning system.

A properly designed and administrated EAS system is the best thing we have going. It may well require these folks are pointed in the direction of other areas where great EAS systems are operating, so they can learn what needs to be done. The bottom line for a statewide EAS system to function: States need to understand that they are going to have to contribute the communications assets to reach the electronic media. This is not a job for Broadcasters.

Barry - This is well and fine, but a Part 74 system is used for EAS messaging in Seattle. Why do you not use an existing government radio frequency?

Clay - You ask a good question. First of all, the Seattle area EAS system was one of the first LRN's in the country. Technically, this area is known as the Central Puget Operational Area (named after Puget Sound) and is comprised of seven counties and many cities, each of which now have the ability to initiate EAS messages.

In order to "jump-start" the system we opted to use a Part 74 frequency for our EAS-UHF repeater system/ LRN. Since then, we have mainly used existing government radio systems. In some case, to get an LRN up and running and avoid some of the political problems, Part 74 might be an easy answer, but it should not be the first place you look.

Barry - Yes, the whole thing benefits from the sort of cooperation you have there. By the way, who pays for the government frequency equipment in the Seattle LRN?

Clay - In Seattle, the major county in the area donated the equipment. Maintenance is spearheaded by local Broadcast Engineers, and the site for the equipment was donated by a local Broadcaster. However, the County will likely repair it if there is a need. In the case where you use an existing government radio system, this is not an issue, as maintenance is already "covered."

Barry - If an area does install an LRN, how does it impact how AMBER is handled?

Clay - In many areas, LP stations are used for Message Generation (wrongly I feel). In areas where there are LRN's, there are usually several entry points into the system, such as a 911 dispatch center.

As an example, if the word comes down from Law Enforcement that they need to initiate AMBER, they provide the information to the 911 facility. If the situation meets the established criteria, the 911 center then loads the encoder and presses the "go button." Immediately the AMBER CAE message is distributed to all the electronic media via the LRN.

Barry - What if the AMBER Alert needs to be broadcast to a wider area. How is that accomplished?

Clay - In the case of Washington State, the local police agency is already connected electronically to the State Patrol. They transmit the AMBER information to the State Patrol, who in turn relays it to the State Emergency Management team, which puts it on the State Relay Network.

Barry - Have you tested this system with an actual AMBER?

Clay - Yes, as a matter of fact we did so a month or so ago. The request to activate AMBER came from Tri-Cites Washington, a small area in the Eastern part of the state. Initially they broadcast the CAE on their LRN. Later it was elevated to a State Wide alert, and sent to the state system, where it was distributed on the SRN. Using further intercommunications links to Oregon, Idaho and British Columbia made it possible to increase the radius of the alert broadcast.

Barry - This takes us back to our discussion of the LP-1 and LP-2. With the SRN's and LRN's in place, are the LP's still necessary?

Clay - Yes they are, because this is what the FCC calls for in Part 11 of the Rules and Regulations. The mission for the LP is to relay National Level EAS Messages. We have two sources for these, the regional PEP station and the 'participating NPR station.' The real question is what exactly makes up the LP? LP's are traditionally thought of as being a Broadcast Station, however this *does not* have to be the case. Thus, LP's can be other automatic relay devices which can fulfill the mission. For example, here in the Seattle area our NWS office is fully integrated with EAS: They monitor and relay the output of the PEP facility and therefore are an LP.

Barry - Can these Local and State Relay Networks be used for other purposes; for instance, providing additional information about an emergency situation?

Clay - Indeed, they could. But they are just one of the "tools in the tool-box." For example, with AMBER follow up information beyond the initial CAE needs to be distributed to the electronic media and the information needed for an effective effort goes beyond the ability of EAS to deliver. The internet is a great vehicle for accomplishing that task.

Barry - Please explain what you mean.

