

RadioWorld®

First impressions
on **USA Digital's**
on-air sound.
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Vol 18, No 21

Radio's Best Read Newspaper

October 19, 1994

Mexico, U.S. Sort Out AM Border Agreement

by Robert D. Weller

SAN FRANCISCO In addition to FCC rules, broadcast stations near the common border between the U.S. and Mexico are subject to a variety of treaties and agreements.

In particular, existing and proposed FM stations within 320 kilometers of the border have, since Aug. 9, 1973, been subject to the agreement between The United States of America and The United Mexican States concerning frequency modulation broadcasting in the 88 to 108 MHz band, dated November 9, 1972.

That is about to change. The FCC is now accepting and processing applications for FM broadcast stations in the Mexican border area subject to a new agreement between The United States of America and the Government of The United Mexican States relating to the FM broadcasting service in the band 88-108 MHz.

The major changes in the new agreement are the inclusion of a method for developing allotments based on contour protection, similar to Section 73.215 of the FCC rules, and the establishment of new station classes, including a 6 kilowatt Class AA. There are a number of other changes in the new agreement; many of these changes eliminate

ambiguities and more closely align the agreement with the current FCC rules.

Figure 1 (on page 12) shows some of the significant provisions of the new agreement, compared to the previous agreement and to Part 73.

New spacing requirements

The spacing requirements under the new agreement are generally relaxed compared to the old agreement, although they are generally still more stringent than Part 73. Many of the minimum distance separation requirements have changed, as shown in New Station Class Definitions. The new agreement recognizes and defines the subclasses AA, B1, C1, C2 and C3. The class definitions found in the new agreement are generally the same as those presently contained in Part 73. The only differences are that Class AA in the new agreement is



Country's
Role in
Shaping Radio
Detailed at
Museum of
Broadcasting.
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Radio
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equivalent to the 6 kW Class A under Part 73, and the reference height for Class C1 in the agreement is 300 meters, rather than the 299 meters specified Part 73.

The Class A defined in the new agreement is equivalent to the old (3 kW) FCC definition of Class A. Interestingly, class

contour distances are not specifically defined in the new agreement; under FCC Rules, effective radiated power is sometimes reduced, based upon maintaining a 60 dBu class contour.

Under the new agreement, only protected
continued on page 12 ►

Satisfy EEO Mandate Using Minority Colleges

Part IV of V

by Thomas Pear

WASHINGTON As the next cycle of licensing renewals quickly approaches,

stations may want to take advantage of predominately minority colleges as a way of beefing up women and minority personnel counts.

As part of the renewal process, the FCC will scrutinize each licensee's women and minority recruitment efforts.

When assessing minority recruitment efforts the FCC not only assesses licensees' effort, but also their successes. Just sending a routine job-announcement post card to a couple of minority organizations is not

likely to favorably impress the FCC, especially if the postcard does not generate any job applicants.

The purpose of the EEO exercise is not to just go through the motions, but to get results. So what broadcasters should be looking for, then, are sources which can be relied upon to produce a steady stream of talented minority job applicants ready to work in all areas of station operations.

Minority colleges

Recruiting at predominantly African-American universities can help stations improve their EEO performance and help them find talented personnel ready to work in all areas of station operations.

Commonly known African-American universities like Howard University in Washington provide a vast supply of minority applicants and are seeing more visits from radio station personnel recruiters.

"We have more this year than ever before, but hardly enough." Howard University Career Coordinator Carol Dudley said.

Other minority schools

Other not so commonly known African-American schools like Norfolk State University (NSU) in Norfolk, Va., and Florida A&M University in Tallahassee, Fla., also welcome recruiters and provide a vast supply of FCC-approved

EEO applicants, but many remain unvisited by radio station personnel recruiters.

Florida A&M University, for example, offers both on-campus and off-campus recruiting of its students to potential employers, but has seen minuscule interest from radio stations.

"I have 500 companies recruiting on campus, and not one of them is a radio station," Florida A&M's Career Services Director Dr. Thomas Haynes said.

Haynes, who recently has been working with a radio consortium in Tallahassee, believes stereotypes contribute to the lack of radio station interest in career recruiting programs at African-American universities.

One typical stereotype that permeates the radio industry, Haynes said, is that African-American students are only interested in working for urban stations that air music which appeals to them.

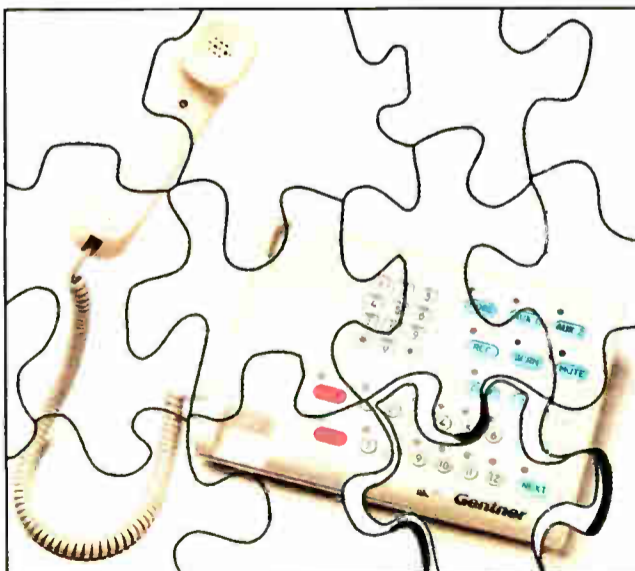
But that is just not the case.

"Students are interested in the professional
continued on page 7 ►

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World Radio History

NEWSWATCH

Broadcast Electronics Acquires Marti Electronics

QUINCY, Ill. Broadcast Electronics Inc. Sept. 26 announced its purchase of Cleburne, Texas-based Marti Electronics Inc.

Marti Electronics will become a division of Broadcast Electronics. Its co-founders George Marti and M.E. MacClanahan will remain with the company for an undetermined transition period.

George Marti was also the president of Marti Electronics.

Marti Electronics is known for pioneering the remote pickup unit, which is a portable transmitter that allows radio

broadcasters to send live remotes from various local locations to their respective studios. Marti Electronics is also a major supplier of radio station studio-to-transmitter links (STLs).

Marti's sales operation and customer service operation will continue to be handled through the Marti staff and distributor network.

Broadcast Electronics is a subsidiary of Concord, Mass.-based Cirrus Technologies. The company specializes in the manufacturing of transmitters and other types of radio equipment, including studio consoles and console accessories, digital audio storage and automation systems. Broadcast Electronics

Spokeswoman Kim Winking said.

Marti Electronics will complement Broadcast Electronics' lines of radio broadcast equipment and systems. Broadcast Electronics President Jack Nevin said.

1994 Communications Act Reform Fails

WASHINGTON There will not be comprehensive telecommunications reform this year.

Although the Senate Commerce Committee last August voted in favor of the bill, also known as the 1994 Communications Act, Sen. Ernest F. Hollings (D-S.C.) decided, with the committee's approval, there was just too much opposition on the Senate floor and from long distance companies for the

bill to pass.

"The lead co-sponsors of the bill and I have come to an agreement that there is simply not enough time left in the session to overcome their opposition," Hollings said in a written statement.

The current congressional session is scheduled to end Oct. 7, and a new session will not begin until January, after the November elections.

The bill would have affected most of the telecommunications industry, including radio.

Clinton Deregulates Radio Lease Ads

WASHINGTON President Clinton Sept. 23 signed new legislation ending lengthy disclosure requirements for advertising consumer leases on radio.

The new regulations, which will primarily affect auto manufacturers and dealers leasing automobiles, allow advertisers to refer consumers to toll free phone numbers and print ads to fulfill the complete leasing disclosure requirements mandated by the Consumer Leasing Act. ☺

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Chairman Chides Industry

by Thomas Pear

WASHINGTON Although communication companies say they want the FCC to deregulate the industry and to advance competition, they advocate regulating their competitors out of the market, said FCC Chairman Reed Hundt.

Hundt spoke at a recent Network Economy Conference luncheon.

"A year ago conferences like these were filled with the rhetoric of removing government from the communications revolution," the chairman said to more than 400 luncheon attendees. "It turned out you were kidding. You didn't mean it. You keep asking us to do things."

As an example the chairman cited the case of telephone companies entering the cable television market via phone lines.

"Everyone agrees the telcos (telephone companies) should be able to compete against cable," he said. "But the cable industry has asked the FCC to reject virtually every application that has been filed by telephone companies to develop video dialtones.

Broadcasters are just as guilty as the wire companies of trying to have their competitor thrust into regulatory oblivion, the chairman noted.

When Digital Audio Broadcasting (DAB) proponents lobbied the FCC to bypass radio stations and allow direct DAB broadcasting via satellite, broadcasters, with the assistance of the National Association of Broadcasters (NAB), cried foul.

"Broadcasters have been lobbying hard to make sure the commission doesn't just step aside and let digital audio services begin to be delivered by satellite without considering the impact on terrestrial broadcasting," he said.

Hundt admitted, however, that there is some confusion about the federal government's exact role in the rapidly changing communication industry.

