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Vol 18, No 7

Radio's Best Read Newspaper

April 6, 1994

NAB Pressures FCC On EBS Technology

by Randy Sukow

WASHINGTON The FCC has agreed to a National Association of Broadcasters (NAB) request to delay implementation of a newly redesigned Emergency Broadcast System (EBS).

For several months, the new EBS rules were expected to get final approval during the commission's February or March regular meeting. But the commission agreed to a delay of the proceeding following several meetings with NAB officials who voiced concerns about broadcaster implementation costs and the efficiency of the revised system.

The commission may still decide to take the issue up during its April meeting.

The commission's EBS Office, a division of the Field Operations Bureau (FOB), has been developing the system redesign for the past two years, seeking to increase efficiency using new digital technologies.

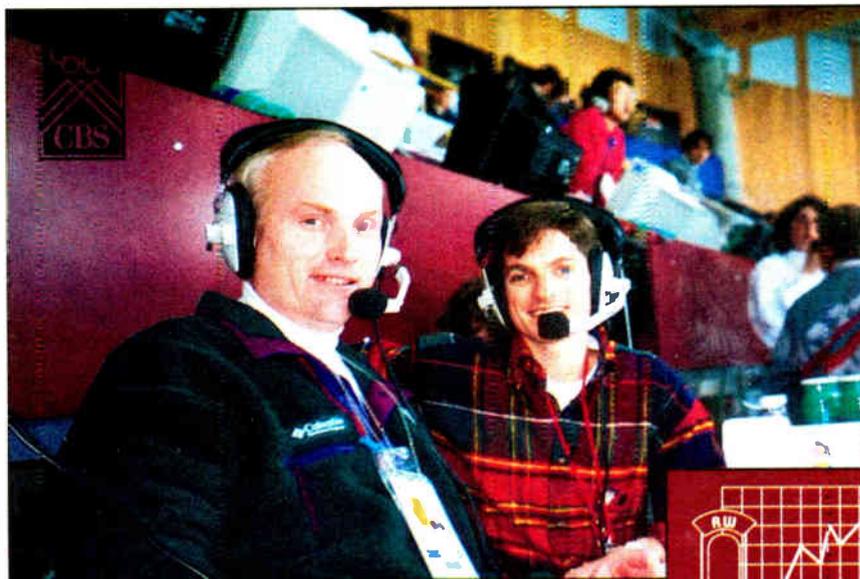
The final order had been written and was ready for approval when NAB staffers met with Mass Media Bureau Chief Roy Stewart. Stewart apparently intervened to delay the proceedings. At deadline, NAB was planning to meet with FOB Chief Richard Smith to

discuss possible alternatives or revisions to the new EBS rules.

One alternative may be early approval of a tentative report and order with time set aside to study whether further changes should be made to the new system. "If (the FCC) came out with a final order in April, I think you would hear a hue and cry from broadcasters across the country," said Jeff Baumann, NAB executive vice president and chief counsel.

Some NAB radio board members are also asking for funds from the FCC or the Federal Emergency Management Agency (FEMA) to defray implementation costs for broadcasters. "Cost is a factor," Baumann

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CBS covered the Olympics from Norway with the help of guest commentators such as figure skater Paul Wylie (r) above.



Running
Radio
pp. 9-20

Joyner Flies by Satellite

by Bruce Ingram

CHICAGO He's bad; he's nationwide. Fly Jock Tom Joyner, famous for jet-commuting for years between his top-rated morning show on KKDA-FM Dallas and his top-rated afternoon drive show on WGCI-FM Chicago, still cannot

be satisfied with one show in one city. These days he is heard in 32 markets simultaneously on "The Tom Joyner Morning Show," an ABC Radio Networks project that blends high technology with a programming approach that is so old it seems radically new.

"I don't know anybody who's done this kind of show before on the radio," said Joyner. "Since the '40s anyway."

"The Tom Joyner Morning Show" is trumpeted by ABC as the nation's first nationally syndicated urban contemporary morning program. The show does target African-American listeners, but its approach is quite different from standard, music-dependent urban programming.

Like most shows from radio's golden age, Joyner's has a live band accompanying guests and providing music in and out of commercial breaks. The new wrinkle is that Joyner is based in Dallas and Uncle Butchie's Live House plays out of Chicago.

Joyner, in his new, \$500,000 Dallas studio, is linked to Chicago and other ABC studios nation-wide by fiber-optic ground lines with no time delay. This means he can carry on casual conversations with celebrities in New York or Los Angeles

or Washington as if they were in the studio with him.

It also means musical guests can play with "Butch" Stewart's band despite the fact they are separated by thousands of miles.

Joyner remembered that one of his first guests, ex-Kool J and the Gang singer J.T. Taylor felt strange about the concept until he hooked up with Uncle Butchie via studio monitors. "Butch said, 'Hi, J.T.' and J.T. said, 'Hi, Butch' and they just counted off and started to play. It was great."

Joyner is proud of the fact that his show emphasizes personality over music, a direction he has been advocating for years.

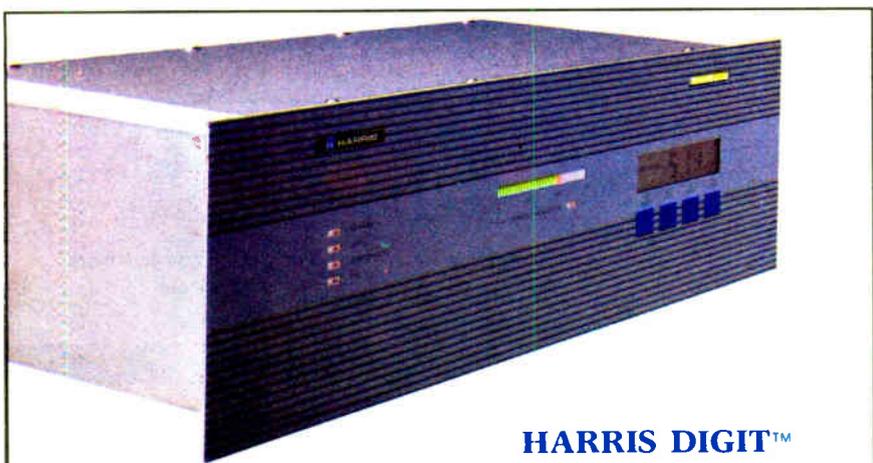
Joyner still spins the hits, but he devotes more time to original comedy, including a daily soap opera spoof, celebrity interviews and performances, sports and news.

Joyner jokes that his show brings all the excitement of late-night TV talk shows to radio, and the comparison is apt.

"The Tom Joyner Morning Show" is a lot like "The Tonight Show," "The Letterman Show," and "Arsenio" without the cameras.

"It is a big, big show," said Joyner, who was winding up the last year's eight-year contract at Chicago's WGCI-FM and preparing for retirement when he got the

continued on page 18 ▶



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NEWSWATCH

NAB Concerned About Freeze

WASHINGTON The National Association of Broadcasters (NAB) is seeking a clarification from the FCC on its decision last month to "freeze" comparative licensing considerations and comparative license renewal proceedings.

The NAB "is seeking FCC clarification on the freeze and its potential impact." Previous freezes have affected new business for contract engineers and consultants.

The FCC enacted the freeze as a result of a recent U.S. Court of Appeals action that said the FCC's criteria used in evaluating comparative applications for new stations was "unlawful."

During the freeze, which will last until the comparative policies are revised, the FCC's Mass Media Bureau will not issue cut-off lists or adopt FM filing windows for new filing opportunities.

Also, major facility changes required to be placed on an FCC cut-off list will be frozen. This includes changes of frequency

and community of licensing, and AM changes, such as operating hours, most power increases and directional antenna modifications.

The NAB said that "changes not subject to comparative proceedings, and FM upgrades under the one-step process apparently will not be affected" by the freeze.

AEQ to Provide Codecs for World Cup

TEMPE, Ariz. The European Broadcasting Union (EBU) has

contracted with AEQ to provide 520 ACD-3.000 audio codecs for this summer's retransmission of the FIFA World Cup soccer matches.

The digital audio encoding/decoding equipment was recently tested and approved by AT&T for use with the long distance carrier's circuits, according to AEQ. The AEQ ACD-3.000 codec receives analog audio, converting it to digital, compressing it for 56 Kb or 64 Kb transmission; the decoder converts the audio back to normal. The compression layer options include the G.722 standard of CCITT or in conformity with ISO/MPEG Layer II. The data

channels are compatible with Switched 56 or with the international ISDN network.

NRSC-2 Waiver To End June 30

WASHINGTON The FCC has issued a reminder to AM stations that the temporary "presumptive compliance policy," which allowed stations employing the NRSC-1 pre-emphasis curve to be assumed that they met the NRSC-2 standard, will lapse on June 30.

By June 30, AM stations that have not been making emitted spectra measurements, must resume an annual schedule of measurements.

Phone Number For Sony SRF-42 Purchases

In the March 9 RW article, "Sony Introduces AMAX Portable," the phone number listed was for consumer inquiries. Radio stations who wish to purchase SRF-42 AM stereo portables for samples and promotions, should call 800-833-6302.

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Earthquake Forced 'Tent' Broadcasting

by Mike Worrall
Chief Engineer
KCSN-FM

NORTHRIDGE, Calif. "Earthquake!" This, according to my wife Teresa, was the insightful bit of wisdom I blurted out just after 4:30 a.m. on the morning of January 17. Having been awakened on a holiday morning by what felt like a tank division roaring through the house, my lack of eloquence can perhaps be forgiven.

I suspect that all in the broadcast engineering profession have been rudely awakened in the early morning hours by an unexpected phone call; we know of the brief moment of confusion as we search for

the receiver not quite sure which side of consciousness the ring is coming from. Yet this "mental" fog is short lived because we have heard this noise before; we quickly realize that it is a telephone and, reluctantly perhaps—answer it.

When the noise is completely unrecognized, accompanied by violent shaking in total darkness that seems to last for minutes, one's response is a bit less practiced. Mine was to search for a flashlight and inspect the house then check with neighbors to see if help was needed.

Only then did I turn on the radio to see if we were on the air. We were not.

Station KCSN is a the non-commercial FM station licensed to California State University, Northridge. It was not until

well after dawn that the epicenter of the quake had been pinpointed at Northridge, and by this time I was confident that our personal situation had stabilized, so I headed for the station.

Off the air

The 12 mile drive was a surreal "Blade Runner" journey past flaming broken gas mains, rivers of water from ruptured pipes and a maze of traffic accidents caused by panicked drivers running through intersections without stop lights. A fire had broken out on campus, and glass was falling from fourth floor windows on adjoining buildings.

The radio station is on the second floor of a windowless building—constructed in the early 60s as a fallout shelter. With my now fading flashlight, I climbed the steps to the second floor, pausing once for a significant aftershock, and unlocked the studio door. My first glance revealed that getting back on the air would require a Herculean effort.

Thankfully, the station runs an unattended overnight programming service, so there were no concerns for the safety of any station employees who may have



KCSN announcers were forced to broadcast from a tent after the Los Angeles earthquake.



Chong Nominated to FCC

WASHINGTON President Bill Clinton announced on March 2 his intention to nominate attorney Rachelle B. Chong as the fourth FCC commissioner.

Chong specializes exclusively in telecommunications law at the international law firm of Graham and James in San Francisco, where she has been a partner since 1992.

Focusing her practice on regulatory issues related to the wireless communications industry, she serves as principal regulatory counsel to four cellular telephone carriers in the greater San Francisco Bay Area. She is head of the firm's Regulatory Department, and is an active member of its International Telecommunications Practice Group, consisting of telecommunications lawyers in the United States. She also serves on its Management Center Committee, a policy-making committee of the firm.

Before joining Graham and James in 1987, Chong practiced communications law for three years as an associate attorney at the now-defunct Washington, D.C. law firm of Kadison, Pfaelzer, Woodard, Quinn and Rossi. Her specialties were broadcast law, radio common carrier regulation and intellectual property matters.

Chong, 34, was born and raised in Stockton, California. She graduated in 1981 with dual degrees in political science and journalism from the University of California at Berkeley. In 1984, she graduated from Hastings College of the Law. She is a member of the California and District of Columbia bars.

The president's nomination is subject to approval by the Senate Commerce Committee and the full Senate. If approved, Chong, a Republican, would fill the spot left vacant when Sherrie Marshall left in the fall of 1993 to go into private practice. Chong would join Democratic Chairman Reed E. Hundt (nominated by Clinton), and commissioners James H. Quello (Democrat) and Andrew C. Barrett (Republican) as a member of the Commission. Hundt's term expires in 1998, Quello's in 1996, and Barrett's in 1995. If Chong is approved her term will expire in 1997.

Another commissioner's seat (for a Democrat) became vacant when Ervin Duggan left earlier this year to become president of PBS. At presstime, Clinton was expected to nominate Susan Ness for the seat.

been trapped. The path to the control room is through the music library with its floor-to-ceiling album and CD cabinets. This furniture was completely disintegrated with 4,000 CDs and thousands of LPs littering the floor.

Initial inspection

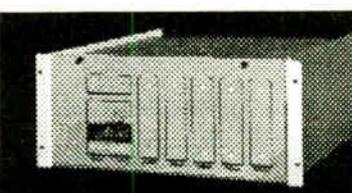
I climbed through the rubble to inspect the control room which was not too badly damaged. The CD players were on the floor, the reel-to-reel machines had rolled across the room and slammed into the

continued on page 29 ▶

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Stir in Radio with Coming of Spring

WASHINGTON Spring is newly arrived and the air is alive with the sound of telecommunications policy being rewritten and spectrum being divvied up and dreamers counting the money they will be making soon, they hope.

The Clinton Administration finally got its act together on nominating candidates to the vacant FCC slots—communications attorneys Rachele Chong (see story page 3) and Susan Ness (at press time—look for our story in the next RW).

★ ★ ★

Although the Clinton Administration may not have been thinking about the FCC and its related industries until recently, Congress has been weaving and unweaving the fabric of telecommunications policy.



First the good news. Jim May, executive vice president, government relations, National Association of Broadcasters, claimed a "huge victory" with the Senate passage of the Radio Advertising Disclosure bill last month. President Clinton is expected to eventually sign the bill, which will alter current laws requiring long disclaimers at the end of car-leasing radio ads, which has forced most car dealerships to limit leasing advertising to TV and newspapers exclusively. The new law would allow broadcasters to give consumers a toll-free number to hear the leasing rights disclaimer.

Just two months after being introduced last September, the Radio Ad

Disclosure provisions passed as a rider to a larger House banking bill. The Senate version is also part of a larger bill, now set to go to a House-Senate conference. The Ad Disclosure section is not considered controversial and

"The passage of this bill marks one of the most significant radio-only legislative accomplishments we have seen in years."

—Eddie Fritts

should easily gain approval in the final conference report.

"This is the most important radio-related legislation in years," May said. NAB estimates the bill will boost annual revenues to the radio industry by at least \$20 million to \$50 million.

NAB President and CEO Eddie Fritts echoed May's sentiments: "The passage of this bill marks one of the most significant radio-only legislative accomplishments we have seen in several years."

"Our goal is to have this bill signed into law and the necessary FTC and Federal Reserve rulemakings completed in time for broadcasters to take advantage of the new law for the upcoming fall model year."

★ ★ ★

Our neighbors to the north just concluded the Second International Symposium on DAB, "The Sound of 2000," and, according to RWI Managing Editor Charles Taylor, who attended the gathering, offered an "optimistic but upfront analysis on the challenges of tomorrow's radio technology around the world."

The U.S. drew harsh criticism from international attendees, reports Chuck. The U.S. failure to commit to L-band for digital radio transmission troubles many, particularly Canada, which would rather see a mass proliferation of common DAB receivers between the

two countries. As many of you know, Canada embraced the Eureka-147 System from the beginning and is now in the real-world test stage of an L-band DAB system.

Canada's Minister of Canadian

Heritage, the Honorable Michael Dupuy remarked, "We have taken a strong lead and are convinced we are offering Canada the best. I hope that America, in due course, will decide to join the rest of the world."

We will of course have a complete wrap-up for you in the next issue of RW, but you can pretty much draw your own conclusions about the sentiments abroad. I think it is worth repeating what we have said before: We are still in the early chapters of a long story. Interested U.S. parties should not read too much into news that Japanese electronics manufacturers are going ahead with plans to manufacture L-band digital receivers.

Yes, Canada is ahead of the game, but receivers will not be available for a few years. In-band receivers could be out simultaneously. The question will be answered when and if in-band proves workable

(or not) and when there are enough digital audio radio receivers on the market to indicate consumer preference for one or more digital radio approaches.

U.S. companies should continue to run their tests (ongoing in Cleveland throughout 1994 and beyond) at their own pace and decide which system or systems are best without feeling undue pressure. U.S. broadcasters, however, would do well to keep an open mind concerning L-band. We have said it before: In-band is not proven and Eureka is. L-band spectrum that was unattainable could become attainable with all the spectrum manipulation and allocation being considered.

Political times are fast-paced. Read this issue's editorial for yet another look at some of the regulatory changes that could have tremendous impact on your industry. Make your voices heard.

★ ★ ★

On a final note, RW's computer whiz and regular columnist, Richard Mertz, recently joined the consulting firm of Suffa & Cavell Inc. as a partner and will be based in Washington. Congratulations, Richard, and good luck!



Minneapolis Twin Cities-based Radio AAHS was honored in a national awards ceremony that recognizes excellence in programming for youth in film, music, television, radio and sports and in performances by young people.

Radio AAHS was honored for outstanding dissemination of news for kids through radio at the annual "Youth in Film" awards ceremony in Los Angeles earlier this year. Radio AAHS is the nation's only 24-hour radio network aimed at kids, featuring children's music, entertainment, news and educational programming.

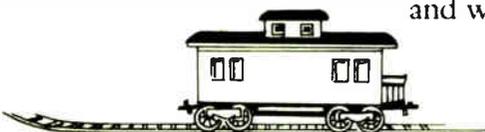


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Share the load

Dear RW,

Jim Wojciechowski begins his guest commentary, "Radio Engineers: Leading a Thankless Life" (RW, March 9), telling us he has left the broadcast technical field and is happier for it. He ends with a forecast of the industry's "technical and marketplace obsolescence."

Perhaps Mr. Wojciechowski would have had a more rewarding career had he understood the balance required of broadcast engineers. While the ability to restore station equipment is a necessary and vital skill, the ability to teach and motivate is at least as important. If the latter had been applied to some of the remotes he complains about, more station personnel might have had an opportunity to contribute and lighten Mr. Wojciechowski's load.

That is how it works at all the stations my firm serves. The on-air staffers produce and deploy the remotes. Their equipment has been organized and packaged to accomplish that capability.

My company is responsible for 100 percent of the technical requirements of two dozen stations spread over almost 200 miles of the upper Midwest. We are on-call 24 hours a day. I submit that my investment in test and diagnostic equipment, standards and calibrations, tools and even gas and oil is far greater than Mr. Wojciechowski's.

Through the past few years, I've accumulated a thick file of thank-you letters and testimonials from the broadcasters I've served. These owners and managers, deeply concerned with the quality of their air products and committed to long-term broadcast service, certainly put the lie to the "migrant labor" comparison Mr. Wojciechowski makes. None of my clients feel that way about my firm, or about engineering talent in general.

For all of us, introspection and self-critique are difficult and sometimes

painful. Mr. Wojciechowski should keep in mind that he was the one thing all of his unappreciative employers had in common.

Frank McCoy, Owner/Manager
Skywave Chicago

Editor's note: A few lines in Jim Wojciechowski's defense seem in order. The basic expenses for a contract engineering firm with 24 paying clients cannot be validly compared to the expenses of a station's staff engineer using his own truck and paying for his own gas and equipment.

Also, Mr. McCoy seems to assume a greater willingness to learn on the part of station management and on-air staff than is reflected in Mr. Wojciechowski's commentary. The fact that Mr. McCoy's clients have been responsible and appreciative broadcasters does not "put the lie to" Mr. Wojciechowski's observations of his own situation.

VSP update

Dear RW,

Thank you for Rich Rarey's excellent review of the Digital Domain VSP (RW, Feb. 23). The first 10 production units were well within the AES frequency tolerance of +/-0.2 percent. (Actually, they were within 0.2, or 10 hertz.)

After the first VSPs were delivered, we discovered that the Sony 7000 series DAT machines require a tolerance of +/-1 hertz. The Sony balked due to the VSP's slightly higher frequency. As a result of this discovery, all VSPs are now manufactured with an internal trim capacitor that easily meets the stricter tolerance.

The first 10 units have since been retrofitted with the new capacitor at no charge. The 7000 series DAT machines now lock right up to the VSP with or without sample rate conversion.

Bob Katz, President
Digital Domain, New York

GUEST EDITORIAL

by William R. (Bill) Bish
Master control operator and
Operating engineer, KVO5-TV

BELLINGHAM, Wash. It's murder, and although you are not aware of it, you are a witness and maybe an unwitting accomplice.

Stop murdering the language and stop letting your employees do it. You can hear it every day, not just on any one particular station, but on any or all of them.

For instance, the word "comfortable" has four syllables: com-fort-a-ble. But most of the time you hear three syllables, "comp-ter-ble." Go look for that one in your Funk & Wagnalls.

Another great one is "nuclear." There is no such word as "nucular," which you hear all the time. I have even heard people who work for the Atomic Energy Commission say "nucular" instead of nuclear.

"Vesh-ta-ble" is the word often used to describe something to eat, usually green and good for you. Many people in this

Radio' Wake-Up Call

Brisk Congressional activity this year has been devoted to rewriting the communications-related antitrust code and to establishing the National Information Infrastructure (NII).

House Telecommunications Subcommittee Chairman Edward Markey (D-Mass.) is quite correct to label the proposed bills as "the most significant overhaul of telecommunications policy in 60 years." Many communications media will profit from business created by new communications technologies.

The public could potentially be given the knowledge of the world at their fingertips, if the bills work as designed.

The danger is that radio could be left out of this revolution.

Legislators poring over the details of the NII incorporate long-distance and regional telephone companies, personal communications service (PCS) and cellular telephone companies, and cable, satellite and broadcast TV companies into their plans. The radio industry is a non-entity.

The currently hot debate over "spectrum flexibility" is a perfect case in point.