Clay - I like to think of EAS, when used for AMBER or other emergencies, as the "door-bell." EAS is a great vehicle for governments to provide short and to the point information about "short fuse" events. But it is a poor system in terms of handling follow up. This is why I recommend AMBER plans have a web-site where the media can turn to – following the door-bell – for additional details and information, including pictures, etc. Another great vehicle is one which has been in use in California for many years; it is called EDIS. I urge everyone to find out more about this system: start with www.incident.com.

The bottom line is – the more tools we have available, the better the system will work. We need to remember the mission of a public warning system is to save lives and to accomplish that task, we must learn to "think outside the box." Outside the box should also mean to everyone "beyond Part 11."

Barry - I have been keeping track, and it seems to me you are saying Broadcasters are going to have to monitor more than two sources to make all this work. Is that what you mean?

Clay - I sure do. Yet, I can not give you a specific number of sources a typical station must monitor to have a robust EAS system. Look at the basic framework: The FCC's part 11 Rules are designed to create a redundant distribution system for National Level EAS messages, i.e., EAN's. Additionally, the Rules make it pretty clear EAS can be used for other things, including weather, state and local messages. Nevertheless, beyond the National level it is *all voluntary*. This means the development of these "other" systems is up to us. In Washington State the typical station monitors three or four sources and some monitor up to six. There is a basic rule here: *Get it from the source; do not depend upon someone else.*

Barry - How can someone get additional information about these systems you have described?

My direct email address is k7cr@wolfenet.com. Everyone is welcome to ask questions. I also recommend subscribing to any EAS Remailer available in your area. The SBE EAS Remailer is another great place to ask questions and exchange information. It is easy to subscribe yourself; the address is sbe-eas@broadcast.net.

Barry - Clay, let us turn to some questions received from the field. Appropriately, since we are talking about LRNs and SRNs, someone asked about the Comlabs EMnet system. What does this system do?

Clay - Comlabs has come up with a very sophisticated system for the distribution of EAS messages; it is a "state of the art" State Relay Network. Several states have already begun to deploy EMnet (Pennsylvania comes to mind) and others, including Washington, are considering it. As the name implies, it is a network for Emergency Managers.

The system relies on computer servers, linked by satellite and/or ground based communications circuits to connect emergency management agencies with the electronic media and others associated with public warning. The system can be customized to fit the needs of the states using it.

Barry - Do you feel the EMnet system will replace existing State Relay Networks?

Clay - Possibly. Here in Washington State were we have an excellent SRN, our State Emergency Management folks are looking at EMnet as an "addition" to the existing SRN rather than a replacement. For other states without a state EAS system, this may be just what the doctor ordered.

Barry - How would a broadcast station receive state EAS information via EMnet?.

Clay - Probably the easiest would be via an existing Ku Band down-link. This leads to a flood of questions that are best answered when and if a state were to elect to deploy a system like this. The best bet is to check with your SECC and State emergency management department, and see what they have been planning.

Barry - With this system will a broadcaster have to pay for their participation?

Clay - This is a question with a lot of political aspects. It will depend on the state that might use it. In short, maybe.

How would someone find out more about this system?

Clay - Contact Comlabs and ask about their EMnet system; their video is excellent and explains it quite well.

Barry - One more question: Now that the President has signed the AMBER Bill, what changes do you foresee?

Clay - At this point, the process of determining that is not complete. At best, this can "unify" all of our various AMBER programs. Here are some of my best guesses:

- All the regional or local names for abducted children programs will change to AMBER. A unified name is important.
- Despite objections from some in Homeland Security over confusion with their color-coded terror threat scheme, the name AMBER will prevail.
- We will achieve a unified criteria for the threshold of determination of what qualifies for a CAE/AMBER.
- A common form of information gathering about the abduction will be introduced.
- A Web-Based information dissemination system about the abducted party will be created.
- Local law enforcement will continue to control the process.