But the chairman tried to clear some of the confusion by noting that the business of government is to regulate in a way that fosters competition.

He noted competition will not come by itself. It has to be fought for and "like all fights worth fighting, it has to be won."

He said the FCC's role in increasing competition is threefold: introducing competition into every market, ensuring consumer choice and encouraging companies to explore markets previously closed to them.

For example, to help communications companies lower costs, the FCC is reducing the paperwork required to raise an antenna.

"We are changing the technique so that we will be able to reduce the number of registrations and the number of licenses that are necessary from 850,000 to 70,000, saving us time and you money."

Planned FCC Move Mired in Red Tape

by Thomas Pear

WASHINGTON The General Services Administration (GSA), a central management agency for federal bureaucracies, recently (Aug. 15) signed a lease to expand a FCC move to a new development in southwest Washington, known as the Portals, from 287,000 sq. ft. to 450,000 sq. ft.

The FCC is now awaiting approval from the House Public Works and Transportation Committee and the Senate Environment and Public Works Committee to lease the additional space.

Although the FCC has already leased the 287,000 sq. ft. space, with Congressional approval, the 1959 Public Buildings Act requires that the lease expansion needs another round of approval from the two congressional committees, said Elliot Levitas, an attorney representing the Portals principle developer Republic Properties.

Levitas also is a former Georgia congressman and the former House Public Buildings subcommittee chairman. The Public Buildings Subcommittee is under the auspices of the House Public Works and Transportation Committee.

Each committee must pass a resolution approving the 20-year lease that will cost the taxpayer somewhere between \$250 million and \$300 million, Levitas said.

Increase efficiency

The move should improve FCC efficiency because it will consolidate the agency in one location, said FCC General Counsel Bill Kennard. A more efficient FCC would be welcomed by radio stations ready to undergo the license renewal process, he added.

"The FCC has a serious space problem because our headquarters (located on M Street in northwest) is located in Washington, D.C., but we're not consolidated in one building," Kennard said, adding that the massive federal agency is now housed in five different buildings.

"It creates a serious efficiency problem when your people are scattered all around."

The lease follows a series of legal battles over a GSA attempt to break an initial agreement to lease 290,000 sq. ft. at the Portals development, even though the Portals contract was procured through a competitive bidding process.

Court records revealed

Court records reveal that the FCC initially wanted to move into the Warner Theater building, which is near the agency's current location. In December 1991, the FCC requested that GSA award the lease to Warner.

But to the FCC's chagrin, GSA rejected leasing the Warner Theater Building in favor of leasing the Portals because the Warner lease would cost the taxpayer approximately \$150 million more than the Portals lease and because the Warner lease would exceed money allotted by Congress for an FCC lease agreement.

The FCC then raised its space requirements from between 286,000 feet and 305,000 sq. ft. to 335,000 sq. ft. The FCC then pressured the GSA to break the Portals lease agreement under the pretense that the 290,000 sq. ft. agreement would not provide enough office space for the FCC.

But Levitas charged that the FCC did not want to leave behind amenities of its current Washington location like easy

access to restaurants and attorneys who do business with the FCC. Because of the broken Portals lease agreement, Republic Properties filed a lawsuit in The U.S. Court of Federal Claims in Washington.

Court records document that the FCC was willing to make a space requirement exception for the Warner Theater building, which would have provided 288,000 sq. ft. of leasing space, or 2,000 sq. ft. less space than the Portals. Court records reveal that the FCC was willing to "deal with additional space needs later."


Court records also reveal that the Warner Theater building is in the same section of Washington as the FCC's current building, creating easy access to the amenities the FCC currently enjoys.

In February of 1990 the FCC petitioned GSA to restrict lease offers to a location in "close proximity" with "the offices of the communication industry representatives." Additional court records note that "the Warner Theater building lies within the revised area requested by the FCC."

The claims court found the FCC's lack-of-space argument to be a "pretext" and ordered GSA to continue negotiations for the Portals lease, and the decision was later upheld by the U.S. Court of Appeals for the Federal Circuit in Washington.

Despite the court rulings, Kennard strongly disagreed that location near amenities was an issue.

continued on page 7 ▶



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The Allure of Baseball and RDS

WASHINGTON The baseball strike may have killed this year's World Series and broken the hearts of many fans, but Fox 97 in Atlanta is betting that baseball's allure will add dimension to its morning drive show—which already features Randy and Spiff.



The Atlanta Braves pitching coach, Leo Mazzone, is adding sports color and commentary as well as his insider's perspective to the show. Mazzone has been a member of the Braves' coaching staff since 1990, but he is a veteran of the bullpen, working his way up the coaching ladder through several minor league teams of the Braves organization.

Even if you are not an oldies fan, you might be tempted to listen in on Fox 97's morning show—just because you like Leo, or because you like sports. It will be Randy, Spiff and Leo's responsibilities to keep the listeners there once they tune in.

Not to mention that involving one of the city's most important sports franchises with the station involves the station with the community.

★ ★ ★

The reverse of course, is involving the listener with the station. And the list of how to effectively do just that is almost as long as radio's history. But, over the weekend, I had the chance to sample one new technology that should be added to that list: RBDS/RDS.

I recently had to return my Sony home tuner to its rightful owner (my brother-in-law) and decided to go for Denon's state-of-the-art TU-380RD home tuner to replace it. After all, if I want to honestly

write about radio, I need to be able to sample all that radio can be.

In Washington, only four stations are using RBDS/RDS, and of those four, only one is using it effectively thus far.

It surprised me to discover that noncommercial station WETA(FM) was the only station really exploiting RBDS. And its tactic is quite straightforward: WETA promotes its programming. The message changes constantly, promoting upcoming program and event information.

What I liked about it (besides the nice, clean sound generated from the tuner through an old Onkyo integrated amp and out to my old pair of baby Advents, and the strong reception of stations even though my condo faces west, away from the D.C. metropolitan area and most of the local broadcast towers to the east of my building) is the tease of what is to come.

I succumbed to RDS. I found there was no need to sample the other stations because I knew X, Y or Z artist or program was coming up in 10 minutes. I had



Now you can "watch" radio with a Denon RBDS/RDS home tuner.

fun waiting for the new messages to scroll by—and was pleasantly surprised at how often WETA changes the text. I know if any of the commercial stations

had been doing the same kind of program-promoting on their carrier, I would have been less likely to sample any of the commercial stations that weren't doing RDS—and get snagged by someone else's music rotation.

Most folks have only a handful of stations they listen to on a regular basis.

And really, maybe one or two stations they listen to the majority of the time. Imagine if you could lure your listeners into staying with you, for longer and longer stretches of time, by tempting them with upcoming programming bits. TSL through the roof!

Second that with the reinforcement of commercial messages with something a la CouponRadio, and you have the makings of an even more powerful audience

response to your call sign. Ahh, technology.

★ ★ ★

But back to programming for a minute. If you number among those that claim radio is not as good as it used to be, Italy would dispute you. An American radio

entry to win a prize since 1979. It was originally broadcast on National Public Radio as part of the "American Private Investigator" series and was recorded in Kunstopf binaural 3-D sound.

According to the Corporation for Public Broadcasting's Eloise Payne, the Special Prize is awarded to programs for overall quality. Because of the way "The Maltese Goddess" is recorded, listeners with headphones are able to hear the sound inside and all around.



Robert J. Leacock has been promoted to head the new division, Applied Engineering & Construction, at New Glarus, Wis.-based Broadcast Communications. In his new role, Leacock will be responsible for wireless systems engineering and integration in North America. Leacock was formerly with LeBlanc Royal, an international tower manufacturer, and was a manager for subcontracting and field services.

Dave Burns has rejoined Harris Allied as radio studio product manager. Burns was most recently an independent broadcast product and marketing consultant. He was previously employed by Harris Allied from 1978 to 1991 in a variety of sales and marketing positions.

Christine Gabor has been named director of marketing for the broadcast division of The Associated Press. Gabor will handle market planning, product strategy and sales for AP's radio and television services. She was previously a senior associate at Coopers & Lybrand Management Consulting in Washington.

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Give credit to originator

Dear RW,
Regarding your feature on WDRE(FM), Garden City, N.Y. (RW, June 29), WDRE is to be congratulated for its success in marketing its alternative music format through visionary technical and program management.

However, I take exception that Tom Calderone takes credit for listenership in the early '80s on the 92.7 FM dial position. Programming on the frequency prior to 1988 was provided by WLIR, a separate entity to which WDRE has no claim. The alternative format that WLIR first created in 1982 was much more adventurous a move for its time, and Program Director Denis McNamara, Station Manager Elton Spitzer and a staff of talented WLIR DJs who made the station truly a pleasure to listen to should be credited for building part of the alternative music listener base WDRE now shares.

The article was a bit unclear on this point, and I believe in giving credit where it is due.

Joseph B. Schepis
Scarsdale, NY

Beware of thefts

Dear RW,
Alan Peterson's column in the Aug. 10 edition of RW about radio station thefts reminded me of a bizarre situation that happened several years ago at a station where I worked.