Telecommunications Subcommittee Member Billy Tauzin (D-La.) proposed an amendment to the House NII bill (H.R. 3636) "to permit broadcasters to make use of the broadcast spectrum...for services that are ancillary or supplementary to the programming services which they are authorized to provide."

The Tauzin amendment (vigorously supported by the NAB) was tabled by the subcommittee because some members thought it was too vague. A more specific version of the amendment passed by the full House Energy and Commerce Committee last month. Among the clarifications was replacement of the word "broadcasters" with the term "television broadcast stations."

In a year or two, TV broadcasters are scheduled to receive a second 6 MHz allocation to transmit digital HDTV. The debate rages over how much of that channel should be dedicated to HDTV and how much should be made available for multiple NTSC programming and other digital services.

Radio stations, according to the current Washington mind-set, do not have the same flexibility option. After all, did radio broadcasters not voluntarily bow out of the fight for additional digital audio broadcasting spectrum a few years ago?

There is time to change this attitude. Even if the NII bill and the Tauzin Amendment do not pass this year, the FCC already has authority to define the limits of "spectrum flexibility" and determine which media will benefit from it. The debate could go on for years.

In the meantime, radio station operators should explore creative ways to obtain more spectrum for digital services. They might start by becoming active bidders for PCS spectrum. Provisions in the FCC's PCS auction rules should make it possible for even small radio entrepreneurs to participate in the auctions.

Duopoly is another possible avenue. The proposed Senate NII bill (S. 1822) directs the FCC to consider expanding the radio ownership limits beyond the 1992 rewrite, which allows a single licensee to control up to four stations in a market.

In the future, some licensees may be authorized to operate six or eight stations in a market. Might the FCC consider granting them the right to air digital services over some of those duopoly channels?

A single FM channel can transmit about 800,000 bits of digital information a second, about 30 times less capacity than a TV channel. (An AM channel has about 10 times less capacity than an FM channel.)

Radio stations are bound by the laws of physics to have less channel capacity than TV stations, but there is no reason for the laws of the land to give radio stations less flexibility to use that capacity.

—RW

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**Next Issue of
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country are too lazy to pronounce all four syllables in the word "vegetable."

Confusion reigns supreme when sportscasters take to the air. When was the last time you heard a sportscaster say something like, "The team is in first place with a record of seven and oh"? Somehow the letter "O" has supplanted the number zero.

Perhaps this zero/oh switch originates with the telephone, where everyone has been taught to dial "O" for operator. However, if you take a look at your dial, "O" actually translates to "6." You have to dial zero to get the operator.

(A friend once tried to explain that "O" is a contraction of zero, but that does not wash. The logical contraction of zero should start with a "Z.")

Speaking of numbers, "eleven" follows ten, not "aleven" or "leven."

Think about it for a few minutes and you can probably compile your own long list of common mispronunciations:

- Pres-i-dent, not prez-dent
 - Ac-cess-or-y, not ass-ess-ry
 - Feb-ru-ar-y, not Feb-u-war-y
 - Wed-nes-day, not Wins-dee
- That cold place up north is the Arc-tic,

not the ar-deek. The cold place to the south is not the ant-ar-deek. If you could purchase real estate at either place, you would go to a realty to find an agent. There is no such word as real-i-ty.

After completing your business with the agent, you can go home every night to your family, although many on the radio talk about going home to the fam-ly. There is no "f" in "teamwork," but "family" does have one.

The friendly broadcaster is always willing to give you the time of day, but sometimes finds it hard to articulate. Just the other day, I heard a TV announcer promoting a movie for "tonight at two thirty." There is no two-thirty at night. The movie aired at two-thirty in the morning.

The solution is simple. We in the broadcast media must pay attention to the details. We have a tremendous influence on the public. When people hear us continually mispronounce words, the incorrect usage begins to sound right to them.

We must be caretakers of the English language. We owe it to our audience to amend our ways.

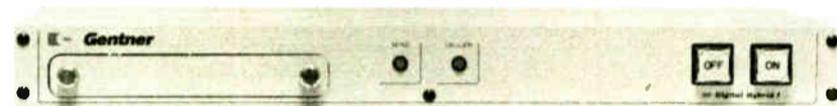
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single-cable conferencing with another G2500 allow you to take it anywhere. An acoustic echo suppressor further reduces the chance of feedback.

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Big Apple Hosts Grammy Broadcasts

by Charles Taylor

NEW YORK It's four hours before the Grammy Awards begin live from Radio City Music Hall, and gathered here a mile away at the Hard Rock Cafe in New York are a host of names that run the gamut in popular music: The Smithereens, Pat Metheny, Matthew Sweet, even Tony Bennett.

While these celebrities will have their chance for mega exposure over the

program's worldwide telecast shortly, for now, they are doing their thing for radio.

The event is organized annually by programming syndicator MJI Broadcasting, which for nine years has been the official radio network of the Grammy Awards. It was sponsored this year by Chevrolet.

For three days, the Hard Rock is host to a satellite remote involving live broadcasts to two dozen major and mid-market rock radio stations nationwide. The restaurant

closes its doors to the public during the event, pushes tables aside and sets up two dozen temporary mini remote studios for the stations' afternoon teams, using most every usable space within the structure's two levels. Station logo banners herald some of the larger set-ups, while some are little more than a table, a placard identifying the station and three draped blue walls.

Waiting on stars

Hard Rock employees buzz about, keeping coffee cups and soda glasses full, while other staffers escort the music stars, clipboards in hand with each destination marked. Each outlet is given a five-minute one-on-one interview with guests, who include not only music stars, but comedians, cartoon voice talent and MTV VJs.

For the celebrities, such a remote equates a mini-promotional tour—24 markets within 6,500 square feet in less than three hours. For radio, it localizes the music industry's most prestigious annual event, bringing both the flavor and the immediacy of the Grammy Awards by way of personalities with which listeners have an established bond.

"Essentially, we're bringing New York to Indianapolis," says Le Ann Summers, mid-day air personality at WRZX in Indianapolis. "We're actually bringing the stars to them, where these guys have sat down with us and talked. We give the listeners a feel for what's going on here at the Grammys and what's going on in the city of New York."

Most of the stations devote the entire afternoon drive show live from the Hard Rock, carefully orchestrating the link between commentary from New York and music played from home base.

Some follow a printed log that outlines songs, commercial and weather/traffic blocks, along with the segments designated for interviews and chatter from the remote. Organization is key.

Even so, the general atmosphere is boisterous and frenetic. At this hour, the

continued on page 17 ▶

Evergreen Case Spawns New Indecency Precepts

by Alan Haber

WASHINGTON As a result of a settlement reached by the FCC with Evergreen Media Corporation of Irving, Texas, the commission will offer, within nine months, guidance to broadcasters relating to existing case laws on broadcast indecency.

The Evergreen settlement, involving two broadcasts on Evergreen-owned WLUP (AM) Chicago by Steve Dahl and Gary Meier in 1987 and 1989, and an additional broadcast on Evergreen's WLUP-FM by Kevin Matthews in 1992, was expected to be filed in Federal District Court in Illinois the week of March 7, according to Jane E. Mago, FCC assistant general counsel.

The Dahl and Meier broadcasts resulted in a \$6,000 forfeiture being levied by the FCC; the Matthews broadcast brought a \$33,750 forfeiture.

A third party in the case, the American Civil Liberties Union (ACLU), filed a counterclaim against the government. The counterclaim stipulated that the ACLU, as listeners of WLUP, would be affected by any action taken by the FCC against the station as far as its rights were concerned. Although the ACLU is not currently a

party to the agreement, the group is expected to sign on shortly.

Evergreen and the ACLU were allowed by the court to challenge the constitutionality of the FCC's action as it applied to this particular case, according to Mago. Evergreen subsequently entered into discussions of a possible settlement with the government. At the heart of the discussions was the idea of reaching a settlement that "was the best for everybody all around," according to Mago.

Heightened awareness

"What the government got out of the settlement agreement is a promise by Evergreen that they would inform their on-air personnel that there was a need to be aware of the statute (covering broadcast indecency), to follow the statute, and also to set up an educational program to update the on-air personnel regarding the FCC's enforcement actions," Mago said. "And what Evergreen gets out of it is an agreement on our part to issue guidance related to our case law on broadcast indecency. We're going to clarify what's already out there."

According to the terms of the settlement

continued on page 22 ▶



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Networks Offer Variety, Flexibility

by Lucia Cobo and Whitney Pinion

WASHINGTON Radio network companies are embracing new technology and ideas at a pace that is far outdistancing the radio stations they serve. Partly due to

(RNA), the industry is recovering nicely from the lingering recession of the early 1990s.

CBS Radio Networks Vice President and General Manager Robert Kipperman, who is currently the president of RNA, monitors the sales figures closely. "Network

example of the growth possible through a blend of aggressive programming and innovative uses of technology.

Company President Steve Lehman expects the company to grow by "50 percent" in 1994. Part of its success is attributable to programs like "Gerry House and the House Foundation," a program that uses digital delivery and storage of live programming to create a completely "local" and live morning show for each of its affiliates.

had outperformed the marketplace in both 1993 and 1994—without including the network's performance in the Olympics (see story page 15).

Says Kipperman: "Our basic niche is news and sports programming. Our advertisers can count on in-program commercial clearance with CBS. We have been extremely successful with Osgood and we just renewed our baseball rights for six years."

In addition, CBS will continue to expand into the talk show arena, an area it recently delved into with the "Gil Gross Show," a program that has cleared more than 150 stations since its launch in August of 1992.

Continued growth

Says Lehman: "Gerry House has really set a benchmark for the industry for satellite-delivered morning shows." Premiere moved to completely refurbished studios two years ago, and, according to Lehman, is already scouting new facilities. "We have almost outgrown our new facility."

But established companies are also on the move. Kipperman revealed that CBS

On the rebound

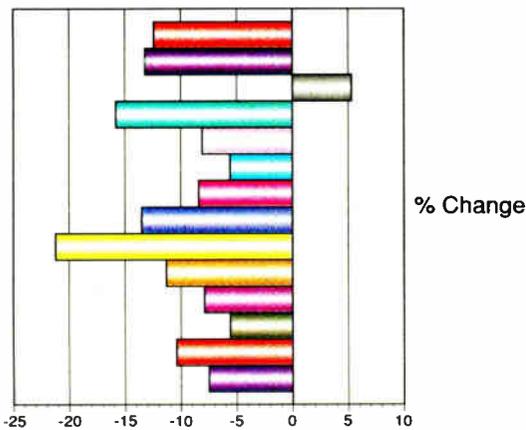
In an effort to better serve its affiliates, United Press International has expanded and modernized its operation.

On the radio network end of things, expansion has meant doing a one-minute news update at the bottom of the hour, in addition to running its hourly news 24 hours a day, seven days a week. UPI's

continued on page 11 ▶

RADAR 48 (Fall 1993). Persons 12+, All Network, All Broadcasts Except Overnight—Average Persons

Prime (ABC)—(7.5)
WMBS (WW1)—(10.4)
Platinum (ABC)—(5.6)
CNN+ (US)—(7.9)
Spectrum (CBS)—(11.3)
Genesis (ABC)—(21.2)
WNBC (WW1)—(13.5)
Super (US)—(8.4)
CBS (CBS)—(5.6)
Power (US)—(8.1)
Source (WW1)—(15.8)
Galaxy (ABC)—5.3
Excel (ABC)—(13.2)
Amer Urban (AUR)—(12.4)



% Change Versus RADAR 47. Numbers in brackets () denote a decrease. SOURCE: RADAR 48, Fall 1993

aggressive new players and partly due to earlier cost-cutting, radio networks find themselves delivering product to radio stations in innovative and flexible packages that are made possible by the digital technology available.

According to revenue figures compiled by the Radio Network Association

radio came off a very strong '93 versus '92," he said. "Overall growth was just under 10 percent in 1993 and we see similar growth in the first quarter of 1994—the upfront has been fairly strong."

Premiere Radio Networks, a comparatively new network company that came on the scene in the late 1980s is a good

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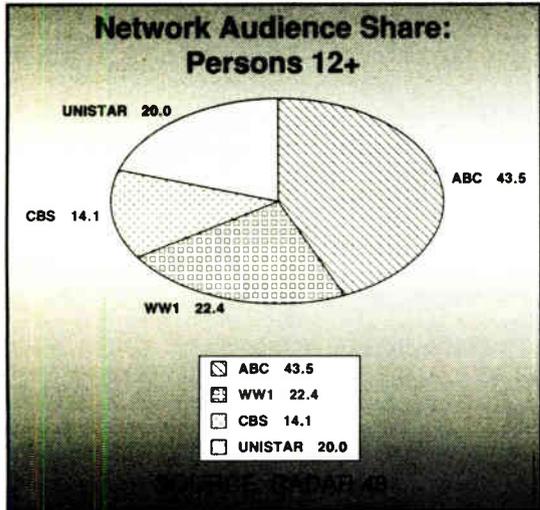
► continued from page 9
sports coverage has increased as well, although each broadcast is limited to one minute every hour. Business-casts, presented live from London during the morning drive, are offered 24 hours a day during the business week but are also kept to a one-minute spot.
"If we can't do it in a minute, we don't do it," explains Howard Dicus, General Manager of the Radio Network. "We keep everything down to a minute, except for our hourlies." UPI's audio service is still available for news stations, but the livecasts

industry. "The use of radio news has changed, and obviously the nature of AP's business is changing with that trend in the radio industry," says Evelyn Cassidy, director of station services.
AP has recently put additional resources into the entertainment areas of programming, arming themselves with a five-member entertainment department that has been growing lately. "We're putting increased emphasis on some of the areas, not other than hard news, but in addition to hard news," says Wally Hinds, Director of Programming.

its affiliates, which are spread throughout the U.S., Guatemala, El Salvador and Puerto Rico. The network recently bought the rights to this year's World Cup. "We paid \$1,200,000 for the rights to this, which is the highest figure that's ever been paid for the rights for any sporting event on radio in the Spanish language," says Barrett L. Alley, President of CRC.
CRC also entered into a con-

tract with the Wall Street Journal to carry the Journal's news in Spanish. In cooperation with Home Box Office, CRC will broadcast live the prize-fights in the heavyweight division, as this division, as this division consists largely of Hispanic boxers.
Standard News, a relatively new player in the network field, intends to serve its affiliates by staying on the cutting edge of

technology and putting control into the hands of the stations.
"Being young, we can start fresh," says Director of Technical Development Charles Wagner. "We are not encumbered by analog...we started fully digital." Standard has embraced a daX, a digital technology developed by California Digital (in use at Premiere's Gerry House program) which enables the network to provide radio stations with a system that is multimedia. The system is already in operation and running flawlessly so far.



are geared toward those music-intensive stations that want to give listeners enough information to keep them from splitting their time with local all-news stations.
Dicus says that there is a growing market for features, especially those that are brief. "Stations that are doing less and less news are still doing lots of features," he says. UPI now produces features for classical, country and rock formats, as well as consumer and lifestyle features.
The Associated Press Radio Network, like UPI, is endeavoring to be more sensitive and responsive to the needs of its member stations and to fluctuations in the

Focusing attention on programming that is not hard news does not mean that AP plans to discontinue delivering the late-breaking stories. "The listener demand for information has not changed," says Vice President Jim Williams. "It's how radio stations decide to present that information to listeners that's changing."

Spanish too
Cadena Radio Centro, a Spanish-language network, also plans to take advantage of improved technology. Currently running on an analog system, CRC will go digital within the next few months.
Largely overlooked because of its non-English programming, CRC has called attention to itself recently by winning the 1994 Golden Mike Award for the best radio network news service.
Like its English-language counterparts, CRC's primary concern is customizing programming for

USAirplay Radio Replays '70s Music Styles

by Charles Taylor

WASHINGTON Back in 1979, seldom did a night pass that I did not tune into WLVA(AM), the most popular top 40 station in town. With school work scattered about, I'd chant along with the likes of Donna Summer, Chic and the Bee Gees.
Some 15 years later, it's deadlines I toil over, and WLVA is now a 24-hour news/religious outlet. But for two hours every Saturday night, thanks to Mix 107.3 here in Washington, it's "Bad Girls" and "Good Times" all over again with the station's "Retro Saturday Night" disco show.
Down the dial a ways, CBS Radio outlet WLTT recently initiated its new Arrow format, featuring mainstream rock artists of the 1970s like The Doobie Brothers, The Eagles and Fleetwood Mac. It's one of four Arrow stations so far, along with outlets in Los Angeles, Dallas and Houston.
Across the U.S., the 1970s decade is back in a big way. Television shows like "The Partridge Family" and "The Brady Bunch" are trendy, bell bottoms are a high point among clothing designers, and clubs are packing in crowds on weekly disco nights—and I am talking 21- to 25-year olds, not old-timers like me reliving the good old days.
So what's the deal here?
"Really, it's a continuation of something that's been going on for some time," suggests Tommy Edwards, programming director at KCBS in Los Angeles, the founding Arrow station. "Every decade opens up the music from two decades previous. In 1973, we were playing music from the '50s. In 1983, the music of the 1960s burst in. Now it's the '70s."
"I don't know why, but it really is a trend," adds

Danny Bonaduce, a star of "The Partridge Family" and now a DJ at Chicago's WLUP. "There's certainly nothing that bothered me about the 70s. I'm pleased as hell about it."
The cultural effects of such a movement are two-fold. First, it arouses fond memories of simpler times and youthful days to those in their 30s and 40s—the music that accompanied high school or college, dating, summer, perhaps a first job in a new city. It's nostalgia.
For radio, '70's nostalgia hits on a demographic not currently served by a single radio station in most markets.
"Radio is finally getting around to realizing a large generation of people are not being served by their favorite music. These people have been living off the scan button of their radios, with no loyalty to one station," Edwards says.
Adds Jack Taddeo, a radio consultant based outside of Chicago, "In the adult contemporary (AC) world, most stations have gone from playing music of the '60s, '70s and '80s to predominately 1980's and 1990's music. There's a lot of attrition. As stations have come away from the '70's product, it's opened up a big hole."
A typical Arrow listener, Edwards says, is in his 30s to mid-40s and grew up on a combination of AOR and top 40 radio. "Classic rock plays a lot of AOR, but no one plays the CHR side, except the occasional AC or hot AC," Edwards says.
A given hour on Arrow might include 1970's hits from Pink Floyd, Billy Joel, Steely Dan, James Taylor, The Beatles, Rolling Stones, The Police, Carly Simon, Fleetwood Mac and Elton John—all mainstream artists with roots on rock radio. Even so, these artists were among the predominate pop
continued on page 18 ►

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NASHVILLE Unistar Radio Networks launched "Acoustic Country," a series of 90-minute, in-concert acoustic performances by music's leading country acts.

Recorded live at the Stage Door Lounge in Nashville's Opryland Hotel, "Acoustic Country" features country music stars performing their biggest hits without amplification. The artists will take a break in the middle of the performance to talk about their music and share their insights.

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American Urban Radio Introduces "USA Music Magazine"

NEW YORK American Urban Radio Networks debuted "USA Music Magazine," a two-hour show that relies on news-making celebrities rather than week-to-week charts for the bulk of its

programming content.

The program is co-hosted by Vinny Brown (of WRKS-FM New York fame) and Wendy Williams, one of radio's top-rated on-air personalities. American Urban Radio Networks President of Programming, Jerry Lopes designed the program to be fast-paced, information-packed and fresh.

For information, contact Jerry Lopes at 412-456-4039; or circle Reader Service 104.

Motor Sports Radio Premieres Weekend Updates

Johnson City, N.Y. Sportcom Associates' Motor Sports Radio program service will premiere "Weekend Updates" this month, for all Motor Sports Radio affiliates. The updates will be three 90-second segments—two on Saturday and one on Sunday.

Motor Sports Radio now also is carried by the Armed Forces Radio and Television Service for transmission to overseas service members.

Motor Sports Radio is available on Galaxy 6, single-line Comrex and dial-up phones to commercial radio stations in the U.S. and Canada on a barter basis, with feeds on Satcom C5 and digital telephony (Switched 56/ISDN) scheduled to be added as business expands.

For information, contact Paul Kaminski at 607-770-9165; or circle Reader Service 97.

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Tom Leykis on Westwood One

LOS ANGELES Westwood One Companies expanded its programming roster with the addition of "The Tom Leykis Show." Debuting this spring, the talk show will air during afternoon drive.

"The Tom Leykis Show" will originate from Westwood's Los Angeles studio, providing it with all the advantages of access to Hollywood. Tom Leykis will cover a variety of topics, ranging from politics to pop culture, and is geared to the 25-54 age demographic.

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Learn to Market Radio's Strengths

by Bob Harris

DALLAS If I understand the national advertising figures correctly, radio only garners 6.8 percent of all advertising dollars spent in this country. And you know what? I think radio gets what it deserves!

Radio is not proud of itself, and tries to sell radio with bells, whistles, smoke and mirrors, but not results. Many radio stations are unprofessional and unprepared to do business in a way to get more business.

Cases in point

I am going to list a few examples. Just today, as I wrote this column, I received a call from the general sales manager of a radio station here in Dallas that had received a small, two-day buy from our agency last week. The schedule was to start today (Tuesday). The GSM called to ask for more credit references.

We had filled out a credit application and provided the required number of media references. Our agency had placed a \$12,000 buy with this very station last summer, and was given credit at the time. The GSM said they could not find a record of that buy at the station. This station is owned by one of the biggest broadcast companies in the U.S. I wonder when, and if, my buy—which is to support a full page of newspaper coupons for Frozen Food month in Wednesday's paper—will actually air.

Another tactic more and more radio station salespeople seem to be using is disguising or hiding the fact they work for a radio station when calling for appointments. This is very much in vogue with sales executives seeking vendor or grocery-related business.

The sales people are very much aware that most vendor contacts, regional sales managers and the like, will not take calls from radio sales people. So they try to hide the fact that they are calling for a radio station in an effort to get their foot in the door.

Why not try to solve the problems that radio has created with this category of business instead?

Dubious achievement

At one session at the recent Radio Advertising Bureau Managing Sales Conference, a major station sales executive in a major market (owned by the same company as the one in my Dallas example above) bragged about the success of new business development enjoyed by the station. The station, said this executive (and handed out business cards to prove it), operates under the name of "XYZ" Merchandising Group (I have changed the name to protect the guilty).