Clay Freinwald, Senior Facilities Engineer for Entercom in Seattle, is Chairman of the SBE's EAS Committee as well as chair of the Washington State SECC. Please feel free to address your questions about EAS to Clay at k7cr@wolfenet.com

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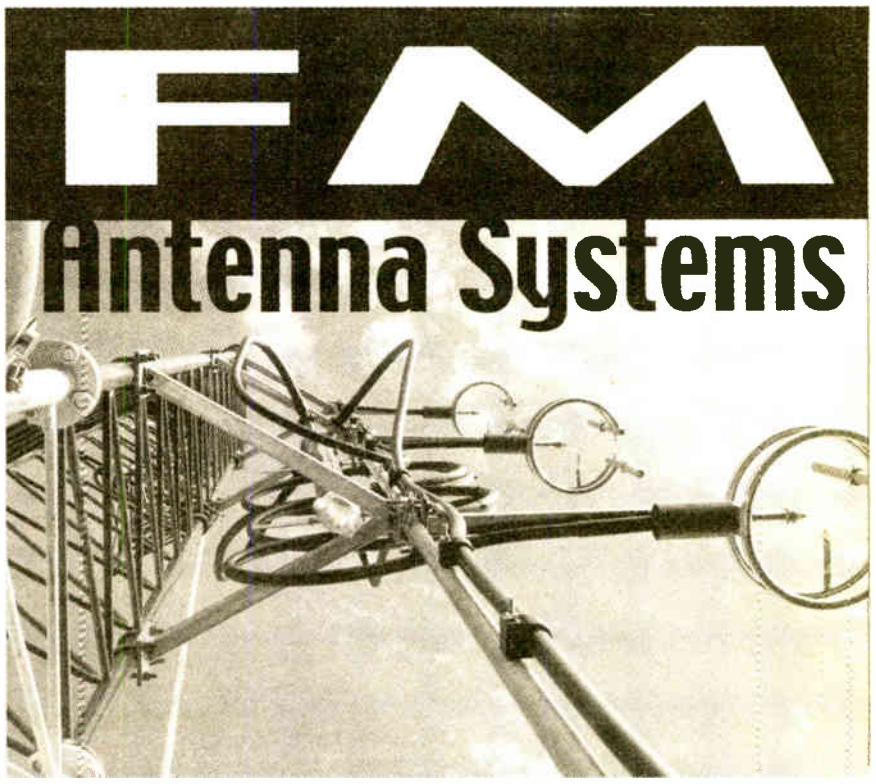

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MP-2	$680	0.8 Kw	GP-2	$1,350	4 Kw.	SGP-2	$2 690	8 Kw.
MP-3	$980	0.8 Kw.	GP-3	$1,900	6 Kw.	SGP-3	$3,595	10 Kw.
MP-4	$1,280	0.8 Kw.	GP-4	$2,600	6 Kw.	SGP-4	$4,500	10 Kw.
MP 4-P	$1,820	2 Kw	GP-5	$3,150	6 Kw.	SGP-5	$5,300	10 Kw
MP 5	$2,270	3 Kw.	GP-6	$3,700	6 Kw.	SGP-6	$6,100	10 Kw.
MP 6	$2,740	3 Kw.	Deicer available in this model					

Other power configurations contact OMB America

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OMB AMERICA

Networking 101

by Tren P. Barnett

Part 4: Dynamic Host Control (Protocol (DHCP)

[TUCSON, Arizona - May 2003] If you have been following our series of articles, we just completed setting up a server with Microsoft Windows 2000, promoting it to be the domain controller in a new domain named radioguide.com. We have also completed the needed steps to set up DNS and have it functioning on our network.

To complete the initial settings of our server, we will need to set up what is called Dynamic Host Configuration Protocol (or DHCP) so our workstations will be able to function completely on our network without having to manually enter addresses for each one.