The station, an AM/FM located in the southeastern part of the country, began experiencing mysterious thefts soon after I began working the overnight shift on the AM. There was seemingly little rhyme or reason regarding what was stolen or how or when. A secretary had a hole puncher taken off the top of her desk. The engineering department had to replace several of the little Radio Shack amplified speakers used in various places

as monitor amps. T-shirts, records and even carts disappeared. My own personal losses included a decrepit black and white TV which used to keep me company on overnights and a single speaker which I had tucked away out of sight (I thought) on top of a shelf; unfortunately, not out of reach of Mr. Thief.

Locked offices, desks and closets did not deter the thief. Paranoia spread among the management and staff of the station. Harsh penalties were imposed for unauthorized after-hours visitors, and alarms were installed on all outside entrances. The management even forbade use of the loading dock door, which was a royal pain for those of us doing remotes. The thefts continued.

The capper came with the disappearance of 13 Sony AM stereo radios from a locked closet. Shortly thereafter, the station got a call from the local police asking for information about one of our employees and, by the way, were we missing anything? Seems the individual in question had attempted to unload 13 radios at a local pawn shop which attracted the attention of police officers watching for traffic in stolen goods.

Our thief turned out to be one of the weekend part-timers, an average so-so disc jockey who was popular with the PD because he was almost always available for last-minute fill-ins. He had apparently been able to get copies of the keys to almost every lock in the building, perhaps by making wax impressions of keys left carelessly lying around. The long weekend airshifts that he worked were ideal for loading his car with whatever he felt like taking. Most of the items stolen were never recovered, although the hole puncher was found in his car's trunk.

Of course, the fellow was immediately terminated and reportedly prosecuted by the management, although we never knew if he was convicted. Some months later I heard him pulling a weekend airshift at another station in the market, and I had to wonder if his new employer was aware of his background and if he was continuing his second career as a petty thief.

Allen Sherrill
Chief Engineer
KOIL(AM)-KKAR(AM)-KQKQ-FM
Omaha, NE

Chasing phase inversion

Dear RW,
Mark Durenberger's letter in the Aug. 10 RW brought back memories of days gone by.

I am very familiar with the Freeman Effect. It was first identified and documented at KIIS in Los Angeles, when midday personality Paul Freeman kept complaining that the mic wasn't working when he went on the air. He could talk or yell as loud as he wanted, and he heard everything in the headphones except his voice. Yet everyone else heard him just fine, and the airchecks sounded normal. KIIS, at that time, had both Moseley PCL-303 and PCL-505 STL systems. When Paul told me the problem only happened on one of the two systems, I

Minority Colleges: A Radio Resource

Over the past few months, Radio World has published a series on license renewal. Within these various installments there has been a recurring theme: Minority employment is a desirable practice in order to meet the EEO (Equal Employment Opportunity) requirements of the FCC.

Over the years, stations that have been cited for EEO violations have claimed that they did not have an adequate pool of qualified candidates from which to hire minori-

ties. Depending on where the station was located, that may or may not have been the case. But if stations fully explore all sources of possible minority employees, they should be aware that minority colleges offer hundreds of talented, ambitious prospects who would be glad to work in the radio industry. Many of these students are already trained in various aspects of broadcasting—whether it be technical, news or copywriting.

Some radio stations actively recruit on minority college campuses. Here on our own doorstep in Washington, for example, Howard University reports that more radio stations have sought African-American students as employees this year than in any other. However, Howard University Career Coordinator Carol Dudley said the recruiting effort is very small when compared to other industries. Officials from other minority colleges, such as Florida A & M and Norfolk State, said their schools also are under utilized when it comes to radio.

The schools said they are given a number of reasons why stations shy away from minority schools, such as a perceived stereotype that African-American students only want to work at urban stations. Such a stereotype is not true, school officials insist, but it still persists.

Whatever the reason radio stations avoid recruiting at minority colleges, it does not make sense. Radio stations should not overlook any potential source of employment—especially minority colleges. Station management should go to the schools to see what they have to offer. Such a move will not only keep the station within the letter of the law but also gain them good employees.

—RW

New furniture vendor

Dear RW,
Thanks for printing your helpful "Resource Guide to Furniture" (RW, Aug. 10).

Your readers will want to know about a new source of studio furniture and wood equipment racks. Panascheme Inc. is based in Maryland and has extensive experience in providing services and furniture for other industries, including the concert touring business.

Panascheme now has a line of modular furniture for radio and TV stations that can be shipped affordably anywhere in the United States. Bradley Broadcast sales is the exclusive broadcast distributor. Readers can get more info by calling 800-732-7665.

Thanks again and congratulations on RW's increasing sophistication and usefulness.

Paul J. McLane
Marketing Mgr.
Bradley Broadcast
Gaithersburg, MD

though I had another crazy air person on my hands. It was after reviewing the schematics of the systems that I realized one of them had an extra phase inversion. That led to the discovery of the cause of the problem. KIIS immediately installed a DPDT switch wired as a phase inverter in the mic circuit, and that took care of the problem for the most part. The amount of Freeman Effect that takes place depends on the headphone gain, phase rotation in the equipment, as well as other less obvious variables. But most of the time, flipping the mic phase will produce an improvement in on position or the other.

Shortly after the discovery, I wrote a short article for Radio World about the phenomena and what I'd found to address it, and that was the source of the name.

I've learned that when a personality makes comments such as "I can't cut through the music" or "I can scream and not hear myself," it's time to have them flip the switch and try again.

Mark's letter comments that the change in phase may take some getting used to, that it may be a while before the personality appreciates the change. My experience has been that the change is immediate and noticeable. Interestingly enough, different personalities prefer different settings.

In any event, the legendary Paul Freeman made us very aware of the need to address the effect, for better or worse, and his name will live forever wherever disc jockeys can't hear themselves.

Michael Callaghan
Chief Engineer
KIIS AM/FM
Los Angeles

Radio World

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November 2, 1994



Dear Radio World...

Use of Digital Spot Delivery Increases

by Alan Haber

WASHINGTON Remember when "I'll send it to you later" was akin to "The check is in the mail"? Well, if you're trying to stay competitive in your market, it does you no good to have to wait for commercials to arrive at your door by (hopefully) overnight delivery, or by a courier that takes hours longer than necessary to find your building and deliver that familiar white box.

It's great if "the check is in the mail," but if it doesn't arrive on time, it doesn't do your station a whole lot of good.

Digital delivery has made it easier than ever before for stations to receive commercials and traffic instructions. Regardless of whether spots are delivered over dedicated ISDN or other phone lines, or by satellite, they're delivered quickly (within as little as an hour after an order is placed by an advertising agency or production house). Spots arrive without the need for station personnel to be present. They are stored on a hard drive for later retrieval, and sound great. And digital delivery is extremely affordable and allows your traffic and production departments to operate more efficiently.

San Francisco-based Digital Generation Systems Inc (DGS), has been delivering commercials digitally to radio stations since July 1993; the number of stations on the company's multimedia network now numbers over 1,100. Stations, which become part of the network when advertisers identify them as targets, or when they call DG Systems directly, need only install a dedicated phone line and connect it to a Receive Playback Terminal, supplied by the company.

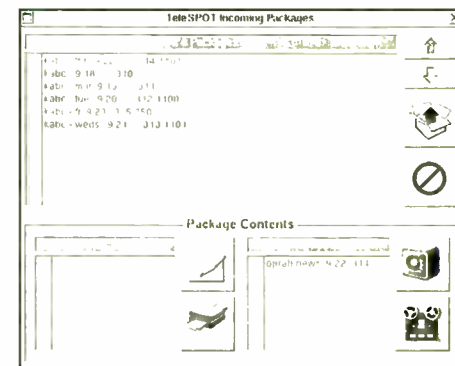
The one-piece terminal, which features a small built-in monitor, a hard disk, and proprietary software, is loaned to stations

by DG Systems; traffic instructions are sent via fax.

Different levels

DG Systems offers its clients, which include advertising agencies and production studios, different levels of service, which fit their varied needs (for example, some spots may not be time sensitive, and some clients may be price sensitive).

Commercials can be delivered to radio



IDB's TeleSPOT sports a user-friendly graphical interface.

stations in as little as four hours from the initial client request. Of course, this benefits stations, which require timely delivery of all spots.

The advantage of delivering commercials digitally, according to Ann Marie McGee, DGS director of marketing, is quality. In fact, she said, "The quality we provide is better than CD quality."

According to the company's press materials, "stringent error correction" is provided, as are computerized logistical controls.

Topical content

IDB Communications Group is offering the TeleSPOT commercial delivery service to 33 radio stations in Los Angeles and 26 stations in San Francisco. The service was acquired in March of this year from Sonnet Communications Inc. IDB provides to radio stations a dedicated 56 kilobits per second (Kbps) phone line. CD-quality commercials (uncompressed) can be delivered to stations in as few as four hours; by employing high-quality audio compression (such as MUSICAM), commercials can be delivered in minutes.

Traffic instructions are attached to the audio file, and are automatically printed out when sent (IDB provides stations with an Hewlett Packard inkjet printer).