I submit to you that if the first thing you tell a prospect is a lie, how do you expect the relationship and radio to prosper?

There are two other radio station groups here in Dallas that do the very same thing in their quest for vendor and grocery business. All of this to hide the fact that they are radio station sales people trying to get in to see key decision makers in non-traditional fields.

Again, if radio cannot convince people to use the medium based on its strengths and results, I believe there is no hope for radio to prosper and grow beyond its current share.

I have another story to share with you

from the "XYZ" marketing station. Just last week I received a form letter on "XYZ" letterhead, from a person I had never heard of (I already have a regular account executive (AE) who calls on me from the station). The letter was addressed to *Bill Harris* at Professional Spots. I just happen to be *Bob Harris* and the name of our firm is Professional Sports Marketing.

I faxed the letter along with a note to the Local Sales Manager at the station suggesting a "little homework goes a long way," and wondering if my regular salesperson was no longer on the case. This week in the mail, I received a letter

from the original letter writer blaming the incorrect name on the station's computer and database, and along with the letter an engraved (correctly) desktop pen stand.

A new attitude

For radio to prosper and grow its share of the total advertising pie, it has to be proud of itself. It has to sell the strengths of radio, and there are many. It has to stop selling against other radio stations and start selling against the big boys of newspaper, direct mail, and television.

It has to be creative in bringing value-added programs to manufacturers who

do not want to buy radio. But you cannot hide the fact that you are a radio station and expect to prosper.

I love radio, I am proud of radio. I know radio works. I just wish more radio stations felt the same way.

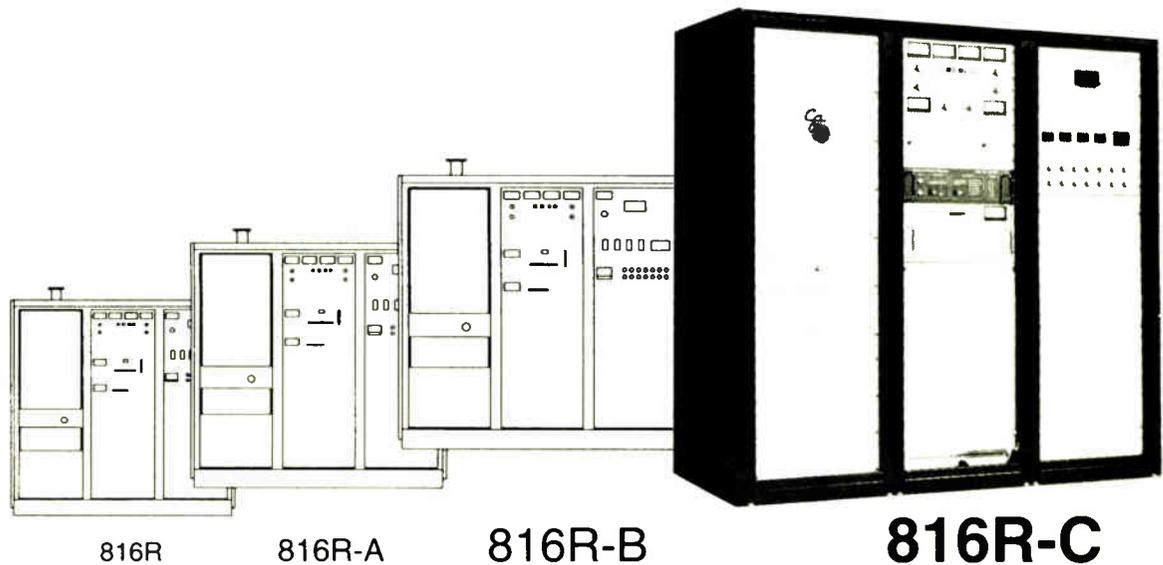
I hope to be proven wrong about the level of professionalism in radio. If you have concrete and successful steps that you have taken to make your station more professional in its sales approach, pass them along.

□ □ □

Bob Harris is a sales and marketing consultant to the food manufacturer, food broker and broadcasting industries based in Dallas. He can be reached at PSM, 900 East Park Blvd., Suite 130, Plano, TX 75074; phone: 214-424-9660; fax: 214-578-7084.

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UPLINK

Format Providers Offer Support Services

by Karl Baehr

ALBUQUERQUE, N.M. When was the last time you heard from your format provider? For many of you, it was the last time your monthly programming bill showed up. If this is the type of relationship you have with your provider, I invite you to think seriously for a moment. Whose fault is it? Yours or theirs? Maybe a bit of both.

Many stations view their programming provider as a utility. They use the service every month, and the bill comes. What you need to do is refocus and look at the provider as a partner, just like a television station does. The resources available from or through your programming service may add greatly to your local success, but it takes some work.

Out of sight...

Do not just throw your station up on a bird and forget it. Yes it is true that satellite can reduce costs, get you better air personalities in many cases, etc. But programming feeds alone are not enough to really make an impact in your market. You must localize.

I do not mean localize dayparts necessarily, if you localize an entire daypart without really planning for it, you could hurt yourself instead. Local news, entertainment, lifestyle features, remotes, all are good localization platforms and we will discuss them each later. Ask your format provider for input and format options applicable to your situation and what some of its other affiliates are doing.

Remember to look before you leap. Changing to a similar format may save you some bucks, but if you are going to change you may want to examine your market situation to determine if a format change is merited as well. If you are live AC with a 2-share and your competition is live AC with a 5-share, a satellite format may or may not help.

Your market may be screaming for another format that would fill a void and increase your share of the pie and by nature of satellite affiliation, reduce your costs. Consider what other formats might apply to your market? What additional services might the programming provider offer with them?

Shop for a format provider the way you would a car. Would you buy the first car you see when you walk onto a lot? After you determine what format(s) are applicable to your station, find everybody who has signed on, and listen to them all. Examine each one closely, ask questions, call listen lines and hear how the format is executed in a real world environment.

Do not take a demo at face value. I have heard some pretty slick demo tapes for some pretty sorry formats. Compare prices, talk to affiliates. You are making a major buying decision here. Give yourself time to make a wise, qualified buying decision as opposed to purely emotional, "I've got to cut costs now," decision. Obtain detailed information regarding any option for programming.

Keep detailed notes regarding your contact with the format provider. How were you treated on the phone? By whom? Did he or she answer your questions satisfactorily or did you feel like he dodged the issue?

Ask the affiliates how they are treated. Is the company responsive to their needs, requests, problem solving? This last point is important. Though I do not expect you to visualize a smiling used car salesman, keep in mind that job one to the person on the other end of the phone is to sell you something, if you do not qualify for yourself the "service after the sale," you have done yourself an injustice.

Explore equipment options for control and interfacing. We just did two new satellite stations and they were on opposite ends of the spectrum. One with a computer, the other with cart machines and a magic box. Explore all the options out

there for control, and there are many.

Does your program provider have a recommendation? A word about automation systems. You now can buy a full-blown, multi-carousel, cart-based automation system and controller for one-tenth or less of what they used to go for. But if you are looking for a "cheap way" in, I suggest a couple of good multideck cart machines.

The people quotient

Once you have your new satellite format lined up and the computer is on the way and your liners are being cut (more on liners in a moment)... do not start swinging the axe. You have good people working at your radio station. They are not just items in your ledger.

Analyze each person and plug in the best ones for the new effort. You will need air personalities for local production and events. You will need a sales staff and an office staff. Successful satellite operations maximize the use of each employee, but they are not run by one or two people. Discuss operations and personnel with the programming company PD. Send him or her air checks and ask for feedback. If changes are merited, he may be able to help you fill any empty slots.

If it is determined that a person is to be let go, do it thoughtfully and in such a way to allow him or her the opportunity to look elsewhere for work. The best way to do this is to pay severance immediately prior to initiating the new effort. Otherwise you run the risk of letting the cat out of the bag before you get your new format up and running.

Liners are an element that is still being overlooked, misused and abused by many satellite stations. Sure you get so many liners per quarter from the format provider, some even tempo code their liners for you.

It is very effective to establish a station voice or voices that does all the liners and is not a regular personality on the network.

This could be a person that was live on the station before it went satellite, or it could be one of any number of voice over services. Utilize your network air personalities for things like promos, commercials, intros to news, remote banter tracks, etc.

Work with your provider to develop a production package that will meet your needs.

Before you settle on that live morning show, remember that your satellite format provider is providing a live presentation. As I mentioned before, you must localize, but do not confuse local with live. If you put on a local morning show, and it does not mesh well with your programming in content or presentation, you could be hurting your chances for success.

The smart thing to do is utilize the windows available with your format to localize programming: short-form stuff like entertainment news, a health program, lifestyle news, the weather, traffic, sports, all hosted by local personalities and perhaps introduced (on tape) by the format's personality in that time slot or your station voice.

This reduces both the time and the labor commitment and creates superior local programming that will mesh beautifully with that of your network. If you are going into a local daypart, consult with your format provider. It can help guide you and prepare the station for the change.

Regular touch

Stay in regular contact with your programming partner. Not just the salesperson, but the operations manager of the format. Let them know what you like, concerns, questions, what you are doing with the format, what works, what does not. Do not wait to call until there is a problem.

By keeping the lines of communication open, you can get greater lead time to sell provider-initiated promotions in your market. Create a mutually beneficial working relationship and that partnership that is so important.

If for some reason you are not getting a feeling of partnership from your format provider, it may be time to drop back ten and punt. There are many programming options out there. Before you make a change, however, make sure that you are on firm grounds to sever the relationship and make sure that you have "B" waiting in the wings.

You need to work well with your provider, not just accept what is given you in the way of format support and leave it at that. No one knows your market or situation better than you. Educate them so that they may do a better job for you.

There is never a bad time to send your programmer, sales person a letter and tape of your station and let them judge for themselves how well you are utilizing the service.

Ask for an opinion, encourage them to offer suggestions. There is never a bad time to say "I need your help improving the performance of 'our' product". I have never talked to a programming provider that did not willingly help an affiliate above and beyond the call. In many cases, it is up to the affiliate to ask.

Take the initiative and you will create a better working relationship and perhaps a more successful station.

□ □ □

Karl Baehr is president of KBE "Broadcasting By Design," a radio consulting firm providing support services for satellite radio stations and produces the Actual Radio Measurement (ARM) electronic survey system. He can be reached at 505-828-0488; or fax: 505-821-4226.

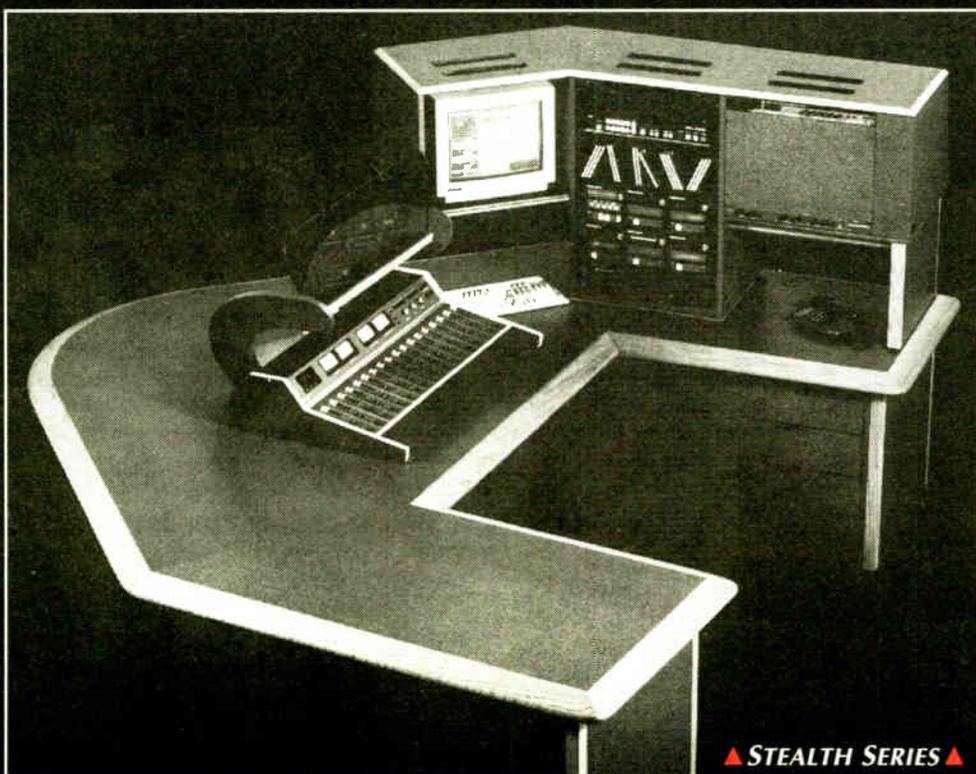
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CBS Coverage Takes the Gold

by Carmel King

LILLEHAMMER, Norway
CBS Radio Sports had a gold medal performance of its own in Lillehammer, drawing 18 million listeners to its live Olympic coverage of the ladies' figure skating competition.

That's more than six times the audience that was projected for the network's overall Olympic package, according to CBS.

"Our coverage of the games was outstanding and I am so proud of our team," said Frank Murphy, vice president, programming and executive producer of CBS Radio Sports' Olympic coverage. "We captured the spirit, the atmosphere and the triple toe loops of the 16 days of competition and brought it to you live," he said.

Despite the heavy demands of an Olympic broadcast schedule that included not only the high-profile figure skating competition, but also live coverage of all U.S. hockey games and the gold medal hockey game, plus more than 300 special reports, the CBS Radio Sports staff operated calmly and confidently.

"Everything has gone relatively smoothly," said Maintenance Technician Rodney Olsen, who together with Andy Vallon, manager of technical operations, built and maintained the network's Lillehammer facility. "We're moving a lot of audio through here," he said.

The system employed for the broadcast was basically the same one used for the 1992 Winter Games in Albertville, with a few improvements. "If it ain't broke, don't fix it," Olsen said.

The operation included five fully functioning studios, a McCurdy 9500 intercom system for communications to all the venues and throughout the plant and a 48-square Grass Valley audio router.

"We're feeding back on four dedicated Switched 56 circuits, part of the E-1 that CBS has back to the States," Olsen said. "We have a fifth circuit that we're using for data for all our computers—the NewStar computer system—and an ISDN back-up system. If the E-1 should fail, we can go out of here by ISDN."

For the Lillehammer Games, CBS also used two Corporate Computer Systems' PACE digital audio editors and several 360 Systems' DigiCarts, which it didn't have in Albertville. "That cut down on the cartridges and tape we had to use," Olsen said.

"We put all our commercials and promos on DigiCart, but we used regular audio carts for cuts and feeds and things like that. We had five studios and only two digital editors so without a file server, we couldn't share all the material," he added.

Olsen said that compared to the

Albertville broadcast, working on the Olympics this time was easier. "Things just worked smoother. It's been very calm," he said.

He attributed that partly to the fact that in Lillehammer—unlike Albertville—CBS did not face any power-related problems.

"We lost a lot of equipment in France because of power," Olsen said. "But here, the Norwegians have been right on the button with power—absolutely no problems."

CBS Radio Sports shared the ground floor of the International Broadcast Center with other

members of the CBS Network, including CBS Sports (television), CBS News and the network's affiliate operation, Newsnet.

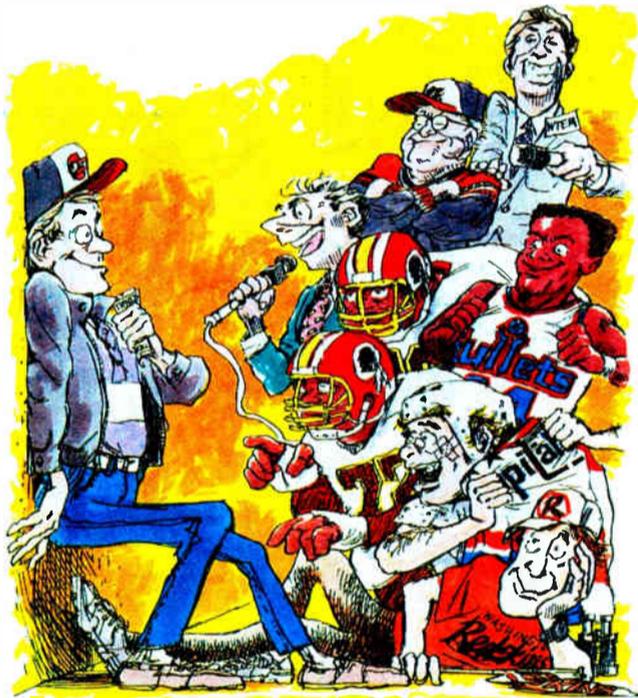
The groups helped each other out. We got a lot of audio feeds, pool feeds, through television. We had eight television router outputs, and we could select any one of the feeds. So a lot of natural sound we captured with TV," Olsen said.

"They've been very helpful, and we in turn have helped them," he added.



The family of Olympic figure skater Nancy Kerrigan listened to the live CBS Radio broadcast of her first meeting on the ice with Tonya Harding, televised later that evening.

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Big Apple Hosts Grammy Broadcast

► continued from page 7

boisterous and frenetic. At this hour, the talk surrounds the presence of Bennett, who is making his rounds. He is friendly, at ease and accommodating. Within the hour, Pat DiNizio, front man of The Smithereens, will stir things up with live acoustic vocals at several of the station stops.

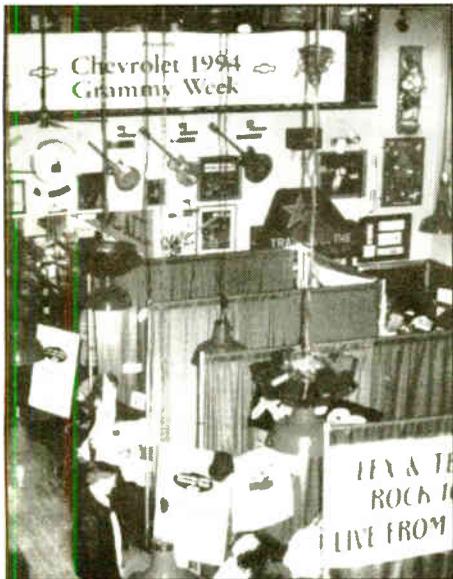
Tight schedules

Because of tight schedules on both sides of the table, many of the celebrities are escorted to stations when the outlet is airing songs or spots. To make the best use of time, often interviews must be taped and broadcast later in the day.

"Today we'll do them live when available. It's just a little bit difficult when you're in the middle of commercials and (the celebrities) only have three minutes to be with you," says Arthur Penhallow, afternoon DJ at WRIF in Detroit. On hand at the station's remote stand are cassette and DAT recorders to tackle the dilemma.

Overall, equipment at each booth is kept to a minimum. Most stations are outfitted with microphones for the talent and guests; headphones, allowing them to hear both themselves on-air and the board operator back home; tape recorders; a small mixing board; and a telephone.

From the Hard Rock, signals are trans-



Radio booths at the Hard Rock Cafe

mitted via telephone lines to a satellite hook-up provided by National Public Radio. Twenty-four lines were furnished on transponders leased through IDB Communications and ABC, according to Will Byrd, engineer for MJI Broadcasting.

The cost for the remote is free to stations. They, in turn, barter with Chevrolet to air advertising and promote the event beforehand.

"This is my fourth Grammys broadcast," says Slats at Rock 100 WDIZ in Orlando. "We run a music promo saying to join us live, we'd love to have you listen. It's an exclusive that we can beat 20 other stations in our market with."

Such a competitive edge takes the value of such an event far beyond three days of live programming from New York. Remote broadcasts have always served radio stations well in terms of community involvement and, depending on the prominence of the event, giving an unabashed edge over the competition that is not involved.

"We do a lot of remotes," says Kaedy Kiely with 96 Rock in Atlanta. "We cover every concert at home, we've done

Halloween events in Los Angeles with lots of movie stars or TV stars. The Grammys are the music industry's biggest awards show, so it's neat for the audience to know that the people they hear on the radio every day are involved with that. It brings it a little closer to home for them."

"People will remember that we were a part of the Grammys and our competitors were not there. They weren't a part of it at all," says DJ Jeff Blazy from KOMA in San Francisco. Blazy and afternoon partner Bob have taken a number of trips for the purpose of high-profile remotes.

"We were one of the first radio teams to go to Tokyo. It's a different perspective on the show because you get a chance to learn

about how the people are in another country," Blazy says.

For now, though, the station is concentrating on an interview with Dweezil Zappa and his be-wigged musician brother, Amet, sons of the late Frank Zappa. Down the aisle, WRZX's Summers is geared up to talk with 1970's icon David Cassidy, reeled in by the presence of former co-Partridge Family member Danny Bonaduce, an afternoon drive personality at Chicago's WLUP-AM-FM.