THE BENEFITS OF DHCP

DHCP is an industry standard protocol that allows one or more servers to take requests from network resources such as workstations, VPN connections, or printers for addresses. The TCP/IP protocol requires several settings to be completed correctly for network resources to communicate correctly with other network resources. Failure to properly configure TCP/IP can result in:

- Communication failures
- Equipment initialization failures
- Other network resources may to fail to communicate correctly

Since each resource on a network requires a unique address, subnet mask, and possibly a gateway, managing these settings individually on each resource on a large network is likely to lead to errors causing the above mentioned problems. DHCP provides the means to provide these addresses, subnet masks, and more. A DHCP server can manage all network resources at one central location. This, in turn, reduces the possibility of error and also onsite network configuration problems.

DHCP allows for increased flexibility and mobility. This means you can walk into any office with your notebook computer and plug into the network. With DHCP you can immediately receive the necessary TCP/IP network settings to communicate on the network, whether at your office or a remote location. DHCP does not lease the same IP address on the network to two individual resources at the same time, eliminating address conflicts. Likewise DHCP can also be use to correctly set:

- Proper DNS settings
- WINS settings
- Time Server settings
- Gateway settings

DHCP network addresses become a renewable resource. Each client receives a leased address, which eventually expires. This means the address your notebook may have been using during the morning shift can be used by someone else's notebook during the nightshift, in effect doubling the number of available network addresses.

HOW IT WORKS

When a DHCP network resource (client) starts to communicate on the network, the client makes a request for a lease. This is done through a discovery packet. This packet represents the client's lease request, uniquely identified by the client's network adapter's MAC address. As discussed in the previous article, MAC addresses are unique to every network adapter ever made. The MAC address thus uniquely identifies a lease request to the DHCP server.

After the server receives the request, one of the unassigned network addresses available that are valid for the client is assigned with the proper subnet mask and gateway settings, now allowing the client to be uniquely identified by its network address. If more than one DHCP server is available, the client will usually take the first network address offered it. The client will now again send its DHCP request back to the offering server thus completing the leasing process and notifying the server the address is now in use. Since a DHCP request is a request to lease a network address, the duration of the lease is likewise specified in this process.

SOME LIMITATIONS OF DHCP

Although a DHCP server can greatly reduce network management tasks, a few things should be noted in configuring DHCP. It cannot communicate over network routers allowing addresses to be leased unless the router is configured to accept BOOTP requests.

- DHCP cannot detect network addresses that have been assigned by another DHCP server or have been manually configured
- DHCP servers do not communicate with each other, so specific scopes must be correctly assigned to ensure the same address is not used twice

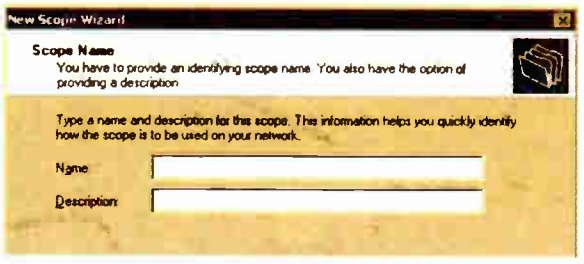
DHCP servers must use manually assigned network addresses, better known as static addresses. For now, we will only worry about configuring one DHCP server so we do not have to worry about duplicate addresses being assigned by more than one server.

DHCP addresses expire, so at half-life the client will start requesting a renewal of its network lease. This should be kept in mind in situations where addresses are in short supply. Since the request is made at half-life, an eight-hour lease can end up costing sixteen hours. It works this way: At four hours into the lease, the client renews the existing lease; the employee does not end his day promptly, so again, at the eight hour mark, the client again renews its existing lease. Whether or not the client is currently using its lease, the server honors the lease, so an eight hour lease can tie up an address for sixteen hours very easily.