IDB's primary clients for TeleSPOT are television stations that are producing topical spots (referencing current events, for example) and want to get them on the air on radio stations quickly. Brian Heimerl, spokesman for IDB, gave the example of Los Angeles independent television station KCAL-TV. "They live and die by their local news," he said. Before they signed on with TeleSPOT, he noted, "they were having to purchase broadcast loops" for the radio stations they were targeting with their commercials, "...or use very expensive direct messenger services."

TeleSPOT enabled the station to send a commercial to IDB's Los Angeles hub (there's another hub in San Francisco), and have TeleSPOT send the commercial to a designated radio station—all in under 14 minutes total.

Radio stations, which sign on with TeleSPOT at the suggestion of the service's

continued on page 9 ►

From San Francisco to Singapore From New Zealand to New York

CCS Audio Codecs Connect the World



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- ISO MUSICAM[®] Compression



CDQ1000

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Circle (128) On Reader Service Card

Satisfy EEO Rules Through Colleges

► continued from page 1

aspects of a station and not just if the music appeals to them," Haynes said. "Some of my students work for a country station."

Haynes believes radio stations, like television stations, should go beyond mere recruitment and become involved in helping students to develop broadcasting skills by offering student internships.

Internships give radio stations an opportunity to identify and develop relationships with talented students and allow stations to have a role in training students for today's radio industry, Haynes noted.

Haynes also recommends that stations develop working relationships with the faculties and career placement employees of African-American universities because they can link stations with qualified students.

"The whole key for recruiting African-Americans and other ethnic groups is the

establishment of relationships at the university level," he said.

Initiating relationships with African-American universities to recruit students is relatively easy. Norfolk State University officials said the school is willing to work with recruiters to establish a campus visitation date to interview students looking for employment in the radio industry. NSU Director of Career Services Benjamin F. Ellis, Jr. said.

After the employer and university determine a visitation date, qualified students are notified and can sign up for 30-minute interview time-slots. Recruiters can also request longer time slots to interview students.

The university has the ability to host six recruiting companies on any given

day, Ellis noted.

"We have six interview rooms as a part of the program," he said.

Haynes and Dudley said their universities have similar on-campus recruitment programs.

Recruitments fairs

In an effort to take on-campus recruiting a step further, many African-American universities usually hold student recruitment fairs. Florida A&M will have a career expo Febuary 1 and 2. The expo will include all majors at the university, giving recruiters an opportunity to fill any vacant positions at their stations.

Howard University is having a student job fair October 20 and 21 that will bring in women and minority students from universities across the country. The university

will accept recruiter reservations up until the fair.

"We try not to turn anyone away," Dudley said.

Norfolk State University just had a career expo earlier this month and will have another one next fall.

All three universities, however, do not require a campus visit in order for radio stations to recruit students. Stations can also recruit students through each university's off-campus recruitment program. Stations merely send the universities a description of available positions, and the universities in turn will send the stations filed resume copies of qualified students.

Besides keeping a resume file of its current students, Florida A&M also maintains an alumni data bank. The alumni data bank assists stations recruiting for positions that require a degree and several years of experience.

□ □ □

Stations can reach Haynes at 904-599-3700; Ellis at 804-683-8462 and Dudley at 202-662-7145.



FCC Plans Eventual Move

► continued from page 3

"The chairman and the commissioner... their sole goal was to get everyone in one building," he said.

Also, the additional space agreement was negotiated into the Portals contract after the court rulings, so the FCC could move its entire operation to the one location, although the Portals development will house the FCC in two buildings.

A new home

The first building, dubbed Portals I, is already finished and houses other feder-

go," he said.

One proposal in front of the GSA would have FCC employees starting their move to the building this spring and continuing the moving process until the spring of '96.

But Kennard believes that option is not a feasible way of conducting the move.

"It's kind of disruptive to have 20 percent of our staff there in the spring and then waiting for them to finish the construction of the (second) building to move the rest of our people," Kennard said. "Our first option would be to have



Artist model of the Portals, future home of the FCC

al tenants, including the Federal Aviation Administration and the Department of Education. It includes amenities like larger conference rooms, a day care facility, a health club with a weight room in it, a cafeteria and state-of-the-art security.

The other building, Portals II, has not been built yet. It will be specifically designed for the FCC, and it is scheduled to be completed approximately 18 months after GSA awards Republic Properties a lease agreement for the Portals, Levitas said.

Depending on congressional approval, construction could happen within the next couple of months, Levitas said.

Republic Properties could also push itself to begin construction sooner than that, Levitas said. "They're raring to

them finish building Portals II... and then moving most of the agency there at one time."

The FCC hopes that the state-of-the-art Portals II building will persuade hi-tech companies to relocate nearby, giving the FCC the opportunity to interface hi-tech researchers.

"Ideally, the chairman's vision of our new location would be to have a hi-tech multimedia center that the FCC would be the nucleus of," Kennard said. "We would attract lots of companies that are interested in what we do, to the area."

GSA employees negotiating the lease did not return several phone calls from RW. The only GSA comment came from spokesman Steve Guiheen. "We are working on implementing the court's order," he said.

FCC to Rewrite EEO Guidelines

WASHINGTON In a Sept. 26 address to the Network Economy Conference, FCC Chairman Reed Hundt said the FCC will pursue simplifying EEO hiring requirements to streamline the licensing renewal process for radio stations.

"In connection with broadcasting one thing we are trying to do is take a new look at more effective, more efficient and more result oriented EEO and EEOC rules," Hundt said. "Often that issue gets raised at renewal time."

Hundt also said simplifying EEOC requirement would "reduce the burden" on the radio industry.

Currently, radio stations have to fill out two minority hiring assessment forms and if those forms do not pass the FCC muster, stations could then be required to send the FCC a list of all employment positions that became available for a three year period prior to their renewal filing dates, list the race and gender of the applicants for those positions and list the race and gender of all hires for the same time period.

EEO violations can subject stations to a schedule of fines that are upwardly adjustable, reporting conditions and in some cases short term licensing renewal.

If the FCC does rewrite EEO rules, the schedule of fines could be the first to go. An appeals court struck down a similar set of FCC fines, not related to the EEO fines, citing that the FCC did not use the correct rulemaking procedures when it established the fine schedule. The FCC used the same incorrect rule-making procedure when it established its EEO fines.



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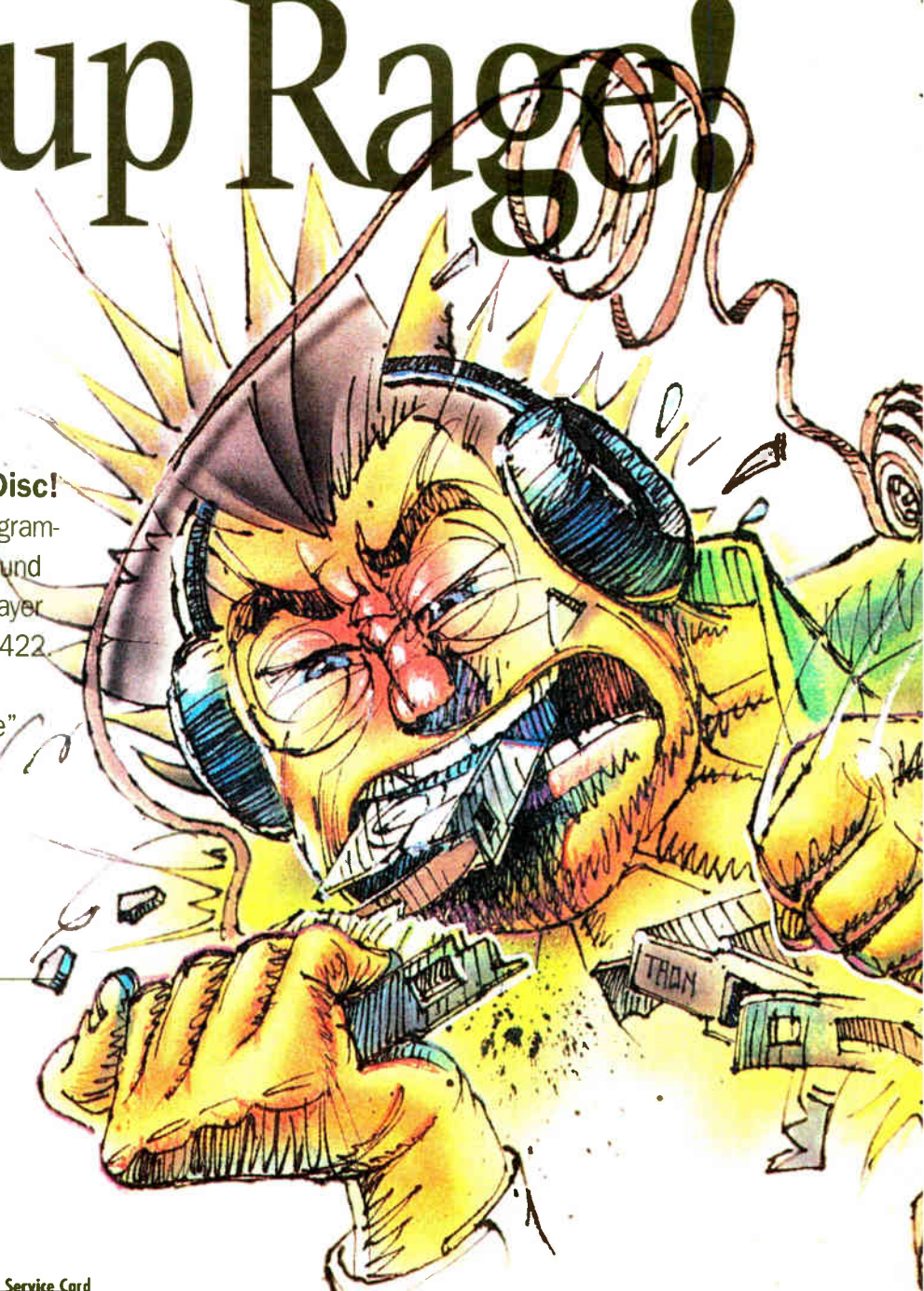
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Transporting Radio Spots

► continued from page 6

clients, receive a terminal from IDB built around the Unix-based NeXT operating system; according to Heimerl, the terminal is "made to run networks." Proprietary software is also provided to stations.