Room will be clear

Within another hour, the room will be clearing and the stars will have moved on to Radio City Music Hall for the actu-

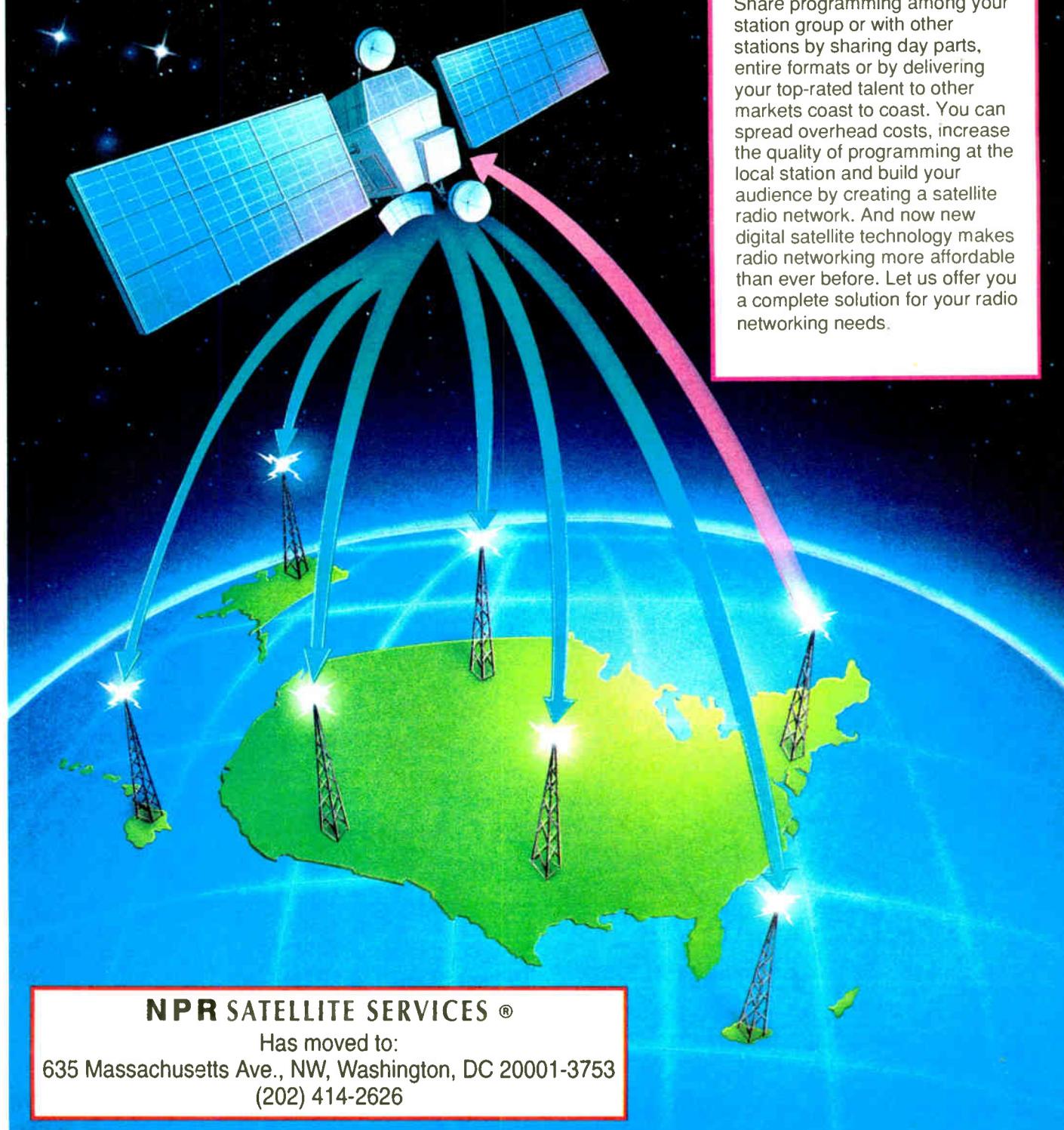
al awards show. Two of the celebrities participating in MJI's remote—Tony Bennett and Pat Metheny—will go on to win Grammys in front of a television audience of more than 15 million in the U.S. alone.

While that exposure may be grander than the five minutes Bennett spent at the Hard Rock Cafe with Tom Wood, program manager at Magic 105 in Little Rock, there is nothing that could equal the intimacy of a one-on-one, linking the singer with listeners some 1,000 miles away.

"This puts us into the scene that up until now has been television's domain," Wood says. "Radio is personal every single moment of every single day. When you're here live three days in a row, four hours a day, it makes us own it. It's just terrific."

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ABC Radio's Tom Joyner

► continued from page 1
call from ABC.

"They offered to let me build the kind of show I've always fantasized about doing," he said. The network also reportedly offered him a \$15 million contract; not bad for someone described by Howard Cosell as "a bum and a washed up deejay" during a brief stint working public relations for Muhammad Ali.

It is likely that Joyner, who long ago cracked the million-dollar salary barrier as urban contemporary's most lauded (he has won Billboard magazine's Best Urban Air Personality of the Year award five times) and well-known performer, is not doing this

for the money alone.

In addition to affording him the chance to prove his long-held view that radio can be much more than a play it/say it adjunct of the recording industry, he sees this as a chance to link black communities across the country.

"That is an important step forward for me and for black radio," he said.

Joyner's show, which was launched Jan. 7, already has had some national impact. During the recent allegations of sexual misconduct surrounding Michael Jackson, Joyner was an outspoken supporter of the beleaguered superstar. When Jackson finally made an out-of-court settlement with his

teenage accuser, reporters from all over the country—not just Dallas and Chicago—turned to Joyner for comment.

ABC publicity materials point out that Joyner's show started out in more markets than Howard Stern's syndicated morning show has amassed in several years.

That fact evidently didn't go unnoticed by Stern, the fiercest of fierce competitors, who loves to attack his rivals on the air. Soon after his show hit the air, Stern made "some kind of nasty remark" about Joyner, who declined to repeat it.

"He only got to do it once, though," said Joyner. "I sent him a message. I said, 'If you ever come after me again I'll fly up to New York and snatch Cher's wig off your head. I know she is looking for it.'"

"I don't play that stuff," Joyner snorted. "I work too hard."

Replaying The 1970s

► continued from page 1
icons of the day.

Since launching in September 1993, KCBS has catapulted in Los Angeles Arbitron ratings from 17th to 5th place among adults 25-54. Says Edwards, "We've definitely hit a nerve."

While the era and the reminiscent impact of Saturday night disco shows might parallel Arrow, the genres are actually as disparate as the rap and modern rock music of the 1990s.

"Arrow oldies seems to be landing an audience primarily consisting of men. The disco Saturday night really targets women," Taddeo says.

According to Linda Silver, music director at Mix 107.3 (WRQX-FM) in Washington, the two-hour Saturday night show aims simply to offer a light-hearted block of familiar, fun music.

"It's a return of the music that we kept in the closet for a while—though we probably needed to keep it there until now," she says.

"Adults in their late 20s and mid 30s are bored with music out there. There's not a true CHR in this market, and they're not into rap and heavy dance music. Though the listeners don't want to hear the disco every day, we put into a special context where they can look forward to it."

The show includes dance music from the late 1970s through the early 1980s. Along with disco standards from the Bee Gees, K.C. & the Sunshine Band, Gloria Gaynor and the Village People, the show includes The Gap Band, Shalamar, ELO and The Knack, for "texture," Silver says.

Since starting "Retro Saturday Night" last September, response has been non-stop. "We have people calling all week long. It takes them back to high school and college. Everybody has a story to accompany the music," Silver says.

For Mix 107.3, the show has added muscle to the station's overall weekend ratings. Taddeo points out that such special programming offers traditional and hot AC stations like Mix 107.3 a programming hook other than the fatigued love songs standard. Across America, it seems to be working. According to Silver, stations are having the same good fortune in markets ranging from Atlanta to New York to Houston.

"Sure, it won't last forever, because it's a small block of music, but we're going to relax and have fun with it until we can't go with it anymore," she acknowledges. "Certainly right now, it's still growing."

Five years from now, as that audience approaches the next stage in life, the Arrow may find itself splintering.

"In the 1960s, a market usually had a rock'n'roll station, top 40, beautiful music and maybe a classical station," says radio consultant Dennis Constantine. "Today, musical styles are being sliced up thinner and thinner. There's a station for every niche."

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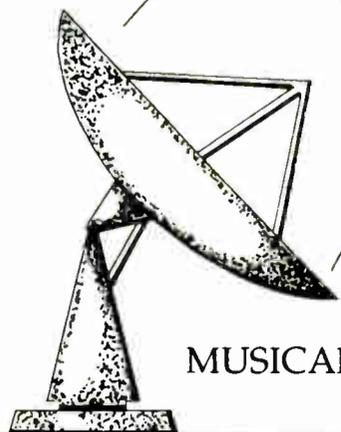
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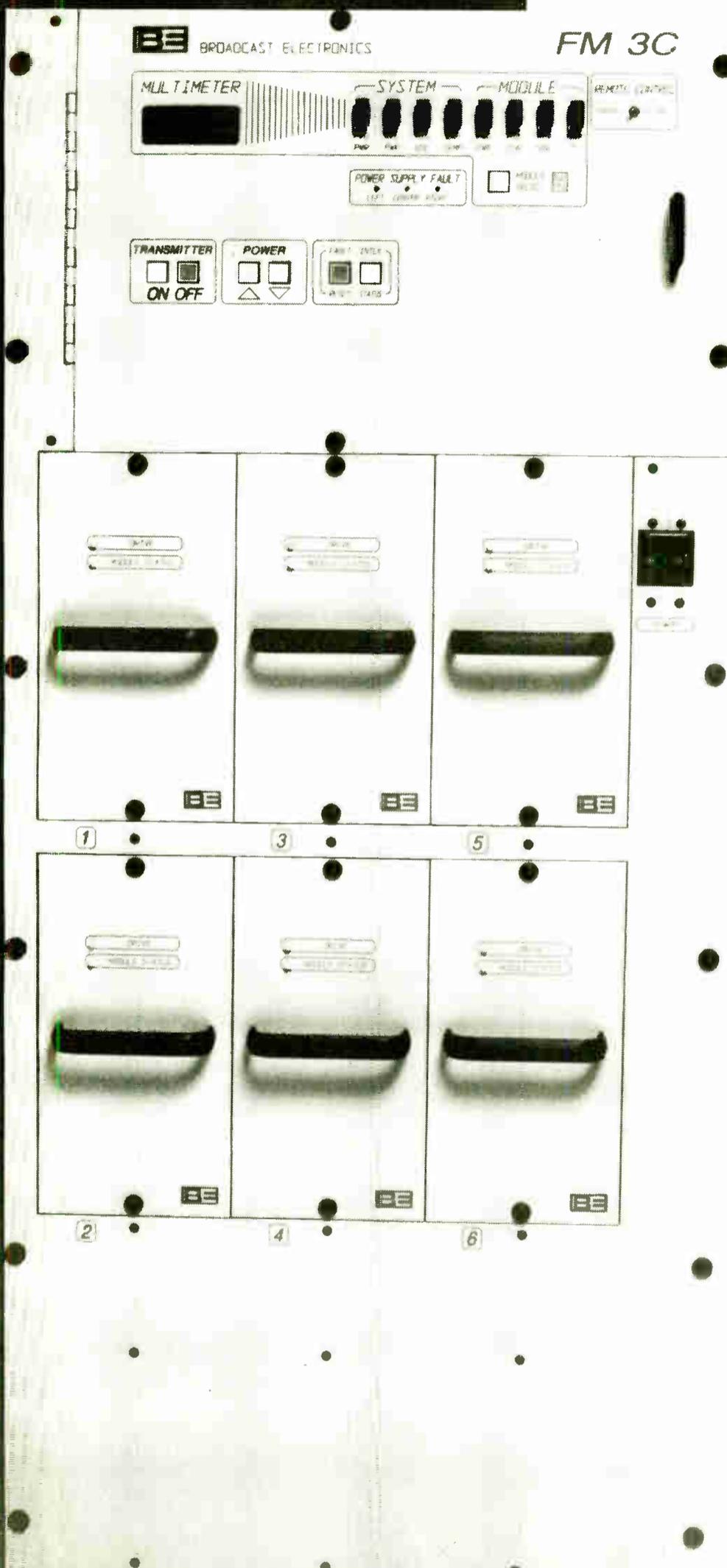
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PROMO POWER

Keep Staff Informed and Involved

by Mark Lapidus

WASHINGTON Your receptionist hates you. When people call the station and ask about your events she never knows any of the details. The jocks and salespeople share her sentiments. They rarely get information about promotions until the last minute. You are so busy taking care of details that you have forgotten what this business is all about...communication.

There is a way for you to become the hero of this scenario: promote yourself to editor-in-chief of your own station newsletter.

A newsletter produced strictly for in-house use has many benefits: it insures good communication as your staff is literally working on the same page; it improves morale; and it forces the promotion department to be organized.

Give it a name

Start by giving your newsletter a name. Select a moniker that the staff can easily remember. If you have a PC, devise a masthead that you can customize with headlines each issue. The best way to organize this publication is by giving each column a name. A few of these columns could even be written by other people on staff.

Your first column might have the headline **REWIND**. In this section, recount what has happened since your last issue. Talk about attendance at events, contest winners, press you have received and anything that had a major impact on the station. Brag without stretching the truth.

Your next column titled **FAST FORWARD** should be broken into small paragraphs, each starting with a date. This is the most important part of your publication because this is what will keep your staff informed about upcoming station sponsored events and con-

tests. Do not go any further than up to your next issue date. Include directions, phone numbers and addresses whenever possible.

Here are a few examples:

- 3/15 Thursday: From 5 to 8 p.m., join WWWW's afternoon personality, John J. Radio for another great WWWW "After-Work Party." We'll have free t-shirts for the first two hundred people. Directions: Take Hick Road to Upscale Pike. Take your first right into Far Out Plaza to 9999 9th Street. Phone: 202-669-6969.

There are many creative people working in radio. Many are never asked for a contribution. The more people you involve, the better.

Anyone attending from the station should wear one of our t-shirts. Herb Tarlick, the AE on the account, has promised to take out any tab we run up, so we hope to see you there. John J. Radio will be there at 3:45 p.m.. Our promotion assistants Buzz and Rita start set up at 2:30 p.m.

- 3/16 Friday: It is the kick-off of WWWW's big spring contest. Every morning at 7:30 a.m. on the Funny In the Morning Show we are giving away \$5,000 in cash. To promote the contest, we are airing a television campaign with 500 target points running each week. Direct mail goes out today to 250,000 homes in the metro.

Details, details

Your **FAST FORWARD** section should be packed with details. Feel free to put in arrival times for set-ups, jock schedules, instructions on what to wear and who to talk to at the location. You will be

amazed at how many memos this section will help you eliminate.

The next column is **MARKET NEWS**. Direct your attention to the other stations in the market. List staff changes, major contests, appearances, press and rumors. Gather the information simply by asking the AEs what they have heard on the street lately. Because any sharp AE is listening to other stations for potential business, he or she will always have at least one tidbit for you.

SALES SALUTES is next. Obtain the

information from your general sales manager. Congratulate the salespeople for specific accomplishments: Congrats to Simon Cash for closing a single market buy from Coke. Simon added \$20,000 to the bottom line. Thank sales assistants for their hard work. Always be specific when giving praise.

BENEFITS can be written by your Human Resources person or the Office Manager. Ask him or her to cover a different piece of your health or retirement plan each time. There is an incredible amount of detail to deliver in this area. Do not include too much at one time.

MR. WIZARD is the domain of your engineer. Have him give the latest scoop on repair, equipment purchase and remotes. This can also serve as a platform for your Wizard to pass along the latest rulings from the FCC.

OTHER NEWS is your catch-all section. Mention future events and contests. Deliver good personal news about people at the station. This is a great place for birthdays, engagement announcements, birth details, new homes bought and just plain old harmless gossip. As always in written communication, exercise caution. Making fun of people or writing some-

thing slanderous is not going to grab you that next big promotion.

At the end of all your written material, include at least three months of promotion calendars. Both Mac and IBM users will find calendar programs available. Be sure to put "current as of 0/00/94" on each page. Jam as many details on these calendars as possible. You may wish to issue new calendars even on the weeks that you do not publish the entire issue.

Humor works

Also at the back, attach any print coverage the station has received. Funny station pictures might also be included. For fun, run a picture and have people submit humorous captions, but remember always to edit carefully. To give your staffers the attention they deserve, bold their names wherever they appear in your rag.

Ask your staff what columns they would like to see you add. There are many creative people working in radio. Many are never asked for a contribution. The more people you involve, the better your newsletter will be. Before publication, find the best proofreader on your staff and have him or her go through each issue carefully.

Try publishing every two weeks on Friday. This way, folks have all weekend (or first thing Monday morning) to read your publication. Mail out copies to your home office and other promotion directors in your group of stations. Encourage your general sales manager to ask questions about items in your publication at each sales meeting. Award prizes (from that overflowing prize closet) to those with the correct answers.

When your receptionist smiles at you again and the jocks feel secure in knowing what is going on, you know you are on your way to being a good communicator. The ultimate is when someone stops you in the hall and says, "What's the deal? Are you mad at me? I seem to be the only one who didn't get the newsletter this week."

□□□

Mark Lapidus is the Director of Marketing for Liberty Broadcasting. Liberty owns WXTR(FM) and WHFS(FM) in Washington, WBAB(FM) Long Island, N.Y., and WMXB(FM) Richmond, Va. Reach Mark care of RW or at 301-899-3014.

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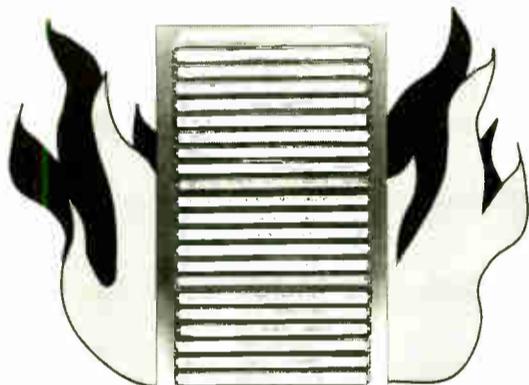
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MQ-15	DIC Digital	Master Quality 15 min DAT	4.99 each
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MQ-48	DIC Digital	Master Quality 48 min DAT	6.29 each
MQ-62	DIC Digital	Master Quality 62 min DAT	6.89 each
MQ-92	DIC Digital	Master Quality 92 min DAT	8.29 each
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Reader Service No. 33

FCC, Evergreen Settle Indecency Case

► continued from page 7

agreement, Evergreen will make a \$10,000 payment to the government, without admitting liability. "It's a voluntary contribution to the government as part of this deal," Mago says. Regarding the two forfeitures against Evergreen, she said: "We have dropped the first one. We would only use the second notice of apparent liability pending for purposes of calculating any future forfeiture amounts for six months from the date of approval of the agreement by the court."

Towing the line

Evergreen must not incur another notice of apparent liability within the six month

period, according to Mago.

Evergreen's aim during this precedent-setting exercise in first amendment rights protection has been for the FCC to establish what Scott Ginsburg, the broadcasting group's chairman and CEO, calls "a bright blue line so that any broadcaster could immediately know what is indecent."

The heavy veil hanging over the air at WLUP-FM and WLUP-AM (now WMVP-AM), during the five-year, economically-draining ordeal, has been lifted, and station officials are relieved that the tussle with the government is over.

"I guess, in the end, we're delighted that it's behind us," said Larry Wert, WLUP's

vice president and general manager.

"We've invested a great deal into what we call 'personality radio.' That turf often comes with what some circles consider controversial programming, and in the field of live, spontaneous talk, we've known for some time that very vague guidelines on what the talent can and cannot say is a cumbersome liability."

An example

Other broadcasters are also eager to shine a light on the cans and cannots of the FCC's broadcast indecency case law. For example, Chris Wheat, president and general manager of WFBQ-FM, WRZX-FM,

and WNDE-AM in Indianapolis, Indiana, said he is happy to see that the commission "has decided to make it a little clearer to the broadcasters about what can and can't be said on the air. It's been a very difficult line for general managers to draw."

Wheat has shouldered his share of fines relating to the FCC's broadcast indecency case law, having been fined in the late-1980's for on-air double entendres broadcast on WFBQ. "Of the five (complaints), four were upheld by the FCC as indecent," Wheat said. The other complaint was not upheld. "It was hard to tell the difference," he added, "hard to tell what was and was not indecent in the eyes of the FCC."

According to Bruce "Cousin Brucie" Morrow, legendary New York City disc jockey and chairman and co-CEO of Multi Market Radio, Inc., a bigger question may be the FCC's ability to effectively deal with broadcast indecency infractions.

"Judging from what the FCC has been up to over the past several years, they've been liberalizing and becoming reasonably ineffective as a policing force," Morrow said. "(The FCC) obviously doesn't have the power they had at one time. I wonder how seriously broadcasters are going to take them anymore."

Shock radio

When broadcast indecency is the subject of the conversation, Morrow immediately thinks of what has become known as "shock radio." "I'd like to see this kind of broadcasting stopped on the public airwaves," Morrow says. "Maybe it's time we reassessed our ethics and moral attitudes so they can reflect properly on our broadcasts. Maybe indecency is part of our culture, but I hope not."

And, when people think of so-called "shock radio," they almost always think first of Howard Stern, whose broadcasts have been the subject of \$1.6 million in fines levied against Infinity Broadcasting by the FCC. Stern has been using his daily morning show as an on-air soapbox on which he continually rages against the commission.

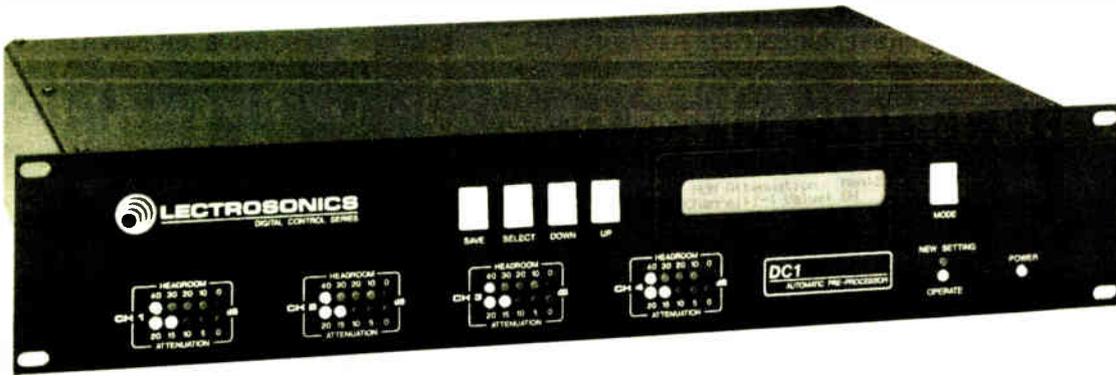
On the air, Stern recently commented indirectly on the Evergreen situation by saying that the FCC had taken some Chicago broadcasters to court and then dropped the case. He then asked why the FCC took them to court in the first place and why they were taking him to court and wasting millions of dollars in a case they were going to lose.

Neither Infinity's lawyers, or Ken Stevens, general manager of WJFK-FM in Fairfax, Virginia (Washington, D.C. market), and WYSP-FM in Philadelphia, which carry Stern's morning program, would comment on the Infinity's indecency fines. Tom Chiusano, vice president and general manager of WXRK-FM, Stern's home station, could not be reached for comment. Infinity's troubles have included not only fines, but also indications that the controversial broadcasts could affect Infinity's station acquisitions.

How any new broadcast indecency cases are assessed after the FCC issues guidance relating to its existing case laws on broadcast indecency is anyone's guess, but Bob Ratcliffe, assistant chief for law at the commission's Mass Media Bureau, hopes that stations will think a little more carefully about what their personalities say on the air.