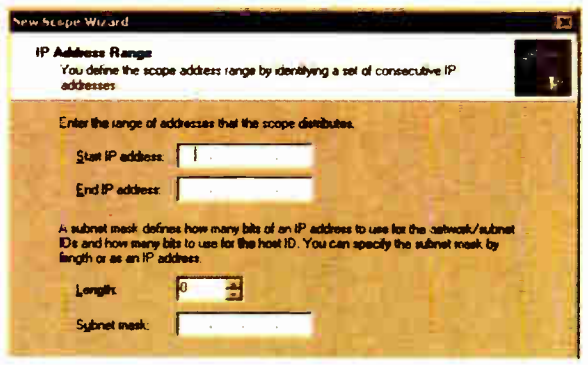
To ensure there are no address conflicts, we will exclude the first twenty-five addresses available in our scope. In the previous article, we installed DHCP services on our server. In this article we are going to go straight to the configuration process. If you need a reminder of how to set up DHCP, see our previous article *Part 3: Domain Name System (DNS)* in the April 2003 issue of Radio Guide, on Page 18.

To start the process, go to the **Start** button, select the **Control Panel**, and now select **Administrative Tools**, then select **DHCP**. We will configure our settings in the management console that opens up. Right click on the name of your server listed in the left tree view pane of the console. If your server is not listed, make sure that the necessary steps to install DHCP were completed correctly as described in the previous article. Once we have right clicked on our server in the list, select **New Scope** from the context menu. As with so many of Microsoft products, we will now have to entertain a wizard. *(My wife says that sounds derogatory. I would be disappointed if it didn't.)*

The first step is to press **Next**.

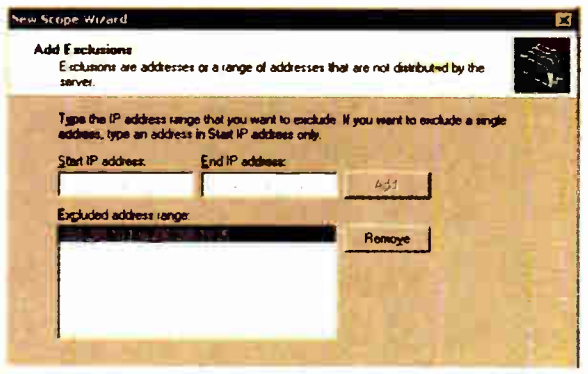


Here we will name our scope, and just in case we want to name all of our scopes the same, we can include a description so we can identify the scope. With the click of a mouse, we can move to the next window of settings. If we have not taken the time to figure out our network addresses it is time to do so now. We will use 200.200.10.1 for the Start IP address, and End IP address of 200.200.10.254 (you can try and enter 255 but you will not be able to do so).



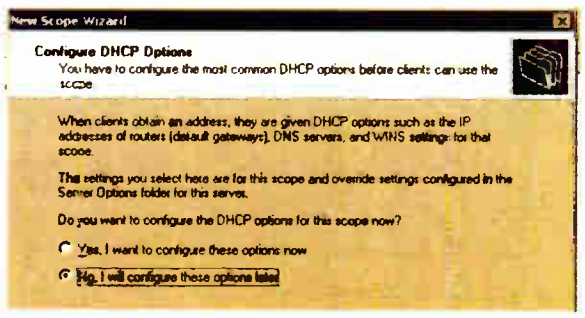
By default, we are going to have a Length of 24 for our Subnet mask. Subnet masks allow us to identify sections of a larger network for routing purposes reducing unnecessary network traffic in our subnet (or office network). We will discuss the benefits of subnets in another article in the future. Our subnet has been identified for us as 255.255.255.0.

As we mentioned earlier in the article, we will probably want a few static IP address available for our network use. We selected 25 for our network subnet. These can be used for printers, other servers, and routers just to mention a few items.



Next step is to configure our lease duration. If your network will have a lot of mobile users, you may want to specify short lease times. Alternatively, you may want to reduce unneeded network traffic by having longer leases. For now we will keep it to zero days, and 2 hours. We can always lengthen the lease time later. As we make configuration changes, the effects of these changes will be realized much sooner on a shorter lease, as these lease changes will occur with renewal at half life.