Satellite delivered

The TMX Network, a joint venture between San Francisco-based TransMedia, a commercial production/recording studio, and Media Fax, a commercial instruction trafficking service, digitally delivers commercials in real time to radio stations via direct broadcast satellite—primarily, Satcom C-5 and, alternately, G-Star on the Ku-band (Traffic instructions are delivered simultaneously by fax through Media Fax).

According to Dave Adams, president of TransMedia, the company's goal is to connect as many as 3,000 commercial radio stations to the network within a year. Since the system was launched in January of this year, 120 stations on the West coast, which are targeted by the network's clients (advertising agencies), have come online.

Stations are supplied by the network with a digital audio satellite receiver which does not interrupt any existing feeds they're taking off their C-band dish (the receiver hooks up to the station's dish with a splitter). Stations that don't already have a C-band dish are supplied with a Ku-band dish. Stations also receive a DAT recorder, to which commercials are delivered, within two hours.

Adams says delivery is made by satellite rather than phone lines "Because of real-time consideration. The amount of volume that can be handled in a telephone situation is drastically reduced."

From due north

Digital Courier International (DCI) will be offering digital delivery of CD-quality commercials and various short- and long-form programming elements over telephone lines later this year (the system, which just underwent a successful alpha technical test in Canada, was unveiled to the North American market at the recent NAB Radio Show in Los Angeles). DCI is a division of MPR Teltech, a Vancouver, British Columbia-based advanced telecommunications company, which is owned by British Columbia Telephone.

Delivery on the network can be accomplished in as little as one hour, Mark Burns, marketing specialist, said that DCI is a two-way network that will move "digital compressed ultra-high quality digital audio with text from point to multipoint." He said that DCI is not "a distribution hub...everyone (on the network) is a distributor and a receiver with equal power," meaning that commercials received by a station can be sent to other stations on the network.

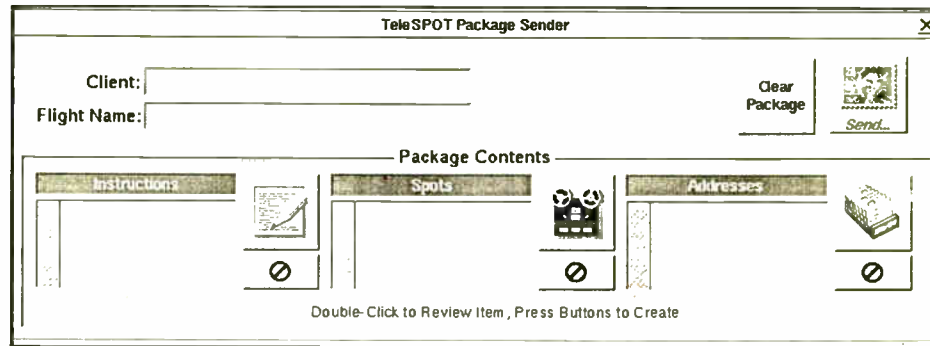
DCI supplies stations with a PC-based terminal with between three and a half to four hours of real-time audio storage, as well as the best telephone line available in each area (ISDN (2B+D), Switched 56, or regular phone line), and proprietary software that runs within the Microsoft Windows for Workgroups interface (also supplied). The only cost to stations will be an as-yet-undetermined small subscriber fee, which will cover the cost of the telephone line.

Burns noted that he considers both senders (production houses and advertising agencies) and receivers (radio stations) to

be DCI's clients. Stations can be referred to the network by senders, or can contact DCI directly. Burns said that the advantages of delivering commercials digitally over telephone lines are sound quality and dependability; he noted that traffic instructions are permanently attached to the sound file. He also said that DCI will be using six to one ISO/MPEG Layer 2 compression, which will allow stations to match with digital audio radio when it arrives.

Telephone delivery

As for why DCI decided to deliver by telephone lines rather than satellite, he said "Material flows just as well over the



DG Systems' Record Playback Terminal (center right) fits easily into a radio station studio configuration.

phone lines, and you can have phone lines in any area."

Steve Howard, operations and program director for WPCV-FM and WONN (AM) in Lakeland, Fla., listed

the elimination of tape hiss and the possibility of the dubbing deck exhibiting a slightly different speed than the playback deck as benefits that digital delivery of

continued on page 11 ►



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FIRST IMPRESSIONS

Group Heads Impressed by DAB Demo

by Judith Gross

NEW YORK When it rains it pours in new developments in DAB...and in a single week recently, there were three major developments on the DAB front including the first full-blown mobile demo of USA Digital's IBOC (in-band, on-channel) FM.

Simultaneously with an overwhelmingly successful demo for a select group of top officials in the radio industry, controversy flared and then abated over the EIA's methods of testing multipath. Meanwhile, word spread that major electronics industry manufacturers were forming a caucus to foster their interests in DAB in regulatory and other areas.

All three related developments came on the heels of news about DAB IBOC tests of both USA Digital AM and FM systems (reported in **RW** last month). The FM has undergone tests on the CBS-owned WBBM-FM in the windy city and the AM on a Group W experimental station in Cincinnati.

But the big question remained: was it ready to show to the world?

IBOC is here

For both systems the answer is: apparently yes. USA Digital representatives flew a hand-picked group first to Cincinnati to hear and observe the AM system perform. They were NAB Radio Board Chairman Doug Wheeler; board

member and DAB Task force chair Alan Box of EZ Communications; board member Randy Odeneal of Sconnix Broadcasting; NRSC DAB subgroup

"It surpassed every expectation I had."

—Alan Box
EZ Communications

chairman Charles Morgan of Susquehanna Broadcasting and NAB Science and Technology Senior Vice President Michael Rau.

From Cincinnati, the group flew to Chicago, for the first mobile demo of the

FM DAB over WBBM-FM.

"We drove all around, under bridges and overpasses, downtown, under the ell, in among buildings and the digital system performed well—at times better than the analog. We had one minor glitch that lasted only about a second. Otherwise, the FM performed beautifully," Gannett's Paul Donahue said.

"It surpassed every expectation I had," said Box of both demos. "The AM system was exceptional, it was slightly better than our current FM system. The FM system was perfect,

it was very much CD quality. We drove around Chicago where there was heavy multipath and analog and there was none on the digital system."

"I was impressed. I would call it a definite proof of concept," Rau agreed. "It improved my confidence in in-band AM and FM." Both Box and Rau mentioned the "minor glitch" but noted that the systems developers can correct the problem with just a software change.

"The beauty is that it's software driven," Donahue explained. "By the time the glitch showed up, the development engineers already had a software correction figured out."

Box added that as far as USA Digital IBOC is concerned, "It's definitely ready." And what would he say to skeptical engineers and others who maintain that it can't work? "That's definitely been proven wrong."

Tempest in a test

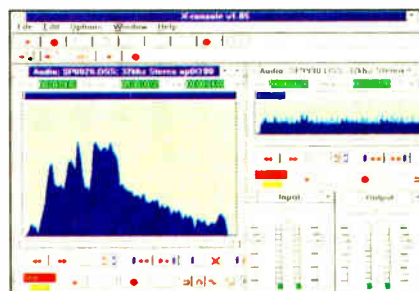
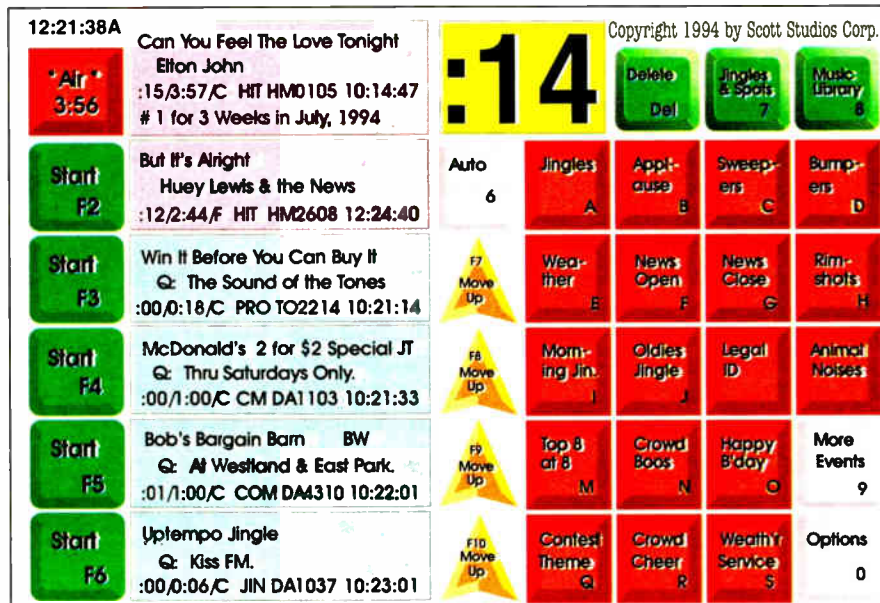
But even while the day of demos was proceeding, a pointed disagreement over how to test multipath pervaded the latest EIA subgroup meeting. It centers on the use of a Hewlett-Packard simulator, a Rayleigh fading model, exactly when certain procedures were decided and by whom, and ultimately what the essence

Touchscreen Plays Music and Spots Instantly from Hard Drive

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Nothing else makes radio as fast or easy as having all your songs, spots, sounders and sweepers start with your fingertip—**always on-line and ready** to play from hard disk. And nothing else is better for fast, exciting radio than the **new Scott Studio System!**

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World's Fastest Requests!