The FCC "intends to enforce (the laws covering broadcast indecency), because it believes it has to," he added. "And, you know, we're hopeful that people will, as time goes on, get better and better at figuring this out."

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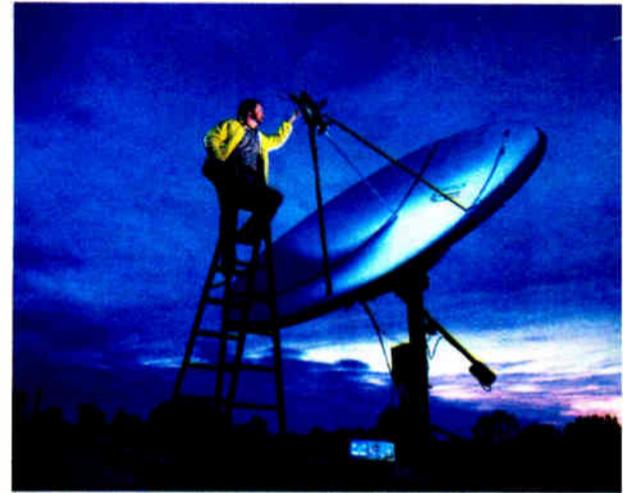
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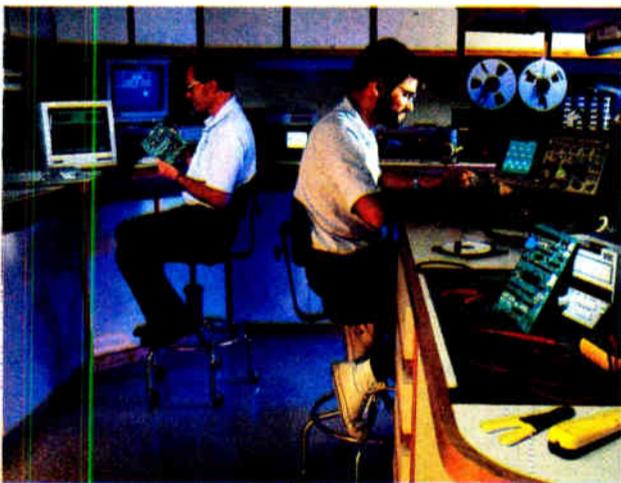
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EBS Decision Postponed Twice So Far

► continued from page 1

said, but many on the board also question the need for any national alerting system.

Helena Mitchell, chief of the EBS office, was puzzled and disappointed by NAB's eleventh-hour protest. Broadcasters were generally supportive of the new rules in comments filed with the commission in 1993.

Mitchell disappointed

Mitchell said the FCC recently received letters from the heads of the state broadcast associations of South Carolina, Connecticut and New Jersey, endorsing the new rules and opposing NAB efforts to delay them.

"I think the biggest problem with this is that [the FCC] only met with the broadcasters who came to their regional meetings," Baumann said. The commission did not pay close enough attention to groups that represent a larger cross-section of the broadcast industry, such as the NAB radio board, he said.

Sage Alerting President Gerald Lebow, who has been promoting RDS technology for EBS since 1990, said the NAB's effort to delay and alter the pending EBS rules makes no sense because the association's involvement has been minimal in the proceeding.

"They took no part at all in the prior three

and a half years of the proceeding," Lebow said. "At the eleventh hour, for political and financial reasons, the NAB seeks to delay a complete and comprehensive record, which spells out new technology that can repair the ailing EBS system."

When asked what financial or political reasons the NAB might have to seek an EBS rulemaking delay or alter it, Lebow said "the NAB is always looking for dragons to slay to show their members that membership in NAB saves them (the stations) money."

Baumann called EBS "a major issue" that has been of growing importance to the radio board during the past year. All of the

association's concerns were aired in past comments and letters to FCC, he said.

However, NAB did maintain a low profile during the past year of field tests of proposed EBS systems and meetings to plan the tests. One NAB staffer observed the second round of tests held last September in the Baltimore area.

NAB was not represented at the first round held in the Denver area in June 1993. Baumann said he did not have available funds in his travel budget to send a representative there.

Ironically, it was a 1991 petition from NAB that led the FCC to begin its EBS redesign project. NAB asked for new rules to discontinue the currently required weekly EBS tests and eliminate the 20-second EBS test tone, to which it claimed the public had been desensitized.

The proposed new rules are expected to carry both of those reforms. The FCC is also expected to delete the requirement that stations have an operator on duty at all times to respond to EBS alerts, another change broadcasters have long desired.

Initial proposal

The EBS office had planned to offer broadcasters the option to buy a range of EBS alerting technologies that could all be activated by the same standard digital communications protocol.

The three major systems tested in Denver and Baltimore were: a satellite-linked system based on very-small aperture terminal (VSAT) technology, developed by Information Systems Laboratories (ISL), Vienna, Va.; a system that uses the Radio Broadcast Data Service (RBDS) standard, developed by Sage Alerting Systems, Stamford, Conn., and a system that directly upgrades the current EBS technology, developed by TFT Inc., Santa Clara, Calif.

Terminals for each of the proposed systems would be able to communicate with each other and each system would break the current "daisy-chain" method for relaying EBS alerts between stations, which is widely criticized as unreliable and obsolete.

The least expensive option for most stations would be the TFT system. A TFT receiver, which may be retrofit to current EBS equipment, is expected to list for about \$700. The total cost of upgrade is likely to be about \$1,000.

Cost concerns

Sage implementation costs were estimated last year at \$2,200 for AM stations and \$3,000 for FM. Its RBDS features would allow for additional features, such as automatic activation of RBDS home receivers whenever an EBS alert is broadcast.

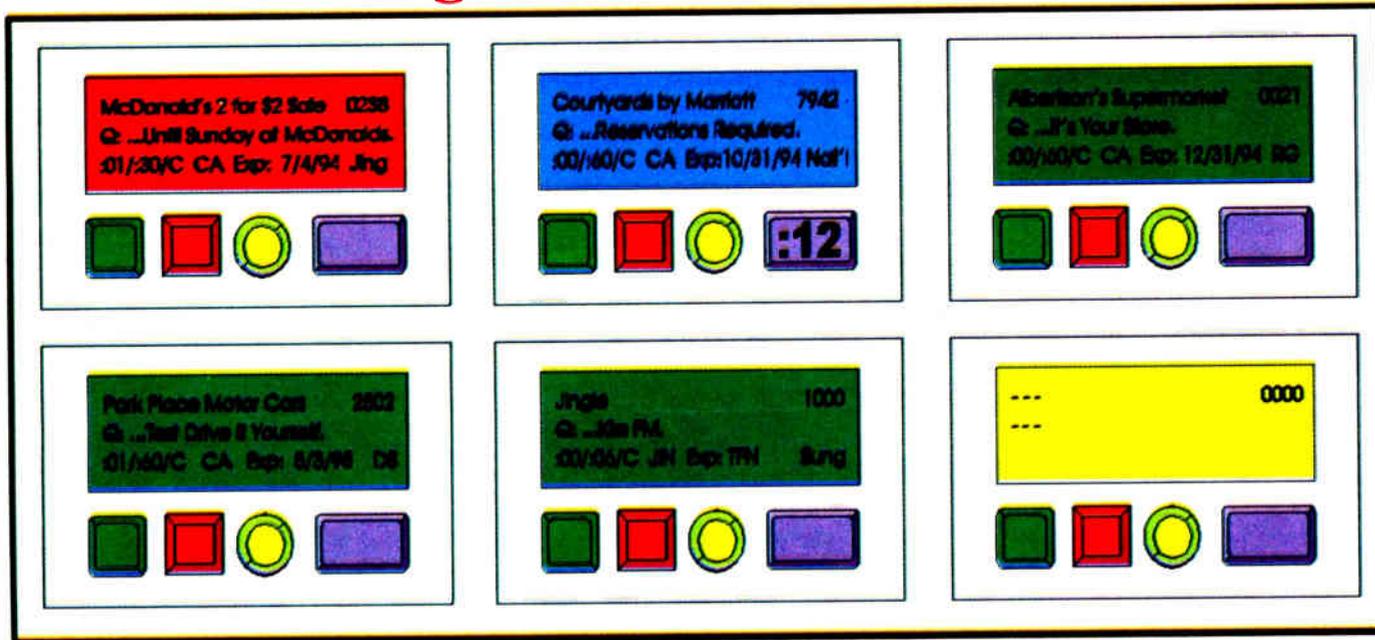
The price of even the most inexpensive system "is still a lot of money," said NAB radio board member Raymond A. Saadi, managing partner of KTIB(AM)-KHOM(FM) Houma, La. EBS expenses taken together with \$500 license fees and other FCC-mandated expenditures likely to be imposed on radio stations in the near future represents "a lot of blows for these guys," Saadi said.

Saadi said he is not adamantly opposed to new EBS rules and welcomed the idea of a tentative FCC decision in April that would give broadcasters more time to study the effects of the transition.

At the same time, Saadi discussed the option of doing away with national alerting altogether. "We have a lot of hurricanes down here and the EBS has never played a part in it," he said. Regular news and weather reporting have adequately warned

continued on page 29 ►

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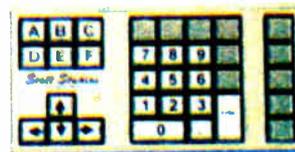


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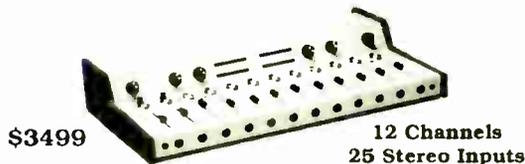
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READER SERVICE NO. 88

KCSN Broadcasts from Tent Studio

► continued from page 3

console, and carts were everywhere, but nothing looked irreparable. But without power or light, in a shaking and burning environment, I guessed that "later" would be the best guess as to when we would get back on the air.

I returned on Tuesday, January 18, expecting to begin the clean-up effort. Power had been restored to some of the adjoining neighborhood. I had arranged for a portable generator from an amateur radio club, and, at the time, the building had seemingly not suffered any apparent structural damage.

That, however, was not the case. University administrators closed the campus to everyone because a number of buildings suffered significant damage, and inspections for unseen hazards would likely take weeks, if not months, to complete.

The administrators acknowledged the need for the station to be on-the-air to serve as the University's voice to its community, but they were unable to offer help with equipment or facilities.

If I can offer any advice to others in the profession who may one day be in similar circumstances, it is this: Get to know other engineers in your market or area. They will likely go out of their way to offer help and assistance.

In our case, we needed a complete radio station—and with a few frantic phone calls to other station engineers—we got one in 12 hours.

I knew by this time that our off campus transmitter was okay. We use a dial-up remote control that enabled me to turn it on when the phone circuits cleared late Tuesday night. I also had thought to grab the STL transmitter from the rack in the studio on my initial visit to the station. From KABC(AM)-KLOS-FM we borrowed an audio processor, microphones, reel recorders and connectors. KFVB offered an STL dish, KLON a broadcast console and satellite demods. It seemed we were in business.

The university established a command post on a soccer field, with green Army "MASH" tents provided by search-and-

rescue, and it was from one of these tents that KCSN returned to the air late Thursday evening, January 20. Subsequent days brought other offers of aid. The Los Angeles SBE printed a story of our plight in their newsletter, and the phone went wild with offers of help. An EBS system and cart machines came from KCRW, turntables from KUSC, personal collections from independent contractors; the response was overwhelming.

When winter paid a brief visit in early February with a rain storm, the tent became a bog. Again, KABC came through with their mobile studio, the "Jolly Roger" and we moved the

equipment into a Winnebago.

At the time of this writing (early March), we just moved into a student housing apartment—about 800 square feet with utility power and running water. It is cramped, the acoustics are lousy and the equipment is all borrowed, but no one has uttered a complaint: We are all grateful to be on-the-air and contributing to the post earthquake recovery—thanks entirely to our friends.

□ □ □

The author would like to especially thank Norm Avery, director of radio engineering, KABC/KLOS, and his assistant John Miller; Richard Rudman, chief engineer of KFVB; Ron Thompson, chief engineer of KLON; the Metropolitan Amateur Radio Club, and all others who helped us get back on the air.

Decision on EBS Stalled

► continued from page 26

the public during past storms, including 1992's devastating Hurricane Andrew, Saadi said.

Harold Miller, immediate past president of the South Carolina Broadcasters Association and manager of four South Carolina stations licensed to Atlantic Broadcast Co., agreed that regular reporting is enough to warn of a coming storm, but stronger lines of communication need to be established to reach people once a storm hits.

"During Hurricane Hugo (in 1989), we in Eastern South Carolina woke up to how fragile we are and how inadequate the old technology is," Miller said. One of the Atlantic stations was a key relay point in the area daisy chain, and when it went off the air the EBS alerts were blocked from several other stations, he said.

Miller has written several letters to Congressmen, the FCC and NAB to push for adoption of the new EBS rules. "I don't think any politician in his right mind would do away with the Emergency Broadcast System," he said.

Miller and other EBS supporters have a powerful ally in Senator Ernest Hollings (D-S.C.), chairman of the Senate Commerce Committee, which oversees FCC-related legislation and budget authorizations. "It is important that a new EBS system be adopted as soon as possible to reduce the potential damage of both natural and man-made disasters," Hollings said in a Feb. 18 letter to FCC Chairman Reed Hundt.



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Peer-to-Peer Pieces Come Together

by Richard Mertz

FAIRFAX, Va. Local area networks (LANs) are a way of sharing resources (printers, files and programs) with other computers within an office.

The two previous articles (RW, Jan. 12 and Feb. 9) dealt with descriptions of LANs and, in particular, the use of a peer-to-peer LAN, in which the PCs on a network share printers and files. All PCs on a peer-to-peer LAN can act as both server (the machine that does the storage and housekeeping duties) and client (workstation).

Software installation is one of the more interesting and challenging parts of the project.

Begin by installing the network interface software. The interface cards I have used are Accton model EN1652 Ethernet adapters. The installation program provided with the adapter cards has its own test program which is valuable in troubleshooting.

The first set of cards I installed did not work properly. The factory, after running through some tests with their customer support engineer, replaced them. The new ones checked out perfectly. Remember that Ethernet adapter cards must be properly wired and terminated before you begin any testing.

Because one of the computers was an XT clone, the installation program had to be copied from the provided 3 1/2-inch diskette to a low-density 5 1/4-inch diskette. With the AT clone and the 486 computers this was not a problem. Both machines had both sizes of high-density disk drives installed.

If you use an XT on your network, try to install high-density drives. A special interface card with the necessary additional firmware support to permit the XT clone to read and write to the higher-capacity drives are available to complete this upgrade.

Installation

Once the adapter cards are tested, install the network operating system. I use Novell's NetWare Lite, which comes on a single 5 1/4-inch diskette. You will need an individual copy of NetWare Lite for each computer on the network.

If you try to use the single copy on more than one computer, a notification of license violation pops up on the screen along with a series of annoying beeps from the computer speaker. I purchased my copies of the program from CompUSA for \$69.99. That's about the cost of two computer games for each computer.

I strongly suggest making a backup copy of the operating system diskette and running the install program from the backup. The program will ask for information regarding the computer on which it is being installed.

Each computer on the network is identified with an individual name. I used the names "Sales," "Engineer" and "Program" to identify the computers by location.

The program also asks for the adapter card driver type. I used the driver programs supplied by the adapter card manufacturers. The NetWare Lite install program did the rest.

Loading up

During the installation, the install program modifies the computer autoexec.bat file adding Startnet.bat and modifying the path command to add the \NWLITE directory. Startnet.bat is a batch file, located in the \NWLITE directory, which runs the DOS Share, LSL.com, NE2000.com, IPXODI.COM, Server.exe, and Client.exe.

LSL.com is Novell's Link Support Layer for the network. It allows the IPX to communicate with the adapter device driver. Next the adapter device driver is loaded and then the IPX.

The IPX controls interpacket transmission between network nodes. Server.exe handles operation as a server. Client.exe handles operation as workstation. If the computer is used only as a workstation, Server.exe is not loaded.

Now the fun: reboot the computer and the new network configuration is loaded into memory. Once startnet.bat is finished loading the network, it finishes back at the C:\> prompt. Type "net login supervisor." NetWare Lite loads in a program called "net." The screen displays a menu for setting up and operating the network. This screen looks very much like Syscon (system console) used in full blown NetWare.

Highlight the "Supervise the Network" option. The directories on the hard drive to be used by others are identified. The whole drive can be made available to others. Move on to another screen to identify the printers by name. You might call the sales office printer "laserprinter," and the engineering printer may be named "dotmatrix."

It is a good idea to set up user accounts. This tells the network who has privileges and what resources are available to them. As supervisor, you have rights to all network resources.

Log in a password to prevent other users from accidentally changing important settings. NetWare Lite users don't necessarily need a password. If security is not a problem, I suggest omitting passwords.

Now you are ready to get started. Go back to the main menu and select "map drive letters." Select a drive letter for directories you are using on the network. This maps a selected drive network directory to the drive letter you have selected.

Say you mapped d: to the c:\ directory on the program director's computer. If you select d: on the sales computer, you are actually looking at the c:\ directory on the program director's computer.

Finally, go to the main menu and select "Print." The next screen you will see shows three printer ports, LPT1 through LPT3. Select the port you wish to use and the selection of network printers is shown. Select the printer you want to use. This operation is called "Capture."

Capture "laserprinter" on server "Sales" to LPT1. When the engineer prints a document to the engineering computer's LPT1, the printer port is "captured" and the data is diverted to the laser printer in sales.

This is just an overview of a small peer-to-peer network. I have successfully used this type of system for some time now.

□ □ □

Richard Mertz is a partner of Suffa & Cavell, consulting engineers in Fairfax, Va. He can be reached at 703-591-0110 or through Compuserve, 73020.3026.



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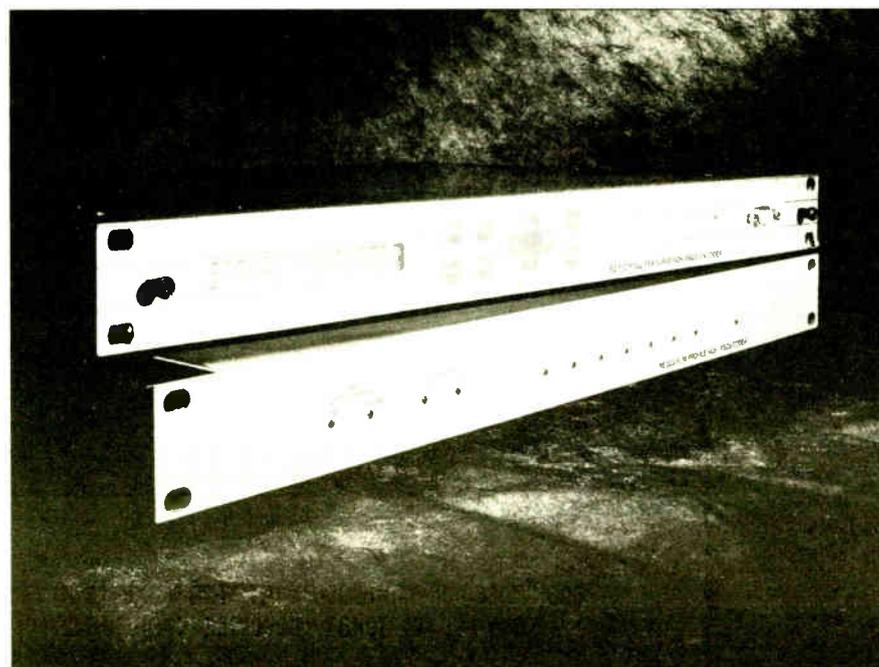
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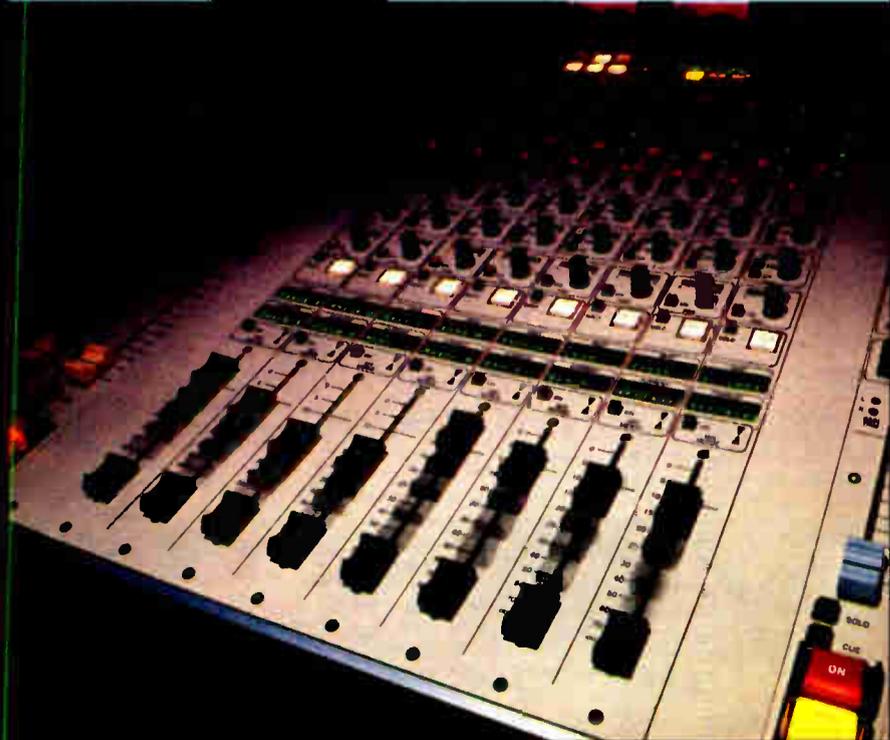
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Please make every effort to secure all of the articles yourself. Northern Virginia Community College and **RW** are not in a position to supply readers with back issues.

by Ed Montgomery

Part VII

ANNANDALE, Va. The active device that "started it all" was the vacuum tube. It is often left out of many study courses, but still plays a role in electronics today.