There are more configurations that the wizard can help us to make, but it may be good for us to stop working with the wizard now.



We will focus in the next article on how to use the DHCP console to make these and other settings changes. In the next article we will also go back and forth between DNS and DHCP. With our changes we will see how workstations and other network resources are working on our network, along with how the changes we make affect connectivity and communication among these resources.

As pointed out in the previous article, DNS is an intricate part of Windows 2000 server and its security model. DHCP plays a large part in DNS settings. In Windows 2003 server we will continue to see the same demands on DNS and DHCP.

When we started this serious of articles, we were going to include an e-mail server, a SQL server, and an ISA server for Internet security and access. These servers rely heavily on the settings of DNS and DHCP for correct functionality. For that reason and more, as we move along, we will take a closer look at configuration of these settings, and we will look at how some specific settings can make or break us.

Tren Barnett is a System Administrator and Programmer in Tucson, Arizona. He welcomes your questions on solving network problems in your facility. Contact Tren at tpb@aires.org

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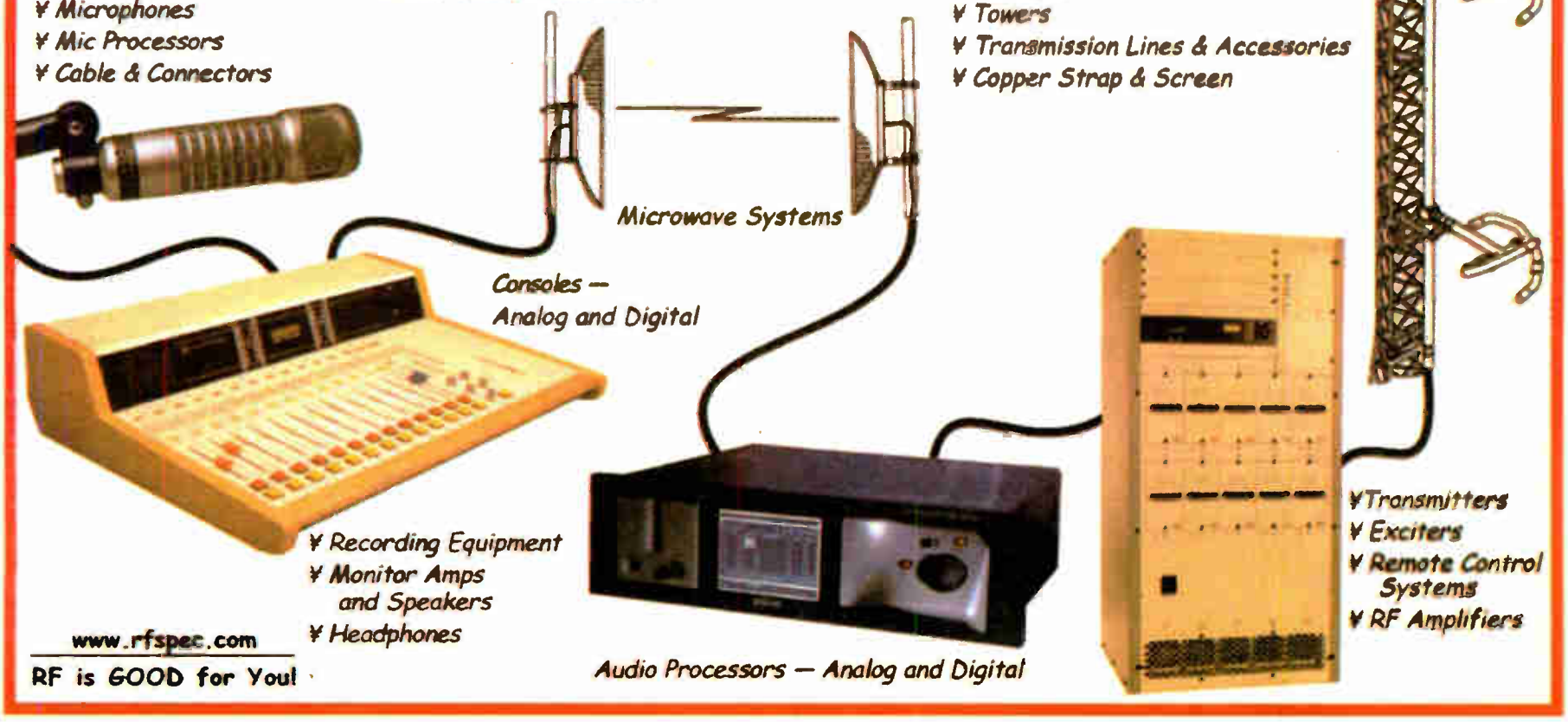