Touch the Music button at the top right of the main screen to see our "Wall of Carts" with 1,000 songs (or more) **on-line!** They're displayed by title, artist, year, length, category, or any way you like. Touch the song you want and Scott Studios' digital audio hard disk plays it **instantly**.

In addition, all your comedy bits, spots, jingles, promos and PSAs have their own "Wall of Carts" so they start immediately. Or, you can pick any unscheduled song, spot, sweeper or promo and put it anywhere you want in today's log.

1, 2 or 3 Touchscreens

Teams of personalities can add touchscreens to share control. Jocks choose whether to handle sweeps themselves or let the Scott System sequence automatically.

Simple and Paper-free

Weather forecasts, live tags, promo copy, contest winners' lists and programming memos automatically pop up on your Scott System's screen. As an option, we can also work with your news wire to update and display selected weather, news and sports copy.

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When spots, promos, PSAs, songs, or any other digital audio events are recorded, they're immediately playable in **all** your Scott System air studios. Nobody wastes time carrying carts down the hall or redubbing spots for additional stations.

Scott Studios will even pre-record your music library from CDs at no extra charge. You choose double- or triple-overlap playback (or more) while recording.

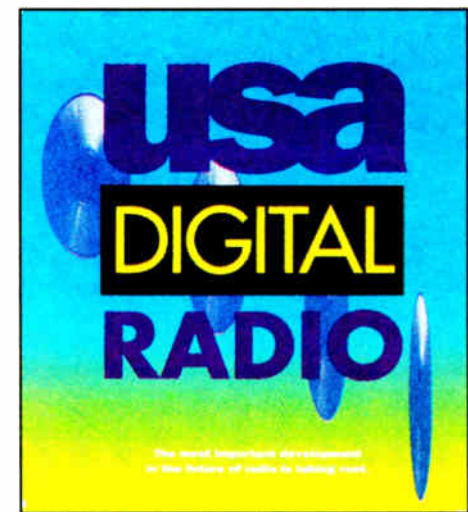
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Scott Systems pay for themselves in increased efficiency on-the-air and in production. Our graphic waveform editor quickly cleans up out-takes and works wonders with big productions.

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of typical multipath is.

In an "I say po-TAY-toe, you say po-TAH-toe" type of argument, USA Digital representatives objected to a multipath test procedure outlined during a July meeting. They maintained that decisions were made during a July meeting they had not been properly notified was taking place.

Bob Culver, who chairs the subgroup doing the tests, and Ralph Justus of the EIA said the discussion about procedures had been ongoing and that a CBS representative was present at the meeting in July.

They also maintained that the Rayleigh fading model, which is fed into a multipath simulator, is appropriate for FM frequencies even though it was developed for 900 MHz frequencies. A sec-

continued on next page ▶

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 ond agreement, over the term "uncorrelated" to describe the multipath reflections centered on whether or not reflections which cause multipath have a mathematical correlation with the original signal's frequency.

"You would never see uncorrelated multipath reflections in a real world situation." CBS Vice President of Engineering Tony Masiello said.

"We find that reflections in multipath generally are uncorrelated," Culver said.

In the end, the basic disagreement was resolved when the subgroup agreed to operate the HP simulator in Direct Mode—using actual site measurement data rather than Simulation Mode, which would have fed parameters into the H-P and allow it to simulate multipath reflections.

What is multipath?

The quarrel over these highly technical issues raises two very important larger questions. First: what is multipath? USA Digital maintains that the method of generating multipath which was ultimately discarded by the subgroup would have resulted in wide flat fading which is atypical of FM radio in general.

The danger? That it would make an IBOC DAB system, which by necessity occupies a narrower bandwidth than an out-of-band system such as Eureka-147, appear to be flawed by creating overly severe multipath which bears no resemblance to the real world.

Culver, Justus and some engineers who are critical of IBOC DAB argue that wide flat fades are typical in FM multipath.

But ultimately, the argument rests on whether or not the EIA tests can be impartial and produce objective data. Recent input into test procedure from Canadian engineers, when Canada has already begun implementing the Eureka system and is actively asking U.S. broadcasters to do the same, has only muddied the waters.

"Canadian engineers have a lot of expertise in digital radio and we'd be foolish not to make use of it," Culver noted. "The bottom line is, we're going to challenge all the systems to see how well they perform, without favoring any one system. They're entitled to their objections, but it isn't going to affect the tests."

EIA caucus

As if that weren't sticky enough, the EIA raised even more question among broadcasters when it announced the formation of a caucus consisting of its largest members, to consider economic, legal, regulatory and technical issues pertaining to DAB. Among those larger members is European electronics giant Thomson, which has a definite stake in the Eureka system.

The caucus is in the early stages, with no agenda yet and the next meeting slated for the January Consumer Electronics Show. The EIA noted that many members had not kept pace of recent DAB developments, and the caucus was formed as members were briefed at the NASA Lewis test center in Cleveland, where DAB lab tests are being done.

Can a trade organization representing one faction of those who will decide the fate of DAB in the U.S. purport to perform objective tests on the one hand and support a caucus of its large members on the other hand?

"Our number one priority is maintaining

objectivity," Culver said. "EIA has no axe to grind. Its members want objective data." Then why the rush to caucus?

"We want to be ready when all the test results are in. The caucus will be set up to evaluate those results," Justus added.

And what happens if all systems perform well, but not exactly in a way that's comparable? Would the EIA ignore broadcasters' stated position to support only IBOC?

"Obviously if broadcasters have a system that they have developed, it would speed DAB implementation considerably if we were all in agreement," Justus said.

□ □ □

Judith Gross runs her own writing/public relations agency, JG Communications, specializing in broadcast and pro-audio technology. She can be reached at 718-392-3288.

Digital Spot Delivery

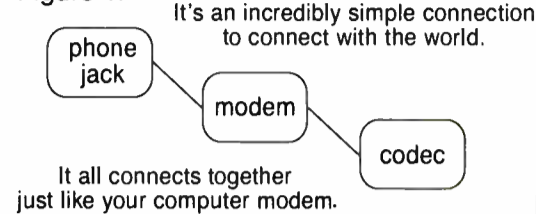
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commercial provides. "Does it get any better than digital?" he asked, adding that he doesn't hear any noise in the digital reproduction.

Howard noted that the digitally-received commercials are played back digitally at both stations. "We use the Arrakis DigiLink automation system on our AM to actually run the automation,

(and) on our FM simply as a very sophisticated cart machine," he said. "So we're totally digital from the time we get the commercial until our listeners hear it."

Figure 1.



Why would anybody put 50 compact discs into something like this?

So broadcasters would never have to so much as touch a CD again. No matter what.

No matter what size their CD library, 100 or 1000. No matter what they want to program for when. No matter what kind of computer equipment they have. No matter what goes wrong with a CD, a player, the changer.

No matter what.

High capacity CD players are all but a must these days, no question of that. How high a capacity, that's a question. Which one's the easiest to load, that's another good question. And what brand is the most reliable, that's probably the best question.

Introducing the 100-CD "Instant Library Change" CD Player/Changer from NSM of Germany.

It's the answer to all those questions. And a lot more.

Put simply, our Model 3101 is the most efficient, totally flexible, all-but-infallibly reliable CD Player/Changer ever made for broadcasters.

The snap-in/snap-out 50-CD magazines are the key.

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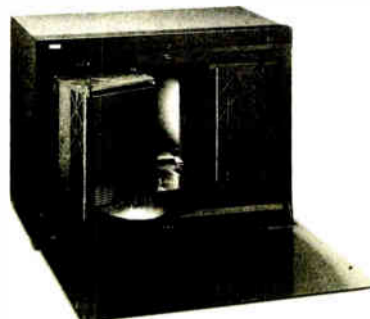
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Circle (103) On Reader Service Card

Border Agreement Affects AM Band

► continued from page 1

contour distances are specified, and these must be used to determine the required

dBu field strength; for Class B stations, the protected contour is based on 54 dBu. Therefore, since the F(50.50) curves are

Power reductions and/or directional antennas can now be used to afford equivalent interference protection to existing facilities or allotments, in much the same way as Section 73.215 of the FCC rules.