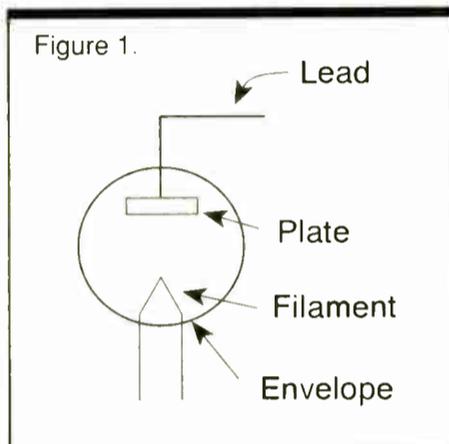
The vacuum tube evolved out of experiments first performed by Thomas Edison after his development of the incandescent light bulb. In 1883 Edison inserted a metal plate into a glass bulb and observed

a current flow when he applied positive voltage to the plate.

Edison noted the phenomenon in his notebooks, but did not follow up on it. Nevertheless, this flow of electrons was called the "Edison effect" in later years.

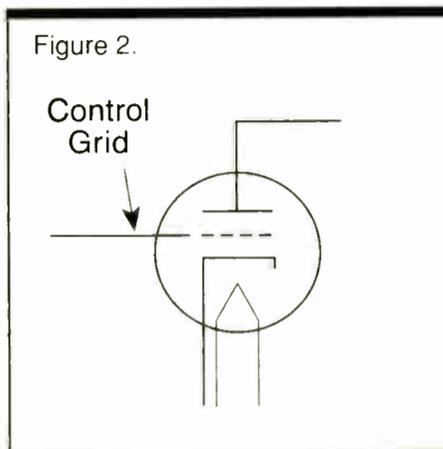
Further work based on Edison's research was left to J.A. Flemming, who developed the first practical vacuum tube, the diode or "Flemming valve," in 1905. It consisted of a filament (cathode) and a metal plate (anode) in a glass envelope as illustrated in Figure 1.

This valve, along with all its vacuum tube successors, works on the principle of thermionic emission. If a piece of metal



(cathode) is heated until incandescent, electrons will fly into the space surrounding the metal.

If a positive voltage (anode) is placed in the same vacuum, the electrons will flow from negative to positive (cathode to anode). Unlike solid-state devices, vacuum



tubes have no minority carriers or leakage. Vacuum tubes create pure electron flow.

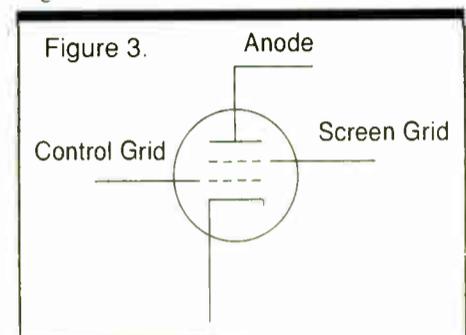
The first tube that could amplify a signal was developed by Dr. Lee de Forest in 1906. de Forest placed a third element, the control grid (illustrated in Figure 2), in the glass envelope.

The control grid varies the amount of current that could flow between the cathode and anode. de Forest discovered that a very small change in voltage on the grid results in a very large change in plate current.

The plate, grid and cathode function similarly to the transistor's collector, base and emitter, or the field-effect transistor's

drain, gate and source. The tube's plate current can be cut off if a sufficiently high negative voltage is applied to the grid. Removing the negative voltage allows the plate to be saturated with electrons resulting in maximum current flow.

Vacuum tubes were modified over the years to improve performance. The tetrode contains an additional "screen" grid, which operates at a positive potential to assist the acceleration of electrons to the plate (See Figure 3).



The tetrode's screen grid reduces the influence of plate voltage changes on the current flow between the cathode and plate. This increases plate resistance and reduces the loading on other amplifiers. The tetrode also reduces the capacitance between the cathode and plate, allowing the tube to work more effectively at radio frequencies.

The pentode (illustrated in Figure 3) is a
continued on page 40 ►

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FEEDLINE

Terrestrial Pitfalls Plague C-Band

by W.C. Alexander

Part III of III

DALLAS Rain fade can seriously impair the quality of a Ku-band satellite link. The weather is not nearly as great a concern for those still operating on C-band.

But C-band links face what is perhaps an even more vexing problem, terrestrial interference (TI). Terrestrial microwave signals in the 4 GHz band are everywhere.

A decade ago, I was engineer-in-charge of a television remote truck that travelled coast-to-coast covering every spectator sport known to man and piping it into your living room for ESPN and various regional sports networks. We were often unable to receive the satellite we were supposed to be uplinking because of nearby high flux density signals from AT&T, MCI and other terrestrial microwave users in the area.

In one memorable case, the start of broadcast of a United States Football League (remember that league?) game from San Antonio's Alamo Stadium was delayed. AT&T had its terrestrial microwave antennas mounted on a water tower near the corner of the parking lot where we set up our uplink. We had to use a spectrum analyzer and work carefully with RCA to be certain that we were illuminating the correct satellite.

Sometimes it is C-band uplinks interfering with microwave terrestrial services. Careful frequency coordination is required by the FCC before uplinks are licensed.

Trapping

It may be possible to trap out TI using in-line filters in the 900 MHz IF line or, if on an LNA system, the 4 GHz line. Multiple-cavity filters are available from many manufacturers. Experimentation in the field, preferably with the use of a good spectrum analyzer, is the only way to set up the filters.

In extreme cases, the only solution is to shield the earth station antenna from the source of the interference. Something as simple as a grounded copper screen held in place with a pair of two-by-fours on one side of the antenna or the other has been known to work. Other times, the situation calls for placing the earth station antenna behind a berm or in a hole in the ground. It may even be necessary to use a combination of shielding and filtering in some cases.

Interference from other satellites is another common problem. Angular discrimination of a particular antenna is the primary means of controlling such interference. Side-lobes produced by a given antenna may well fall right on an adjacent bird. Cross-polarization of signals will mitigate this type of interference to a degree, but not completely.

A site survey before installing the earth station is a good idea. There are contractors in most metropolitan areas who specialize in this type of work. They will come out to the proposed site and check the look angles, set up a portable antenna and check for signal from the desired satellites and check for TI, all for a reasonable price. It is well worth the cost considering what may have to be spent moving an earth station that just won't work in a given location.

When I worked in television many years ago, we used LNA systems that brought the 4 GHz signal directly to the receiver. A synthesized local oscillator was used for

tuning, and the output was broadband video off of which we filtered and demodulated the audio subcarrier.

Things have changed quite a bit since then. Most C- and Ku-band systems use LNBS that amplify the 4 or 12 GHz signal and heterodyne it down to a broadband 900 MHz IF L-band signal for input to the receiver. A synthesized second local oscillator is used to tune the desired signal, which is demodulated into a broadband 70 MHz IF baseband.

On an analog transponder signal, this baseband will usually contain video plus many FM² audio subcarriers both below

and above the video signals. This baseband signal can be "daisy-chained" into many audio demodulators.

Scanning

The second local oscillator in a digital satellite system is a software-controlled synthesizer. The software causes the LO to scan the baseband, pausing briefly on each carrier it finds to see if the proper net and channel ID signals are present.

If they are not present, the scan continues to the next carrier. The output of the second IF is fed into a digital demodulator which in turn feeds the forward-error correction

(FEC) decoder, which removes the error-correction bits, corrects detected errors and outputs the received data and clock signals. The received data is then fed through a digital-to-analog converter.

This is the 1990s, and satellite communication is nothing new. We have been using this medium for three decades. The difference is that it is now much more affordable.

Consider this the next time the program director comes in and tells you that in May, a whole week of the morning "zoo" will originate at Epcot Center and it is up to you to get a "CD Quality" feed back from 1,500 miles away.

□□□

Cris Alexander is director of engineering for Crawford Broadcasting. He can be reached at Box 561307, Dallas, Texas 75356.

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I found out the hard way, at 3 AM when the system we bought crashed. And in morning drive, when missing spots meant dollars down the drain. When I finally reached customer support, they said they were working on software they thought would fix my problem, but they weren't sure when it would be done. Guess what I told them?

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ROOTS OF RADIO

Sound Effects Made Radio Seem Alive

by James T. Wold

MINNEAPOLIS Radio networks in the late 1920s and early 1930s used to boast that every sound heard on their programs was "live." This pushed producers to elaborate lengths.

If a bugle call was needed, a bugler was brought into the studio. If a lion's roar was required, you did not have to bring a lion into the studio and twist its tail, but you did have to find someone who could roar just like a lion.

Sound effects were a true technical challenge and sound effects men were literally radio magicians.

There was nothing to see on radio. Every story had to be told with sounds that conjured up an image in the mind's eye.

Dramatic spice

The earliest radio dramas were failures. They were usually broadcast from the stage of a theater, with virtually no accommodation made for radio's special needs. All the audience could hear was the dialogue, with no other sense of what was happening.

Sometimes producers realized that listeners needed more, so they provided an announcer to describe the sets. When there was action, but no dialogue on stage, the announcer might whisper a description. It was soon obvious that this would not work.

The first sound effects used in a radio drama were broadcast on WGY Schenectady, N.Y. A door slam was simulated by slapping a couple of two-by-fours together during a 1922 presentation of Eugene Walter's "The Wolfe."

The first program to spotlight sound effects in a major way was the "Great Northern Program," a series first broadcast by NBC in 1928. One of the show's features was a railroad train that required five men to produce.

Before moving to Radio City in 1932, NBC studios were located at 711 Fifth

Ave. An entire side of a large studio there was reserved to making railroad noises. An authentic locomotive bell was suspended there next to an enormous machine designed to simulate the chugging of an engine, the click of wheels and a blast of steam.

Real locomotive

An authentic locomotive whistle was placed outside the studio, which was visible from Fifth Ave. and 55th St. A microphone was placed just inside the building to pick up the blare. That whistle was used regularly during an NBC series on the history of the railroads, "The Empire Builders."

Sound effects are usually associated with radio dramas, but they were actually first used during a sports broadcast, the 1921 World Series. WJZ, which was then located in Newark, N.J., broadcast the games with a sports writer phoning in a play-by-play description and an announcer at the studio recreating it.

But the inventive young announcer was not satisfied with simply relaying the balls and strikes. He wanted to give listeners a real feel for the game, so he assembled a small crowd to stand outside the studio window that would begin cheering on his cue. The sound of a bat connecting with the ball was actually a match stick broken next to the mic.

Stations used similar game reconstruction techniques for several years using telegraphed descriptions of the games.

Other radio program producers went to the same lengths to give their shows a realistic feel. The producer of a program called "Russian Gaieties" needed the sound of a restaurant in the background. He was dissatisfied with the sound of occasional knives and plates rattling, so he set up a restaurant in his studio and served dinner during the broadcast.

But often reality was much more difficult to recreate. A cadre of specialists who could recreate specific sounds with

their voices was formed to handle those situations.

Some of the most invaluable specialists were the "animal men." One man might do a terrific dog bark while another might specialize in goats and pigs.

Bradley Baker became an expert on practically every feral sound by spending hours at the zoo. He perfected his art to the point that he could make different calls for the male or female of a species. Other notable animal specialists included Harry Swain, Donald Bain and Elsie Mae Gordon.

Innovative engineers found ways to recreate sounds that could not be done by voice. They made people hear forest fires using a blowtorch and by breaking match sticks; rain on the roof by pouring dried peas down a paper tube and thunder by waving a thin sheet of metal.

Doorbells, alarm clocks, telephone bells, locks, dummy doors and several other sound props became standard studio equipment.

Some sound effects from this era are still well remembered today. The immortal "thundering hoofbeats" of the "Lone Ranger" were created by Jim Jewell of WXYZ Detroit, the first director of the show, who employed the best sound men in the business.

Jewell's staff found ways to make most of its sounds by striking a cardboard box with a slat, and later, after some experimentation, by striking a leather cushion. When a horse galloped, you heard not only the hoofbeats (changing sound as the horse crossed different types of terrain), but you also heard the jangle of the harness, the creek of the saddle, leaves rustling, water rippling and heavy, excited breaths drawn by both horse and rider.

You could almost hear the sun going down. One actor once blundered and said: "Listen, I hear a white horse coming."

Irving Reis produced "Buck Rogers in the 25th Century," a daily 15-minute seri-

al that aired in the 1930s and 1940s. The show was broadcast from a 21st-floor studio where a bent air-conditioner duct would often give the crew fits by creating unwanted noises.

Later, when Reis needed a new sound to suggest a rocket traveling through space, he remembered the duct. When he opened the microphone next to the duct, it produced a low, unearthly sound that became the definitive sound of a spaceship for millions of listeners.

Perhaps the most memorable sound effect was the squeaking door of the "Inner Sanctum" mystery series. It was simply the door to the basement of the studio where the show was produced. After coming up with the idea of using the door to close the show, Inner Sanctum producer Himan Brown told an assistant, "I'm going to make that door a star."

Grisly effects

Arch Oberler, producer of "Lights Out," delighted in creating the most grisly sound effects imaginable. Frying bacon and a telegraph key hooked to a dry cell battery were held up to the mic to create the sizzle and spark of someone being electrocuted. Spareribs were smashed with a pipe wrench to simulate breaking bones. A blade slicing through a head of cabbage and maple syrup dripping on a plate sounded just like a beheading followed by dripping blood.

Oberler once squished and squashed cooked spaghetti when he needed the sound of human flesh being eaten. The "Radio Guide" called it "the most monstrous of all sounds."

Sound effects men were the wizards of their day. Audiences were riveted by their productions. Even today, those who listen to tapes of some of these original broadcasts may find themselves drawn in by their magic.

□ □ □

James T. Wold is a free-lance writer based in Minnesota. He is author of "Minnesota Microphones," published by Northstar Press. Wold can be reached at 1106 South Seventh St., Minneapolis, MN 55415.

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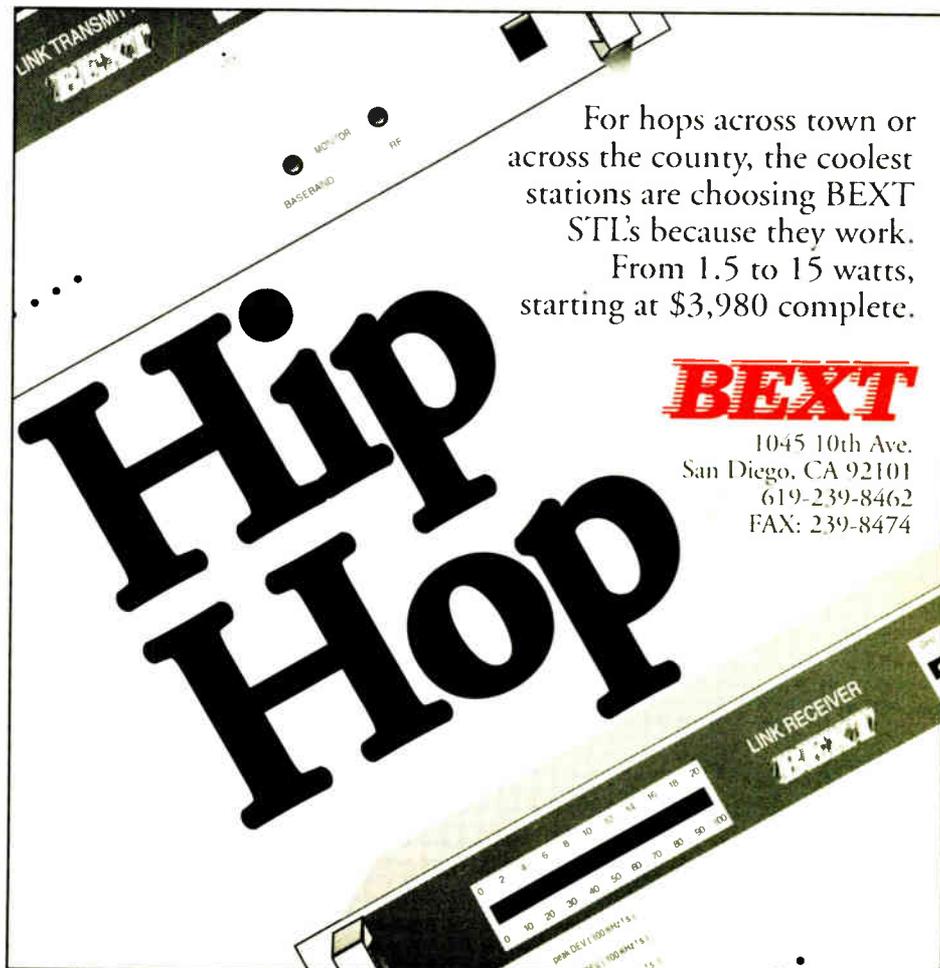


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World Radio History

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OFFBEAT RADIO

Colorado FM Station Is Powerful by Nature

by Dee McVicker

STEAMBOAT SPRINGS, Colo. KFMU-FM is operating on nothing less than an act of nature. It claims to be the world's only wind- and solar-powered radio station.

A windmill spinning atop the Steamboat Springs station's 163-foot tower and a supplemental collection of solar panels keep it powered 24 hours a day.

The windmill was hand-built when KFMU-FM went on the air in 1975 as the first station in the country powered with an alternative energy source. The windmill was necessary then (as it is now) because the utility company's power lines did not reach the top of Stagecoach Mountain, a 9,100-foot rise.

The forces of nature seem to be in harmony on Stagecoach Mountain. "When there's no wind there tends to be sun and when there's no sun there tends to be wind. So the two systems really complement each other very well," said Jonathan Christopher Renaud, KFMU-FM's chief engineer.

Adding solar

Except for supplemental power from a diesel generator, wind power kept KFMU-FM going for several years. The diesel generator is gone now that sun power has been added. There are few

problems. General Manager Ward Holmes said he couldn't remember the last time the station went off the air due to power failure.

The decision to add solar power was made in the mid-1980s to improve reliability and later to raise the station's authorized effective radiated power

Solar/wind power is more reliable than conventional power at other sites. "We're on the air when a lot of stations are not."

—KFMU-FM's Christopher Renaud

(ERP) from 250 watts to 1400 watts.

Joel Davidson, a solar energy expert and author of the book "The New Solar Electric Home," who once built a solar car that made it into "The Guinness Book of World Records," was on hand to help his friend Renaud during the solar conversion.

Two solar arrays, one designed for winter sun and the other for summer sun, feed 42 batteries in a 36-volt configuration. The wind generator (which was rebuilt concurrently with the solar project) also feeds the batteries, which route the energy through a DC-to-AC converter. In the end, KFMU-FM can store 2,300 amp hours of power. The system has enough

juice, when at capacity, to keep the station on the air for four days.

"We've got enough power up there that we have a fan in use during the summertime to cool it," Holmes said.

Input power to the tower is minimal because of an elaborate, energy-efficient antenna pattern. A 16-bay Shively anten-

na system covers almost the entire height of the tower, requiring only 150 watts input for 1,400 watts ERP output. The conventional two-bay antenna system was not even considered, Renaud said, because "we could not generate that much with present (solar or wind generation) technology."

na system covers almost the entire height of the tower, requiring only 150 watts input for 1,400 watts ERP output. The conventional two-bay antenna system was not even considered, Renaud said, because "we could not generate that much with present (solar or wind generation) technology."

Battery technology

Battery replacement is high on the maintenance list, although battery technology is continually improving. New batteries installed will last up to five years, a longer life span than previous generations because they discharge and recharge with less deterioration.

"They're basically the kind they put in fork lifts. They call them high boys. They look like a car battery only they're twice as tall, and they're six-volt instead of 12-volt, so they hold a whole lot more juice," Renaud said.

As for maintenance of the wind generator, every few months Renaud straddles

the blades to grease them and keep them aerodynamic. This is usually done while the wind generator is in motion. "It's quite spooky because the blades will be going around," he said.

Strange maintenance duties aside, the system has several surprising advantages. It is more reliable than conventional power at other tower sites. "We're on the air when a lot of stations are not. A lot of transmitter sites are on isolated mountain tops and have a whole lot of wire going to them and they get hit by lightning or are down because of snow," he said.

Power spikes and surges are uncommon at KFMU-FM's transmitter site and snow build-up, to Renaud's surprise, has been virtually eliminated. "We found that the vibration caused by the wind generator acts to knock off the ice, not only off the antennas, but also off of the solar panels," he said.

There have been times when nature has not cooperated and knocked the station off the air, sometimes hurling windmill blades through the air. The most memorable case occurred just a few days after Holmes joined the station, when a powerful wind launched one of the blades into a tree a quarter mile from the tower site.

Holmes is fond of joking that the harder the wind blows, the louder the station gets. But overall, he likes the idea that the station is not only helping to save utility costs (roughly \$180 a month), but also the earth. He's proud to call KFMU-FM one of the country's first ecologically-friendly radio stations.

□ □ □

Dee McVicker is a free-lance writer and regular contributor to *RW*. She can be reached at 602-545-7363.