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Eating the Frog

by George Nicholas

Obey the Law of Forced Efficiency. There is never enough time to do everything, but there is always enough time to do the most important things. What are they?

[CEDAR RAPIDS, Iowa - May 2003] Okay, let us see a show of hands here. How many of you feel under pressure to get things done every day? How many of you feel there simply is not enough time to do your job the way you would like? Nice to see, everybody is in agreement!

This month, we focus on time management. I might add, while this article is being written, our Esteemed Editor is waiting patiently for this draft. In other words, we are *all* learning better time management skills!

In researching the subject, two main things became quite clear, and consistent. One, there *never* is enough time to complete all of the tasks you need to do. And two, you need to change your life-style in order to maximize the time you have. While it seems painfully obvious, we are usually good at doing one or the other - but rarely do both at the same time.

Brian Tracy's book *Eat That Frog! 21 Great Ways to Stop Procrastinating and Get More Done in Less Time* (BK Publishers, Inc., San Francisco) is a great reference, and a short read at 130 pages. The premise of the title is quite simple. It has been said that if the first thing you do each morning is eat a live frog, then you can go through the day with the satisfaction of knowing that is probably the worst thing that is going to happen to you all day long.

Your "frog" is going to be your biggest, most important task, the one you are most likely to procrastinate on. If you have two "frogs," start with the biggest, ugliest one first. And do not stop until you finish all of it! And finally, if you have to eat a live frog, it does not pay to sit and look at it for very long!

But this is not just about getting things done. It is about doing it in a way where you can measure your results. That might mean doing a task faster, each time you do it. More importantly, it might mean you get satisfaction in taking one more "frog" off your list. By the way, this does not just apply to employment. The "frog" could be the goal to lose weight, quit smoking, spend more time with the dog – the choices are endless.

PUTTING IT ALL TOGETHER

Decide your goal, in clear and concise terms: "I need to have this transmitter installed and on the air by October 15." Then write out these goals and objectives before you begin.

Plan every day in advance. (Remember last month's installment about The Plan?) Here is where having a Daytimer or Palm Pilot with a daily planner is key. Every task takes time, and every task must be entered and accounted for.

Apply the 80/20 Rule to everything. Twenty percent of your activities will account for 80 percent of your results. Concentrate on that 20 percent. Conversely, avoid wallowing in minutia, the small unimportant things that waste valuable time.

Organize your tasks by value and prioritize them so that you will be working on the key areas first.

Obey the Law of Forced Efficiency. There is never enough time to do everything, but there is always enough time to do the most important things. What are they?

Leverage your special talents, and identify your key constraints. Focus on the things you are really good at, and do those things very well. Conversely, identify the bottlenecks or "choke points," internally and externally, that set the speed of your most important goals. Focus on alleviating them.

Take it one step at a time. If the project appears too big and overwhelming, break it down into several smaller sub-projects. (Make sure you finish them all, or the original net result is still zero!)

Maximize your personal powers. Identify your periods of highest physical and mental energy each day, and structure your most important and demanding tasks around those times. Get lots of rest so you can perform at your best.

Do the most difficult task first. Begin each day with your most difficult task, the one task that can make the greatest contribution to yourself and your work, and keep at it until it's completed.