The rate-of-change limitations contained in the old agreement and in the rules are absent in the new agreement; however, the 15 dB maximum-to-minimum ratio, which is preserved. This provision should allow many stations in the border area to increase their coverage. In determining the required contour protection, field strength values are calculated in a manner similar to FCC rules. Protected and interfering contours are projected at

standard radials adjacent to the actual azimuth. Azimuths and distances shall be determined to the nearest degree and kilometer, respectively. Rules for rounding are not given. F(50.10) values resulting in distances of less than 15 km default to F(50.50) values. Values of HAAT less than 30 meters are replaced with 30 meters.

The new agreement was signed by representatives of the U.S. and Mexico in Queretaro, Mexico, on August 11, 1992. It does not legally enter into force until both the U.S. and Mexico have exchanged diplomatic notes that they have complied with the requirements of their respective national legislations. Apparently, the Mexican Senate has not yet ratified the agreement, so it is supposedly not yet in force. This is the reason that copies of it

Figure 1.

Item	New Agreement	Old Agreement	FCC Rules
Subcarrier Communication Services	Yes	No	Yes
Assignments based on contour protection	Yes	No	Yes
Station Classes	A, AA, B1 (C3), B (C2), C1, C	A, B, C, D	A, B1 (C3), B (C2), C1, C
Class A definition	3 kW/100 m	3 kW/90 m	6 kW/100 m
Distance calculation	Spherical Earth	Lookup table	Flat Earth
Azimuth calculation defined	Yes	No	No
D.A. Rate of Change limit	No	Yes	Yes

ERP reduction, if any. For station Classes B1 and B, the class contour and protected contour distances are different, since class contours are always based on 60 dBu field strength. For Class B1 stations, the protected contour distance is based on 57

not linear, this may lead to slightly different permitted ERP values.

Perhaps the most significant change associated with the new agreement is the provision for restricted allotments, which do not meet the spacing requirements.

Figure 2.

Class Relation	Co-Channel (0 kHz)	Adjacent Channels		I.F. 10.6/10.8 MHz
		200 kHz	400/600 kHz	
A - A	100 km*	61 km*	25 km	8 km
A - AA	111	68	31	9
A - B1	138	88	48	11
A - B	163*	105	65	14*
A - C1	196	129	74	21
A - C	210	161*	94*	28*
AA - AA	115†	72†	31†	10
AA - B1	143†	96†	48†	12
AA - B	178†	125†	69†	15
AA - C1	200†	133†	75†	22
AA - C	226†	165†	95†	29
B1 - B1	175†	114†	50†	14
B1 - B	211†	145†	71†	17
B1 - C1	233†	161†	77†	24
B1 - C	259†	193†	96†	31
B - B	237*	164*	65†	20*
B - C1	270†	195†	79†	27
B - C	270	215†	98†*	35*
C1 - C1	245	177	82	34
C1 - C	270	209	102	41
C - C	290†	228†*	105	48

* Separation distance less than required in old Agreement.
† Separation distance greater than required in Part 73.

field strength levels appropriate for the classes of stations involved. The protected contour is based on an F(50.50) value; interfering contours are based on F(50.10) values.

The protected and interfering contour field strength values to be used are the same as those specified in Section 73.215. Only the eight standard radials may be used for determining HAAT.

When it is necessary to protect an assignment that is not along one of those radials, one must interpolate between the two

are extremely difficult to come by; our repeated requests for a copy from the Commission were denied.

However, several FCC staff engineers have indicated that applications for new facilities pursuant to the new agreement are being accepted and, conversely, applications not complying with the new agreement may be restored.

□ □ □
Robert Weller is an engineer with Hammett & Edison Inc. Consulting Engineers, based in San Francisco.

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Book Outlines Oklahoma Radio History

by Harry Heath

STILLWATER, Okla. Every state should be so lucky.

With the book "Voices on the Wind: Early Radio in Oklahoma," broadcasting veteran Gene Allen has crafted a profusely illustrated history that is likely to be the envy of broadcasters and scholars throughout most of the nation.

There are several adequate histories of national and international broadcasting, but few state radio histories exist. This is one of the best.

A good read

Published by the Oklahoma Heritage Association, the 110-page hardback book is well-researched, readable, fast-paced and authoritative. Fifteen chapters supported by 44 well-chosen photographs plus an epilogue make this a delight for radio buffs.

Allen, who currently is a free-lance writer based at Oklahoma State University, began his professional radio career by accident. He ran out of money at Oklahoma State University and took a job writing copy for KWHW(AM) in Altus. With his bankroll replenished, he returned to college, paying his tuition by writing for KSPI(AM) Stillwater.

Following graduation, he joined WKY(AM) Radio and later WKY-TV in Oklahoma City, where he won a number of awards for his documentaries. He closed out his radio career as a broadcasting specialist for his alma mater, Oklahoma State.

In the book, Allen relates for the first time the stories of Oklahoma's pioneer broadcasters, their hopes and aspirations and the stations they built.

Here, too, are the legends, among them the young violin player who found his bride by radio, and the millionaire who dreamed of a giant Oklahoma station that would put the young state in the forefront of the exciting new radio industry.

Allen traces radio's history from Reginald Fessenden's Christmas Eve broadcast of 1906 to the present, with major emphasis upon Oklahoma.

Flying music

About the year 1919, U.S. Army fliers at Post Field, Fort Still, Okla., operated a 5 kW AM transmitter. On one occasion, they broadcast music from a plane flying over Lawton, Okla., which attracted considerable attention in the press.

E.C. Hull, a radio instructor who had served in France during World War I, came to Oklahoma City looking for adventure. He found it when he formed a friendship with H.S. Richards and they decided to build a radio station.

The radio enthusiasts at Post Field had talked with other operators, including Hull and Richards, and may have been the catalyst that brought radio to Oklahoma City, according to Allen.

Both Hull and Richards had a supply of equipment, and Hull had the necessary transmitter tubes. Allen writes that it seems likely Oklahoma City's first radio station went on the air with a major, if unwitting, assist from the U.S. Army.

In the spring of 1921, Richards and Hull began broadcasting with the call letters 5XT. The homemade transmitter, a collection of bits and pieces of wire and

other components, was located in Hull's garage at 1101 W. Ash. Towering over it were two wooden poles with a five-element "flat top" antenna strung between them. The living room was converted into a studio, including an upright piano, a phonograph, a divan and two chairs.

Enter the giant

While the enterprising partners had first used their station to build sales for receiving sets they manufactured, that venture slowed down considerably when Westinghouse factories began turning receivers out by the thousands every day.

But by then, 5XT was getting letters from listeners in all parts of the country, and Hull and Richards were having so much fun trying new program ideas that they didn't mind.

By 1921, there were three commercial stations west of the Mississippi. One was owned by the Detroit News, one by the Kansas City Star and the third by Oklahoma's two inventive electricians.

1922 was the year radio arrived "with a rush and a roar." From 1919 to 1921, the Reader's Guide to Periodical Literature listed no articles for radio broadcasting. But the 1922-23 edition listed 10 pages

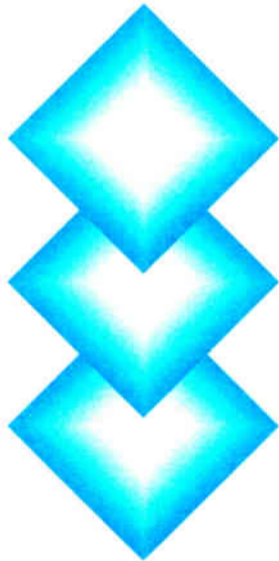
of titles devoted to radio.

Before 1922 had ended, the Department of Commerce had licensed more than 500 stations. A year earlier, the first year of licensing, only 28 applications had been approved.

Station 5XT's most distant listener was in Grand Rapids, Mich. A boy in Wichita Falls, Texas, reported excellent reception using his bed springs as an indoor antenna.

The first major broadcast, with the cooperation of the state's largest newspaper, The Daily Oklahoman, was a remote concert on March 4, 1922, by the internationally

continued on page 15 ▶



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Circle (44) On Reader Service Card

The Basics of T1 in Radio Stations

by Dan Joffe

NEW YORK The world is going digital, and, in many ways, broadcasting is leading the way. CDs, digital tape recorders, DSP-based mixers, effects generators and audio codecs are changing the broadcasting business daily.

All these digital devices generate large amounts of data. While some people are still dropping tapes in mail pouches, others are using digital telecommunications to move their data and keep a step ahead of their competition. One very useful digital telecommunications tool is the T1 or fractional T1 line.

This article hits the high points from "The Inside Guide to T1 and Fractional T1 Services," published by the Integrated Network Corp. The guide describes, in

use every day are just one-lane dirt roads.

A T1 line from point A to point B is composed of two distinct portions, access and long haul.