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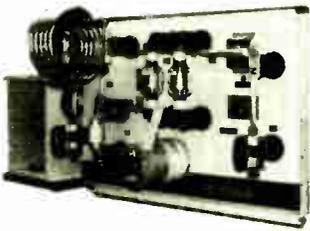
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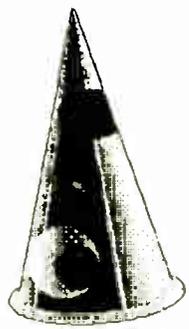
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40	Audio Processing Technology	26	12	Dick Brescia Associates	28	41	Radio Systems	80
2	Audioarts/Div. of Wheatstone	17	38	Econco	19	21	Reel Industries	33
36	Audiopak	7	46	Econco	139	28	Russ Friend & Associates	169
47	Audiotronics	39	12	Energetic Music	112	27	S.C.M.S.	8
27	Autogram	2	46	Energy-Onix	70	3	Satellite Systems Inc.	140
37	BSW	190	21	FEE	141	26	Scott Studios	211
36	Belar	210	21	Format Productions	113	44	Sescom	1
27	Benchmark Media Systems	31	12	Ghostwriters	56	27	Shively	146
35	Bext	143	21	Globe Music Production	187	35	Sierra Automated Systems	219
45	BBH Software	142	12	GMI Media Group	52	11	Standard News	122
28	Broadcast Devices Inc.	25	27	Gorman Redlich	94	7	Svetlana Electron Devices	98
19	Broadcast Electronics	215	42	Hall Electronics	116	46	Svetlana Electron Devices	208
4	Burk Technology	32	21	Halland Broadcast Service	109	29	Telos-Systems	40
40	CCA Electronics	49	23	Harris Allied	—	27	The Management	134
18	California Digital	178	6	Harris Allied	138	46	Transcom Corp.	199
28	Celcast Communication Products	54	1	Harris Allied	77	9	U.P.I.	183
34	Computer Concepts Corp.	5	39	ITC	36	42	USAFoam	93
3	Comrex	115	42	J & I Audio/Video	185	48	Wheatstone	62
27	Comrex	163	38	J Squared Technical Service	203	27	Zercom	209
20	J.R. Nelson	84	20	Continental Electronics	127	21	Radio Concepts	110
38	JT Communications	111	38	Custom Professional Billing System	58	11	Radio Programming & Management	51
15	Jones Satellite Network	13	15	Cutting Edge	15	42	Radio Resources	24
12	La Palma Broadcasting	—	30	Dataworld	147	20	Radio Spirits	102
22	Lelectronics	42	12	Dick Brescia Associates	28	41	Radio Systems	80
12	Man From Mars Productions	135	38	Econco	19	21	Reel Industries	33
45	Marathon Products Company	47	46	Econco	139	28	Russ Friend & Associates	169
28	Monroe Electronics	100	12	Energetic Music	112	27	S.C.M.S.	8
21	Motor Racing Network	173	46	Energy-Onix	70	3	Satellite Systems Inc.	140
14	Murphy Studio Furniture	165	21	FEE	141	26	Scott Studios	211
32	Myat	20	21	Format Productions	113	44	Sescom	1
17	National Public Radio	205	12	Ghostwriters	56	27	Shively	146
38	Omega Scientific	65	21	Globe Music Production	187	35	Sierra Automated Systems	219
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31	Pacific Recorders	202	27	Gorman Redlich	94	7	Svetlana Electron Devices	98
21	Post Modern Radio Network	6	42	Hall Electronics	116	46	Svetlana Electron Devices	208
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28	Priority Leasing Corporation	117	23	Harris Allied	—	27	The Management	134
28	Pristine Systems	88	6	Harris Allied	138	46	Transcom Corp.	199
38	Prophet Systems	157	1	Harris Allied	77	9	U.P.I.	183
39	OEI	161	39	ITC	36	42	USAFoam	93
30	RE America	160	42	J & I Audio/Video	185	48	Wheatstone	62
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CONTRACTOR'S FORUM

DAs and Other Engineering Horrors

by Thomas Osenkowsky

Part II of II

BROOKFIELD, Conn. Over the years, a contract engineer can come across some singular experiences with AM and FM broadcast transmission equipment.

I set down some of those experiences, stories the reader might find insightful, in an earlier column (RW, Jan. 26). Here are a few more. Many of them may seem humorous, but there is at least one moral an engineer can take to heart in each one.

Murphy's Law

Can you imagine an AM directional array where everything was wrong? Well, here's a real-life DA horror story still in progress as of this writing.

I was called in to fix this array, which consists of four tall towers, in-line, operating fulltime, 5 kW, DA-2. Sample loops are located 200 feet up from the base of each tower. The station's contract engineer told me that the night pattern was out of adjustment on one monitor point, but that the day pattern seemed OK.

When I got there, I found that tower No. 3 had no sample reading in the day mode; one of the night parameters was over 10 degrees and +8 degrees out of FCC limits; the day parameters were far from licensed limits, and the patterns were unstable.

The erratic sample on tower No. 3 was traced to a poorly installed "N" connector on the sample line isolation coil. The installer never took the time to peel back the cable shield, so there was no contact being made to the shield of the sample line.

The connector body was badly burned because of arcing. When sample line isolation coils are used, they most often also serve as the static drain choke and thus static current flows in the outer sheath of the cable to ground.

Other erratic sample readings were traced to poor contact from the ATU door to the

cabinet frame. These ATUs are crowded, so RF current is induced in the doors and can affect the array if good ground contact is not made. Each ATU door was bonded to the cabinet frame using copper braid. One transmission line was found to be making a high-resistance contact to the ATU on its outer sheath.

A moment method computer analysis was used to devise a better phasor design. The best match on the day and night feeder lines was a 3.5:1 VSWR. (You don't want to know the worst match.) None of the towers even came close to relating measured self and mutual impedances to computer predicted values.

I found three towers were mistuned after I checked the isolation coil resonance. Shunting tower No. 3 with just the coil (without resonating capacitor) produced a parallel resistance 29 percent greater than without the coil, which is theoretically impossible. I found that the sample lines were bonded at each tower base and at the sample loop, leaving just over one quarter wavelength of line unbonded and a detuning stub just where you do not want it.

Rigger-marole

The RPU line on tower No. 2 was likewise bonded and the low end of the RPU isocoupler was not grounded. It was time to get the tower rigger to bond the lines.

A measurement of the sample lines with a TDR showed that tower No. 1's line was 260 feet from the base to the loop. That would be OK, except that the loop is only 200 feet up the tower.

The rigger disconnected the loop from the sample line and instead of a nice open circuit, I measured 30,000 ohms of resistance from the inner to outer conductor. The problem turned out to be water contamination in a 20-foot section of the line.

When I first do a DA rebuild, I always measure the electrical length of each sample and RF line. This goes into the computer and is considered in

the new phasor design.

The TDR in this case showed an inverted pulse about 200 feet out. I dug up the line and found a big hole and lots of arcing. It seems that this station's antenna field was used as a camping and picnic ground for many summers.

Tents were set up in the field, and what holds up a tent? Stakes, which tend to damage underground lines.

Frequency checks

Back in the old days, we were required to maintain frequency monitors. My first job as chief engineer required coming in at

midnight once a month to measure the station's frequency together with the late Clarence Cheney of Cambridge Crystals.

One month, the day before the midnight measurement, I decided to repair the transmitter's ailing crystal oscillator No. 2, which was falling victim to lower and lower power output. I discovered that the oscillator "can" was supplied by a regulator +15-volt supply located in the exciter.

After unwrapping the can, I found a couple of burned 1K ohm 1/4 watt resistors. I replaced a bad 15-volt regulator and replaced all the resistors in both oscillators just to be safe. I then adjusted the frequency of both oscillators to read zero (center scale) on an old tube type frequency monitor. Everything appeared to go well.

I got a call from the announcer on duty
continued on page 40 ▶

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World Radio History

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The Voice of Experience

► continued from page 39

the next evening who was getting listener complaints of a "wooning" sound on the station. While driving toward the station later that night, I heard what sounded like a 400-cycle tone along with the normal program, but it disappeared as I got closer to the station.

Imagine my surprise when Mr. Cheney told me I was 420 Hz off frequency. Those old frequency monitors measured up to about 50 Hz deviation and then would go back to zero. As those resistors aged, tweaking the frequency every month became increasingly inaccurate.

When I replaced the resistors, I must have

tuned on a point where the frequency monitor no longer measured the error.

On a separate occasion, I was called in to fix an FM transmitter that was "eating" PA tubes. After four hours of work, I called my office to check for messages, just as the station chief engineer walked out to take quick break.

After I hung up and went back to work, the phone started ringing off the hook. I went over to answer it, but there was nobody at the other end. I bumped my head twice in the PA cavity while running to answer the phone.

The engineer got a laugh out of it when I told him what happened. He explained that

the telephone (an old W.E. 500 set) was placed where it was, on top of the two audio processors, for a good reason. These processors used solder to form the PC board finger contacts, which were notorious for becoming intermittent.

When the DJ heard the audio fizzle out in one channel, he would ring the phone until

it came back. The bell would vibrate the board back into operation.

□ □ □

Thomas Gary Osenkowsky is an SBE certified senior broadcast engineer and NARTE first-class certified engineer. He can be reached at 5 Beachwood Grove, Brookfield, Conn. 06804.

Tubes Still Often Useful

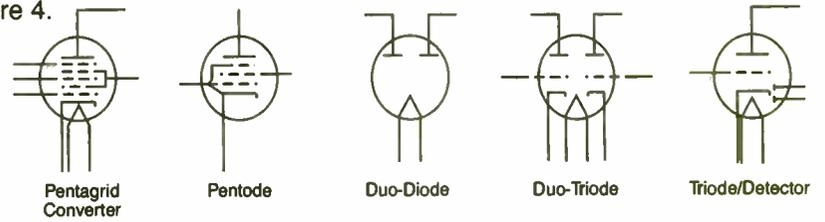
► continued from page 32

tube with a third grid, which is called the suppressor grid. It usually operates at whatever the cathode's voltage level. The negative voltage next to the plate tends to block electrons from hitting the plate and dislodging other electrons.

withstand power surges and lightning strikes still exceeds the limits of solid-state devices.

The vacuum tube's main drawback is its fragile construction. However, when properly maintained, a vacuum tube's life span can equal or exceed that of an equivalent

Figure 4.



Over the years, variations of these tubes were designed to meet special needs. The "variable mu" or "remote cut-off" tube was developed to improve reception in mobile receivers. Beam power pentodes permit higher amplification and reduced harmonic distortion. Other specialty tubes are illustrated in Figure 4.

Vacuum tubes still play a part in modern electronics. They are often used in audio systems and transmitters. Their ability to

solid-state device. Solid state devices have the advantage of smaller size and more efficient electrical power consumption.

□ □ □

Ed Montgomery is a communications teacher at Thomas Jefferson High School for Science and Technology. He has taught broadcast engineering at Northern Virginia Community College and worked as a broadcast engineer for several radio stations.

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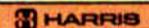
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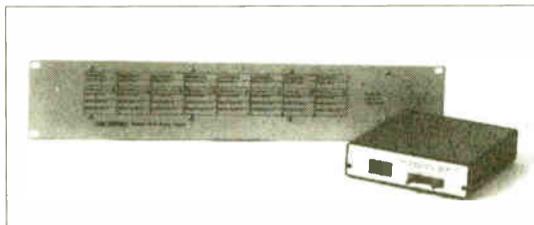
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Authenticity RA-1 digital radio automation system complete w/Pioneer CD-TM2 18 pack & Sony CDP-C910 CD players, Pioneer 6 pack cassette player, 2 Sony Mini Disc, computer, software, hardware & more, \$7777.77, M Lund-Vallance, WAPN, 1508 State Ave, Holly Hill FL 32117. 904-672-3333.

BE Econo Sat 16 automation w/Carousels (3), IGM Go Cart, on-air, \$4000/BO. C Ashworth, WMJR WBZA, POB 928, Glensfalls NY 12801. 518-792-2151.

Audiofile II, single column, 10 slots, 3 Audiofile I, various shape, 903 boards. B Bailey, WHYR, POB 507, Saco ME 04072. 207-284-9000.

SMC RP1000 automation controller, Otari R/R (5), carousels (3), cart liner drawer (2), all working, \$2000. C Maley, KSIB KTR, Hwy 34 West, Creston IA 50801. 712-542-4858 after 3:30 pm CST.

SMC ESP-1 452 Carousels (4), brain, swtchr, clock, 1 rack, 2 vid mon. R Statham, WHLG, 1000 NW Alice Ave, Stuart FL 34994. 407-692-1000.

IGM EC system, switcher 4 carts, 3 Carousels, computer, monitor, printer w/latest software, used 6 mos on Unistar, \$5000. D Igou, KCHL, 8435 Twisted Oaks, San Antonio TX 78266, 210-651-9049.

Schafer Series 7000 1-Celec system brain; ITC 770 stereo R-R tape PB units (4); Gates ATC P/B cart units (3); Celec Audiofiles (6); Ctr terminal, racks, spare parts, B/O. P Berger, WROE, POB 1035, Neenah WI 54957. 414-725-4447.

Scully 100 sm automation sys will run 2 reels & 1 cart mac, gd for non-commercial stn, \$400 B/O. J Kesler, WOZB TV, POB 220, Livingston KY 40445. 606-843-9999.

Schafer 902, 1/2 automation system, inc 901 switch w/lots of I/O cards, audiofile I unit, Audiofile II unit, spare parts inc Schafer decks (4), grt for satellite format, BO. S Winkey, KXIC/KKRR, Box 2388, Iowa City IA 52240. 319-254-9500.

Century 21 Autoseg, 3 multi-disc CD players, brain and disc magazines, \$400 as is. J BellGerman, WHKX, 345 Office Plaza Dr, Tallahassee FL 32301. 904-942-9459.

Henry Eng Net Commander, GC w/documentation, replaced by hard disk sys. G. Manfroi, WMAV, 502 S Allen St, Spaulding IL 62561. 217-629-7077.

Sentry FS12C automation w/ctrl interfaces for 16 Pioneer 18 play decks, automation & Pioneer decks less than 1 yr old, priced tog or sep, \$11,500. M Rollings, Rollings Comm, POB 882, St Louis MO 63006. 314-458-5595.

SMC MSP-12 comp automation system, 3 Carousels, 3 decks, DAS-12 switcher, \$6500. M Jarvis, KORC, POB 1419, Waldport OR 97394. 503-563-5100.

Schafer 800T control unit, Carousels (2), Gates 55 cart units (2), Ampex R-R (3), will consider selling separately. L Nelson, WSRS, POB 1327, Russell Springs KY 42642. 502-866-5969.

CART MACHINES

Want To Sell

BE 5300C tripledeck, stereo, PB, mint less than 50 hours, BO. R Kaufman, Pams Productions, POB 462247, Garland TX 75046. 214-271-7625, after 3PM CDT.

Spotmaster 505-C, good condition, loaded, mic preamp, aux tone, cue edit, R/P, \$125 + s/h. G Gibbs, KMNS/KSEZ, 901 Stueben St, Sioux City IA 51102. 712-239-3966.

BE 2100C mono R/P mint, \$500; (5) Ampro mono play, good condition, \$100 ea; Ampro mono R/P good condition, \$200. G Kornbluth, A&J Recording Studios, 225 W 57th St, New York NY 10019. 212-247-4087.

ITC 3 deck stereo, all tones (2), gd con, 1 ITC st R/P. R Statham, WHLG, 1000 NW Alice Ave, Stuart FL 34994. 407-692-1000.

ITC 750 clean, \$100; Magnacord 1021 (2), \$100/ea. D Swanson, 712-252-4621.

ITC Erase Splice Finder (2), one gd con, one needs work. R Statham, WHLG, 1000 NW Alice Ave, Stuart FL 34994. 407-692-1000.

SMC 590, cart recorder in good condition, mono R/P, newer style head gasket with many spare parts, \$150. B Bailey, WHYR, POB 507, Saco ME 04072. 207-284-9000.

ITC PDII R/P mono, mint condition, clean, \$650 including shipping. E Finley, Genesis 200 Studio, 4101 W Union Hills Dr, Glendale AZ 85308. 602-978-8092.

Great Prices on original equipment tape heads for ITC, BE, Fidelipac, Otari, Tascam & others!



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Fidelipac CTR-12 stereo PB with all tones, never on air, manual incl, \$850. D Igou, KCHL, 8435 Twisted Oaks, San Antonio TX 78266, 210-651-9049.

Spotmaster 500 R/P (2), 1 excellent condition, \$500; 1 good condition, \$300 both mono, lever type, \$700/both. K Stevens, In House Audio, 5354 Cortez Ct, Mobile AL 36609. 205-666-4232.

Want To Buy

ITC, BE, Fidelipac cart machines: single, triple, mono, stereo, play & record/play. Call M O'Drobinak @ 619-758-0888.

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Want To Sell

Otari 5050 MK III 8 trk, heads excellent, \$2450. Wayne Gunn 619-320-0728.

Technics 4 trk R/P (3), exc con, \$2500 for all 3; Otari MX5050, PB only (2) \$1000 for both. S Cohen, KIHx, POB 26523, Prescott Valley AZ 86312. 612-775-5277.

Inovonics 375 R/P amp unit, missing VU meter but checks ok, \$200. L Beigel, On-Cue, POB 85042, Hollywood CA 90072. 800-726-9813.

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Sony S600 (2) 3/4 mac, both in gd shape, \$1000 ea or B/O. J Kesler WOZB TV, POB 220, Livingston KY 40445. 606-843-9999.

Marantz vari speed portable cass rec, battery or AC, \$200. R Edwards, 1750 30th Street #222, Boulder CO 80301. 719-630-1452.

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Sealed bid sale of open reel recorders, cart recorders & players, cassette units, carts, reel tape & related mats, bid open May 18, 1994, send SASE w/52 cents postage for bid info to: Sealed Bid Sale 051894, c/o Benchmark Comm Corp, 4700 SW 75 Ave, Miami FL 33155.

Ampex AG-440B 2 trk R/R, R/PB (2), 1/4", 7.5/15 ips, in roll around racks, both \$1000. Rich, 404-534-1000.

Ampex AG-440C, full trk, like new cond, w/manual, \$500 + shpg. M Johnson, Production Masters, 413 Allenberry Dr, Pittsburg PA 15237. 412-487-5513.

Scully 280 1/2 inch 4 trk, very gd cond, 7 1/2 /15ips, \$650; also 4 more 280 electronics, \$100 ea. M Gore, 54 Ney St, San Francisco CA 94112. 415-469-0136 noon to 5 pm West Coast time.

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Otari MX5050B, 1985 new, 2 trk, gd cond, minor repair needed to headphone jack, sounds incredible, will ship to you, \$750 OBO. L. Ballance, KFI/KOST FM, 8837 Grove Ave #312, Rancho Cucamonga CA 91730. 909-949-1744.

Revox A-77 very gd cond, stereo 7.5 & 3.75 ips, \$225. G Gibbs, KMNS/KSEZ, 901 Stueben St, Sioux City IA 51102. 712-239-3966.

Tascam 22-2 (2) 7" R/R, \$150 ea; Akai GX-4000, 7" R/R, \$125; Teac A-450 cass deck, \$100; Otari extender brd ass'y #PB-7JEA, \$125. M Guthrie, WFNS, 813-620-9100.

Otari MK-III 8-trk, new-never used, w/new CB116 auto-locator, \$4500. T Hicks, KUGN-FM, 4222 Commerce, Eugene OR 97042. 503-485-5846.

Sony PCM 2500 DAT machine, VGC, w/new hds & update mods, \$900; Revox 1/4 trk, VGC w/blt-in spkr con, \$400. H Fair, 312-784-1558.

Scully 280 4 trk, 1/2 inch, in roll around cabinet, gd cond, \$1200 or trade for Tascam model 15 console; Scully 280 2 trk recorder, 1/4", gd cond, rack mount, \$800/BO. F Badeaux, The Music Factory, 1812 Procter St, Port Arthur TX 77640. 409-982-7121.

Fostex MY250R00 capstan motor for 250 4-track cassette deck, BO/trade. E O'Brien, Imperial Sound, 383 N Studio St, Terra Haute IN 47803. 812-877-4663.

ITC 99-B cart record/play deck, all options, \$3500; (2) ITC SP's, modified to 99-B specs, \$700 each. All equipment like new, home use only. 810-435-3932.

Ampex 350/440 parts transport & electronic pts, some new most used in super cond, motors, headstacs, guides, etc, also parts for Scully 280s & complete Inovonics electronics for 350s & 440s, all reasonably priced. M Gore, 54 Ney St, San Francisco CA 94112. 415-469-0136 noon to 5 pm West Coast time.

Tascam 38 8 trk R/R, 1/2", pitch cntrl, incl dbx NR, remote, rack, more, \$1850 neg. Rich, 404-534-1000.

Studer C270/2 2 trk analog mastering, \$295/BO; Studer/Revox HS77 Mk IV FT mono, \$750/BO/trade; portable case for A77 w/mon spkrs & pwr amps, exc cond, \$375. R Katz, Allegro Sound, 15004 Ventura Blvd, Sherman Oaks CA 91403. 818-377-5264.

Tascam MSR16 low hours, mint cond, dbx NR \$3200; Alesis ADAT. M Schackow, 307 4th Ave E, Lemmon SD 57638. 605-374-3424.

Nakamichi 480 pristine single well tape deck, black face, superb sound, \$250; Teac 3340S, as new cond, 10 1/2 in synchro 4 trk, 1/4" tape deck w/sev reels of tape, \$350. R Schweppe, WTMO, 7155 Clark Rd, Sarasota FL 34241. 814-925-7215.

Revox 77A (2), 1/4" 2 trk 7.5/15, port case, very fine cond, \$500 ea; (5) Scully 280A 1/4" 2-trk 7.5/15, Russ Lang console cabinets, \$500 ea. G Kornbluth, A&J Recording Studios, 225 W 57th St, New York NY 10019. 212-247-4880.

Ampex MM 1100 16 trk 15/30ips in superb cond, has seen very little use, heads gd, all elects have been checked, has updates, counter, MDA fans, AC stabilizer card, mods, B/O. M Gore, 54 Ney St, San Francisco CA 94112. 415-469-0136 noon to 5 pm West Coast time.

Ampex AG-440B, 2 trk, 7.5/15, add'l 1/4 tr PB head w/both scrape flutter idlers, synchronous capstan, spare hold-downs and pinchroller, in Ampex roll-around, manual, exc cond; Sony 770-2 portable, 2 trk, 7.5/15, add'l 1/4 trk PB head, variable speed DC servo capstan, manual, nds some work; Pioneer RT-1050, 2 tr & 1/4 tr head-blocks, 15/7.5, balanced mic inputs, edit/cue lever mod, manual, needs rewind switch. J Mehne, Clearwater Audio Recorders, 607-277-0540.

Otari MK-III, 8 trk w/snake, exc cond, \$1900; roll-about stand, \$100. S St John, St John Productions, POB 641448, Kenner LA. 504-464-8881.

Ampex 440 recorder & parts, RCA, EV, Presto, UTC and other misc electronic gear, call for 4 page list, B/O, close out. B Lindahl, 503-644-9643.

Scully '100' recorders, record/play amplifiers, 8, 16, 24 track heads. Sequoia Electronics, 4646 Hounds-haven Way, San Jose CA 95111. 408-363-1646.

Telex 1022, good condition, needs heads, portable case, many parts & boards. B Bailey, WHYR, POB 507, Saco ME 04072. 207-284-9000.

Telex 235 exc cond, records 3 cass at once, no notches in hds, like new, \$650. S Russell, Russell Studios, 60410 Klett Drive, Decatur MI 49045. 616-782-9258.

Otari Mark II-IV 1/2" 4-trk, multi-trk, mint, less than 50 hrs, BO. R Kaufman, Pams Prods, POB 462247, Garland TX 75046. 214-271-7625, after 3PM CDT.