Create large chunks of time. This is probably the most difficult, and probably the most important strategy. Since every difficult task takes longer than we expect, budgeting extra time to complete the task is critical! This should be one large block of time, to allow you to concentrate for an extended period with minimal interruptions.

Develop a sense of urgency. Make a habit of moving fast on key tasks. Hint: It is a good thing to be known in your company as a person who does things quickly and well!

Select any goal, task or project in your life where you have been procrastinating and take just one step toward accomplishing it immediately. Sometimes, all you need to do to get started is to sit down and make a list of all the steps you will need to take to eventually complete the task. Then, just start and complete one item on the list, and then one more, and so on. You will be amazed at what you eventually accomplish.

So how does that frog taste?

George Nicholas has been in the broadcasting business since 1975, most recently as a Regional Engineering Manager with Clear Channel. He now operates George Nicholas Communications, specializing in technical and communication consulting throughout the US. You can contact him via Editor@radio-guide.com

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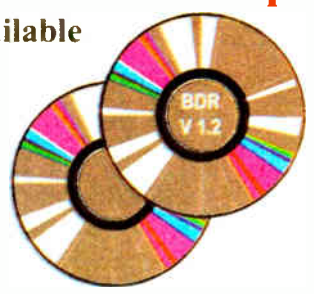

At last year's NAB, Version 1.0 of the Oldradio.com CD was released. **Broadcaster's Desktop Reference** (BDR) is now is available to everyone. A work in progress – it seems something new is added almost every month.

Among the resources already available, you'll find: Barry's Radio Utilities-2002, The Continental Electronics E-Slide, RF Specialties Toolkit, Tom Osenkowsky's Toolkit, Bob Carpenter's AM and FM/TV database viewer, Top Ten Lists, EAS paper sources, some project schematics, and some nice historical files.

To make the CD even more valuable, when you are at the transmitter site, we have added the FCC and EAS checklists, and some equipment manuals. And this is not the end ... more is planned.

You will find most of the CD contents are listed at: www.oldradio.com/latest.htm

The proceeds from this CD are going to be put into improving the next edition of the CD, and supporting Oldradio.com and its efforts to document and display the history of our industry.

We are suggesting something in the range of $15-$20 (or more, if you really want to support the Oldradio Project).

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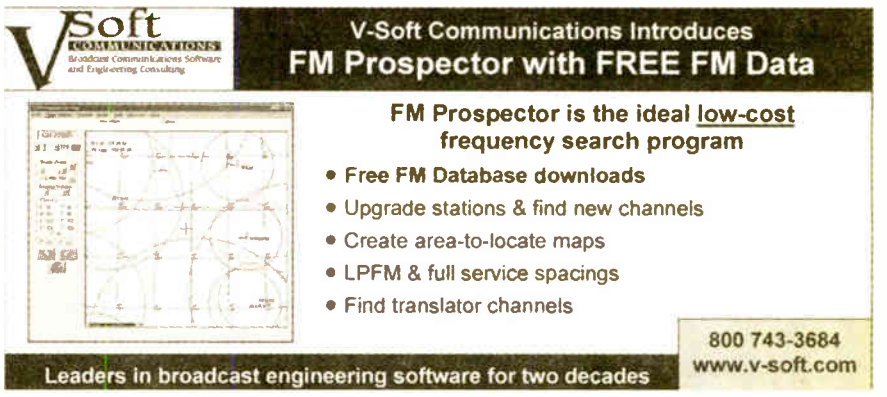

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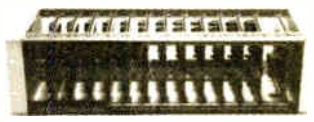

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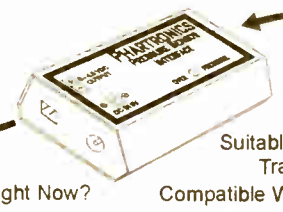

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