Recordex 6 cassette rewriter \$100; Tascam 40-4 4 trk 10" in flight case w/free dbx \$750; MRL new short test tapes \$39 for 1/4" to \$199 for 2". W Gunn 619-320-0728.

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Revox A-77 quarter trk w/spkr cab, 7 1/2 - 3 3/4 ips. Wolf, Ealing Recording, 312-784-1558.

16 track 2" \$3450, MCI JH110C-8 \$2800, 110C-8 play only \$500, ATR800 mono or Tascam 7300 or 2502 \$600 ea, MCI Locator III \$1195, Tascam 52 2 trk \$1200, Ampex AG350 electr \$50/ch. W Gunn 619-320-0728.

Ampex ATR100 taperecorders for parts. Circuit cards, heads, motors, machine parts, or electronic parts. Call 818-907-5161.

Spotmaster TP-60B tape timers from cart tape winders (TP-1A or TP-1B). Mel Crosby, 408-363-1646.

Ampex tube recorders and mixers. W Gunn, 619-320-0728.

Tascam 58 1/2" 8 trk wanted to buy or trade for Otari 5050 MK III-8 or...? Wayne Gunn 619-320-0728.

CD PLAYERS

Want To Sell

Revox B225 built like tank, \$350. Wolf, Ealing Recording, 312-784-1558.

Audiometrics AMCDs-1000A 100 disk CD Jukebox w/RS232C computer interface, \$1000/BO. J Stromquist, WNCB, 2828 Piedmont Ave, Duluth MN 55811. 218-722-3017.

Denon DN950FA (2), perf cond, in use until 2-25-94, \$750 ea. J Leutinger, KFSB Radio, 2629 Dogwood, Joplin MO 64804. 417-624-1310.

Denon 950 FA, perf cond, \$1650. K Thomas, Rebel Recording, 5555 Radio Lane, Jacksonville FL 32205. 904-388-7711.

EMPLOYMENT

To place ads in this section, use the ActionGram form. To respond to box numbers write Radio World, PO Box 1214, Falls Church, VA 22041. Attn: _____

POSITIONS WANTED

Former CE National Black Network, college radio exp, seeks FT/PT radio or TV position, ISCET cert, FCC licensed, ham radio OPCET. M Rakoo, 95-60 Queens Blvd Ste 513, Rego Park NY 11374. 718-591-3859.

Former radio GM fluent in Spanish and semi-fluent in French seeks pos in intl bdct equip sales or consultation, exp'd in programming, technical & sales aspects of bdcting, willing to travel often, very familiar w/most areas of Mexico, currently a senior at UGA. Tyler, 706-354-6109.

Soon to be college grad, seeking emp in early May, sales, on-air, prod, will travel. RR 2 Box 21A, Center Point IN 47840.

Combo Chief Engineer, PD, anncr, sales, prod. Tampa Bay area or other good coastal FL location. Bill, 813-844-3823.

Sportscaster w/pro & college exp seeks stn committed to PBP, if you do lots of sports, call me 302-436-5631.

Exp Radio Personality seeks prgm dir/prod for CHR or A/C fmt stn, med or large mkt pref. John, 904-683-9050.

Exp Radio Personality seeks PD/Prod for CHR or A/C frmt stn, med or large mkt pref. John, 904-683-9059.

Radio Anncr seeks pos in CHR or A/C fmt, also exp'd in talk radio, currently work Sunday AM jazz prg for A/C stn. John, 904-683-9059.

Bdcting Grad seeking on-air pos, gd prod skills, FCC Gen/Ship, Radar End Asst Eng, exp. CD Hamlin, 606-528-5460.

Combo Chief Engr/PD/Anncr/Sales/Prod, Tampa Bay area or other gd coastal FL loc. Bill, 813-844-3823.

Help! Enthusiastic anncr stuck on mid-nights w/no way up, 4 yr deg in bdcting, prod skills, very versatile, fast learner. Paul, 606-473-7622.

Agree experience isn't only years, tapes? Hire Janet, 502-895-5888, FT announcing, programming aspirations, computer literate, in radio since 1980, announcing, mkting exp, serious inquiries only.

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Broadcast Supply Worldwide has an immediate opening for an East Coast Digital Product Specialist. Qualified candidate must have experience with computers, digital audio workstations, and experience in the broadcast industry. BSW offers competitive salary, outstanding benefits, 401K etc. Send your resume in complete confidence to:
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Tacoma, WA 98466

Exp young bdctr seeks sports talk/announcing, ctry, alt, etc, deg in comm. Brian 503-228-1792.

CE w/big production voice & over 15 yrs hands-on eng exp seeks CE pos w/prod, strong troubleshooting, RF & computer skills. G Morgan, 704-563-8676.

Country Only! Current morning AT/MD, topical, humorous, telephone, animal attraction. Mike, 510-988-9005.

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We're looking for a manager/sales-manager for our small-medium market radio station in Arkansas. Excellent area! Excellent opportunity! Equity position available. EOE. Reply to Radio World, POB 1214, Falls Church, VA 22041. Attn: Box# 94-04-06-012RW.

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Revox 225 CD plyr in GC, \$450. H Fair, 312-784-1558.

COMPUTERS

Want To Sell

Epson FX-100 Mdl P10FA wide carr printer, \$75. M Guthrie, WFNS, 813-620-9100.

Exabyte EXP-8505 10 gig 8mm tape backup, int half height, 5 1/4" SCSI-2 drive, \$1495. G Wachter, KFYY Radio, 602-258-6161.

Want To Buy

Tandy 6000HD w/at least 1 floppy drive. Mel Crosby, 408-363-1646, FAX 408-363-0957.

CONSOLES

Want To Sell

Tapco 6 chnl, like new, many hook ups in back, great tone, \$200. S Russell, Russell Studios, 67410 Klett Drive, Decatur MI 49045. 616-782-9258.

Tascam 5B mixer, 8x4, 2-band EQ, 2 sends; talkback module, spare master module, spare pan, wood shipping crate, documentation; PB-64 patchbay w/cables, nice shape, kept clean, used on classical music. J Mehne, Clearwater Audio Recorders, 607-277-0540.

Audiotronics Grandson 110, 12 mono channels with faders, 2 stereo channels, 3 remote starts, incl Audiotronics PS-30 & very nice custom console furniture with space for 2 deck mounted R/R recorders, \$850. Bill, 806-359-4000.

Ward Beck, NBC Radio Network master control, collectors item. H Norman, NDXE, 747 Wire Rd, Auburn AL 36930. 205-826-0393.

RCA BC8A dual-channel, solid state, self contained, plug in modules, 30 inputs, 2 program outputs, cue/monitor amps, mono, good cond, \$350 + s/h; Gates stereo Yard, fair cond, needs clean up, tube type, \$300 + s/h. G Gibbs, KMNS/KSEZ, 901 Stueben St, Sioux City IA 51102. 712-239-3966.

BE 10S350A 10 chl stereo slide fader, mint, complete doc, \$2300. G Kornbluth, A&J Recording Studios, 225 W 57th St, New York NY 10019. 212-247-4860.

EV/Tapco 100M powered mixer, 10 inputs, 2 built in 150 W amps, phantom pwr monitor send, reverb, 16 band EQ, slide faders, only 36 lbs w/case, \$800 OBO. R Shuli, WFAS AM/FM, POB 551, White Plains NY 10602. 914-693-2400.

Norcom Maxitell (2) remote bdct mixers, as-is, \$125 ea. M Guthrie, WFNS, 813-620-9100.

Pacific Recorders Radio Mixer 20 console, \$12,000; Tascam M2516 console, \$2100. J Stanley, Colfax Communications, 60 S 6th St, Minneapolis MN 55402. 612-373-0110.

Yamaha 1601 16 channel mixing boards (2), excellent condition, lots of features, \$3000 for both. S. Cohen, KHX, POB 26523, Prescott Valley AZ 86312. 612-775-5277.

Shure M67 original condition mic mixer with meter, with schematic, \$150; Shure M68 original condition, with schematic, \$150; Altec 1567A modified for stereo output, Peerless mic & line transformers, 2 band EQ section tubes all around, 5 input mic line amplifier (as is), \$300/Best Offer. A Levinson, Spruce Hill Studio, 1002 S 49th St, Philadelphia PA 19143. 215-729-0941.

Want To Buy

Gates Stereo Yard hi lvl input panel 992-1268-001. B Bartoli, 414 Adams Dr, Mt Shasta CA 96067. 916-926-3273.

Harris Exec 10 chnl stereo brd, clean. D Swanson, 712-252-4621.

Russco 5055 or 5055R stereo console, state price & cond. E Pacek, WQTW, RD 12 Box 615, Greensburg PA 15601. 412-836-5435.

WE 23C 5 channel console. B Davies, Virgo Productions, 5548 Elmer Ave, N Hollywood CA 91601. 818-761-9831.

Ampro AC Series, any cond. M Crosby, 408-363-1646.

Soundcraft 200B or Delta 24 chnl w/dbx modules. M Schackow, 307 4th Ave E, Lemmon SD 57638. 605-374-3424.

RCA BC-7 in nice condition, Inovonics MAP II. G Goldsmith Consulting Engineers, POB 5786, Beverly Hills CA 90209. 310-696-0177.

DISCO-PRO SOUND EQUIP

Want To Sell

UREI model 539 27 band cut only EQ, as-is, \$50. M Guthrie, WFNS, 813-620-9100.

Yamaha DX100 keyboard synthesizer, \$225/BO; Tascam PB 32 patch bay, BO R Edwards, 1750 30th Street #222, Boulder CO 80301. 719-630-1452.

AKG R-25 remote control w/cable for BX-25 reverb unit; new diaphragm for JBL 2405 slot tweeter; Kenwood D-5 carrying handles; EAB (Gotham) W66A linear motion potentiometers (3), BO/trade. E O'Brien, Imperial Sound, 383 N Studio St, Terra Haute IN 47803. 812-877-4663.

JBL 2425H-2402H compression drivers, new in boxes, never used, 2402-H bullets, exc cond, \$200; JBL 2426-H, \$300/pr/BO, dbx 118 compressor/expander, exc cond, in box, \$125; SAE 5000, impulse noise reduction sys, remove clicks & pops, exc cond, \$125. R Glenn, WIGR, 1718 Shannan Dr, Wimauma FL 33598, 813-634-1940.

AudioWorks DataLink, AES/EBU digital cables; Studio Sound S305, vintage passive filter sets, rackmount, \$175 ea. R Katz, Allegro Sound, 15004 Ventura Blvd, Sherman Oaks CA 91403. 818-377-5264.

Yamaha DX100 synthesizer, works extremely well as FM digital tone module, 192 sounds on board, full MIDI, \$150 + shipping; Roland Alpha June 2, 5 octave velocity sensitive keyboard synthesizer w/road case, great analog/digital sounds, also makes great MIDI master keyboard, \$550 + shipping. J Bartus, Radio Active Prods, POB 2523, Marathon Shores FL 33052. 305-743-4248.

EV Eliminator Twos, 2 way PA/mon spkrs, recovered, snd grt, \$350/pr. W Kremer, Kremer Kraft, 301 SW 16 St, Ft Lauderdale FL 33315. 305-524-5652.

Electrovoice EV100 monitor speakers (2), \$540. J Stanley, Colfax Communications, 60 S 6th St, Minneapolis MN 55402. 612-373-0110.

Complete 8 trk, analog recording studio, demos, too many brands to list, no shipping, bring cash and come and get it, no reasonable offer refused. T Houston, Custom Audio, 929 California Ave, Bakersfield CA 93304. 805-324-0736.

ART Multi Verb digital single effect processor, new w/manual, \$400/BO. R Edwards, 1750 30th Street #222, Boulder CO 80301. 719-630-1452.

ARI MDC 2001 stereo compressor, lmr, gate, de-esser, exciter, like new, \$300. K Thomas, 5555 Radio Lane, Jacksonville FL 32205. 904-388-7711.

Want To Buy

Altec 604/Western Ele 755's speakers & systems 53, 728, 757 & oth. RQ Studio, Larson Rd #4, N Reading MA 01864. 508-664-0174.

Roland DEP-5. S Russell, Russell Studios, 60410 Klett Drive, Decatur MI 49045. 616-782-9258.

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LIMITERS

Want To Sell

Collins 260-1 classic tube limiter, exc original cond (1); Gates 5767 classic tube limiter/comp, BO/trade. W Kremer, Kremer Kraft, 301 SW 16 St, Ft Lauderdale FL 33315. 305-524-5652.

UREI BL-40 modulimiter mono compressor limiter SN332, \$250. R Chambers, 916-257-2121.

Orban Optimod XT-2, six band limiter for 8100A1, \$1000 firm. R Wolfe, WDFM, 118 Clinton St, Defiance OH 43512. 419-782-9336.

UREI 1176 (4), all VGC, \$450 B/O. Bernie, 818-303-8850.

UREI 1176 compressor/lmr, \$275; Shure SE-30 mixer, rack mnt, \$75; Lexicon PCM41 dig delay, \$200. J Adoie, WLTL, 708-579-3749.

Orban 8100A XT/2 processor/generator w/ACC-022 filter card, \$5300; Aphex aural exciter, \$1000; Aphex Compellor audio processor, \$1000; CRL SEC-800 multi-band processor, CRL SGC-800, multi-band AGC, \$1125; CRL SMP-850 FM limiter, \$1175. J Stanley, Colfax Communications, 60 S 6th St, Minneapolis MN 55402. 612-373-0110.

Gates M6467 stereo limiter, GC, \$150, Volumax 4200, stereo AGC, lmr, \$200. W Moring, WITV/WSCI, 2187 Wappoo Dr, Charleston SC 29412. 803-795-9401.

Inovonics 230 multiband processor, works fine, gd AM processor, rack mountable, \$300; Yamaha SC2020B, stereo 2-chnl mono compressor-limiter, works great, rack mounts, \$200. Steve, 214-490-7070.

Valley People Gain Brain II (3), Kepex II (3), Maxi-Q (4) all brn face, \$100 ea; Valley Mdl 440 comp/lm (5), \$425 ea; Comrex AGA AGC for phone couplers, \$125; Gentner Teleprocessor, \$225. M Guthrie, WFNS, 813-620-9100.

Mod Sci comp clipper, \$500; Harris MSP-90 AGC unit, \$200. W King, KQAC/KIXZ, 1703 Avondale St, Amarillo TX 79116. 806-355-9777.

Want To Buy

RCA or Fairchild 660/670, looking for old tube limiters, Wstn Elec/RCA/ Fairchild, call btwn 9am & 5 pm, Mon-Fri. Burton, 601-534-8584.

Fairchild 670 or 660 tube compressor/limiter, Teletronics LA-2A tube compressor/limiter or UREI LA-3A solid state compressor/limiter, call after 3PM CST. 214-271-7625.

Modulation Sciences CP-803 clipper, rack mount not necessary, must be in working cond. T Backer, Contract Engineer, WXHC FM, Box 386, Homer NY 13077. 317-472-9797.

MICROPHONES

Want To Sell

Telefunken/Schoeps CM61 tube mic, ext rare, uses std 6AU6 plug in tube, orig ps, new cable, mint cond, \$2500. R Katz, Allegro Sound, 15004 Ventura Blvd, Sherman Oaks CA 91403. 818-377-5264.

RCA 74-B (Baby 44), Ampex 350-2 w/tube amps & other quality equip, closing up shop, for list, SASE to: C Fuller, 241 Douglass Way, Bolingbrook IL 60440. 708-739-0044.

Telefunken, Sheeps, Neumann, AKG tube mics. Telefunken, Siemens, Tab tube mic pre's. RCA, WE, mics sale or trade. Tracy 615-821-6099, no calls after 10PM EST.

Cooper CSP-1 2 chl mic preamp w/48 V, m/s decoder & high pan filters, mint w/pwr supply. Wolf, Ealing Recording, 312-784-1558.

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Neumann U-67 sev mics w/pwr supplies in gd cond, \$1200/ea OBO. J Boyle, Sound Patrol, 6 E 39th St, NY NY 10016. 212-213-6666.

Want To Buy

Neumann U-89 in gd cond needed, will pay up to \$1100. H Fair, 312-784-1558.

RCA 77DX's/44B's ribbon, chrome/TV grey, gd cond, BO. R Kaufman, Pams Prods, POB 462247, Garland TX 75046. 214-271-7625, after 3PM CDT.

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RCA 91-A; desk stand for model 44 mic. E Kovach, 1409 Oak St, Wyandotte MI 48192. 313-285-9710.

Neumann U87s, KM84s, AKG 451s, EV RE20s, Sennheiser 421s. W Gunn 619-320-0728.

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McMartin (buy & sell) any model. C Goodrich, 11435 Manderson, Omaha NE 68164. 402-493-1886 or fax 402-493-6821.

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Anaconda #9300 sweep spectrum analyzer, \$1950/BO/trade; Philips PM6507 curve tracer, \$1450/BO/trade. R Katz, Allegro Sound, 15004 Ventura Blvd, Sherman Oaks CA 91403. 818-377-5264.

General Electric ST-2A bench type oscilloscope works good, \$50 or will trade for working Heath 10-12 oscilloscope. S Gardner, 3-G Enterprises, POB 387, Hillsville VA 24343. 703-728-9114.

Oscilloscopes, Tektronix 130BR, \$150; Tektronix T921 (15 MHz), \$200; Tequipment 4 MHz portable, \$100; Boonton 202H RF signal generator, \$100; HP 330B distortion analyzer, \$100; Lambda 71 (AC 0-500 V DC 0-200 V @200 mA), \$100; Lambda LYD5-152 (+/-12 V DC & +/-15 V DC), \$75. R Place, WPEP, 401-455-7226 or 508-636-6707.

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New McMartin 20 W, BFM-8000 1M exciters, New McMartin IBM1005D 1M relay/rebroadcast revrs; also some used McMartin B910 exciters 15W. Goodrich Enter., 11435 Manderson St., Omaha, NE 68164. 402-493-1886 fax 402-493-6821

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Collins 20V-1, 1 kW, tuned to 1450 kHz, in working cond, presently in use as aux. B Crandall, 205-236-8291.

Collins 830F-1A, 250 W pwr amp, exc cond, complete w/ spare tube & manual, \$1500. K Austin, KFXI, 1101 Hwy 81 N, Marlow OK 73055. 405-658-2556.

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Collins 20-V, 20-T or RCA BTA-1M(X), Pref CA, NV, AR area. G Goldsmith, Consulting Eng, POB 5786, Beverly Hills CA 90209. 310-696-0177.

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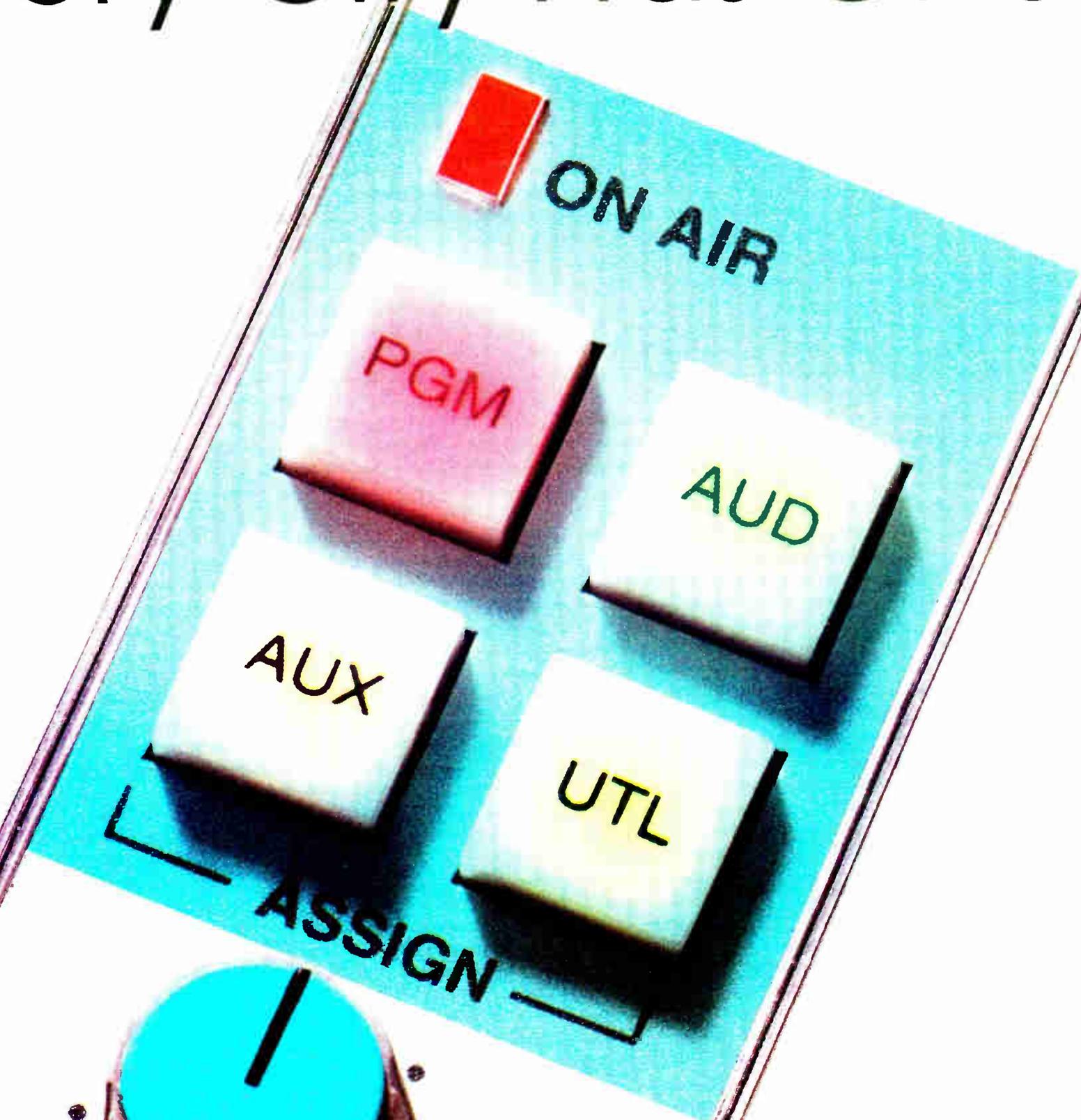
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