The access portion of the T1 line begins with the two pairs of wires which the telephone company brings to your premises. It ends with a connection somewhere in your local telephone company's central office.

Connect to access

The long haul portion of the T1 line connects to the access portion at the long distance company's (LDC) central office. The LDC central office is usually referred to as its POP, or point of presence. An LDC will have a number of POPs located throughout the country.

Although there are many applications

per second (bps). In telephone tech talk, the lane is referred to as a DS-0 time slot. A standard voice telephone call occupies a single DS-0 time slot.

A T1 line is a digital telecommunications facility that functions as a 24-lane, pothole-free superhighway for data or voice.

There are 24 "lanes," or DS-0 (64,000 bps) time slots in a T1 line, for a total bandwidth of $24 \times 64,000 = 1.536$ Mbps. Another 8,000 bps, known as framing bits, are used as the equivalent of lane markers to allow traffic to remain in its assigned line.

Bandwidth organization

Each time slot can carry a different phone call or data circuit. In this case, each phone call or data circuit is allotted 64 Kbps. However, some applications require higher speed channels. In that case, time slots are grouped to provide connections at multiples of the 64-Kbps data rate. For example, a 384 Kbps channel (popular for video conferencing) is made by grouping together six 64-Kbps DS-0 time slots.

A T1 line can have its time slots allocated in different ways. The first 12 time slots (1-12) might carry 12 voice circuits. The next six (13-18) time slots might carry six individual 64-Kbps data circuits, and the final six time slots might be aggregated to provide a single 384-Kbps data circuit. Multiplexers are used to connect different applications to different time slots.

Every T1 line terminates in a T1 channel service unit (CSU). The T1 CSU may stand alone or be built in as the front end of other multiplexing equipment, but it

provides these two functions:

- Demarcation point between the telephone company and the customer
- Diagnostic loop-backs for testing the service integrity.

The CSU converts a widely varying signal from the telephone company into a stable one for the customer equipment.

The customer side signals of a T1 CSU are in an electrical format known as DSX-1, a DS-1 signal suitable for cross connection.

Data service unit

The simplest form of multiplexing equipment connected to the T1 CSU is the data service unit (DSU). It converts customer data signals (e.g., RS-449 or V.35) to a DSX-1 format, compatible with the input to a CSU. Very often, the CSU and DSU are combined into one unit known as a T1 CSU/DSU.

A multiplexer combines multiple sources of data on a T1 line. The multiplexer assigns each source to distinct DS-0 time slots (lanes) within the T1. Wide bandwidth signals take more than one time slot; normal voice traffic or 56/64-Kbps data channels take one time slot.

The multiplexer may come with a built-in T1 CSU or use an external T1 CSU. INC's CM-ET1 is an example of a T1 multiplexer which combines the T1 CSU, DSU and multiplexing functions in one unit. Another multiplexing device, known as a channel bank, typically uses an external T1 CSU.

Fractional T1

A fractional T1 line may be purchased in any 64-Kbps bandwidth increment from 64 Kbps through 768 Kbps. You pay a slight premium (that is, buying half of the T1 bandwidth costs slightly more than half the price of a full T1 circuit) for buying bandwidth in lower quantity but still save overall. Some local exchange carriers offer fractional T1 access tariffs. Ask about their availability before your service is installed. Even if only available at one end of the T1 line, your savings will be significant.

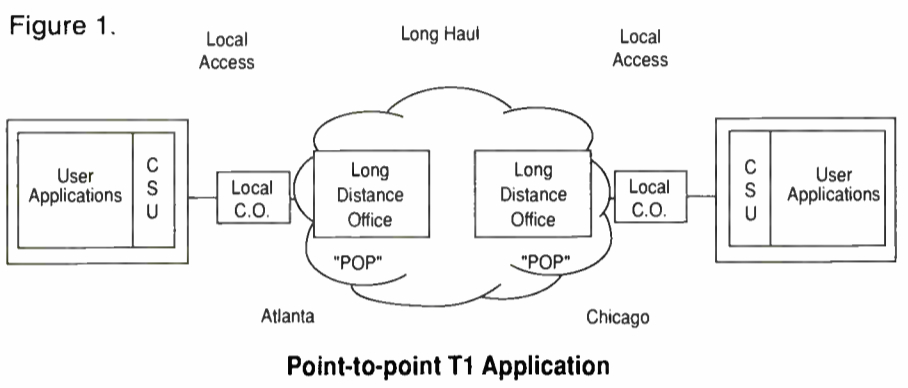
T1 application examples

The most common application of T1 lines is for point-to-point circuits. Figure 1 shows a full bandwidth point-to-point connection. In broadcasting, the user applications shown might be digital audio codecs for remote broadcasts, studio-transmitter links or distribution of network programs to affiliate stations.

In Figure 2 the T1 line is being shared among a PBX, an IBM SNA circuit, a LAN interconnecting line, video conferencing equipment and a high-fidelity audio codec for broadcast audio. All these applications are guided through multiplexing CSU/DSUs in the example, INC's CM-ET1.

Figure 3 uses only half a T1 line (768 Kbps) share between two applications, PBX tie bunks and a 384 kbps circuit for video. Significant savings are available on fractional T1 long-haul and local

continued on page 21 ►



plain language, what T1 digital services are, what they can do for you and how you can lower your costs by using T1 lines. It provides enough information for you to deal knowledgeably with T1 service providers, making it easy to establish service quickly and economically.

What is T1?

A T1 line is a digital telecommunications facility that functions as a 24-lane, pothole-free superhighway for data or voice. Using this metaphor, the POTS (plain old telephone service) lines you

for T1 lines, they all rest on four fundamental characteristics:

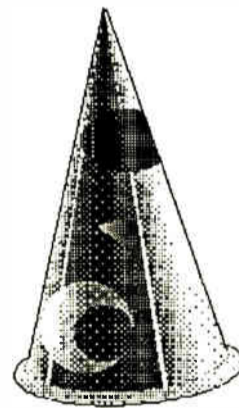
- T1 saves money by letting you buy bandwidth in bulk.
- T1 allows you to move quantities of data faster than POTS with fewer errors.
- T1 can save money by allowing you to bypass local telephone company charges for long distance dialed calls.
- T1 is the preferred access method for new high-speed data services like Frame Relay, SMDS and ATM.

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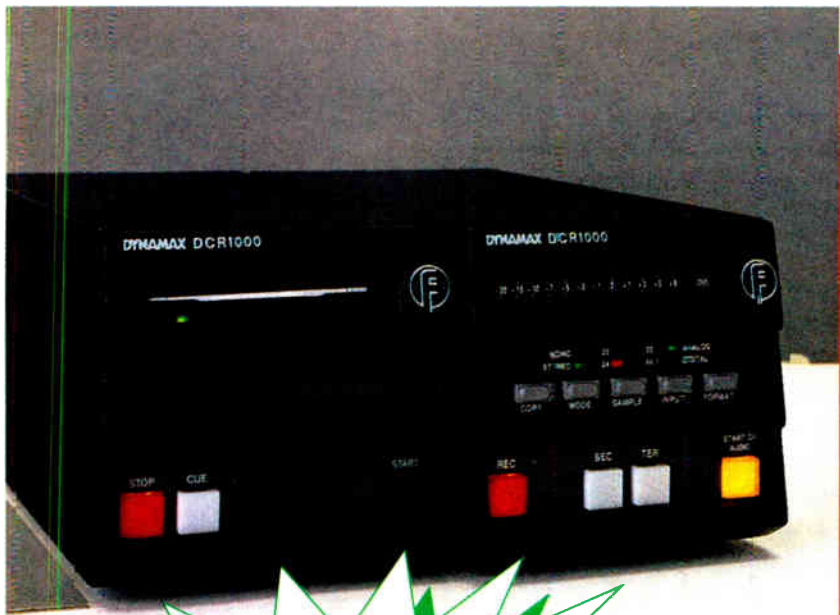
OUR FULL-FEATURED, INCREDIBLY FLEXIBLE SYSTEM HANDLES ANY FORMAT AND RUNS MULTIPLE STATIONS FROM 1 CENTRAL NETWORK MACHINE. YOU CAN SHARE AUDIO BETWEEN STATIONS AND ACCESS ANY STATION FROM USER TERMINALS. THE SAVINGS REALIZED FROM GREATER EFFICIENCY AND A MORE PROFESSIONAL SOUND WILL CONVINCING YOU IT PERFORMS MAGIC!

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World Radio History



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 **HARRIS**
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Oklahoma's Early Radio History

► continued from page 13

known soprano Alma Gluck and her husband, Efram Zimbalist, one of the day's best-known violinists.

A remote in those days meant dismantling the entire station, transmitter tower and all, and moving it to the site of the broadcast.

Complications arose

Then complications arose, Allen wrote. Madame Gluck said she would not think of "singing into a tin horn." She had confused a microphone with the sort of reversed megaphone used in early phonograph recording.

To get around the problem, Hull con-

cealed the microphone in a curtain at the side of the stage.

That same March, the touring LaSalle Jazz Orchestra came to town, and Hull, Richards and the Oklahoman crowded them into the living room studio at 1911 Ash. Their broadcast had dance groups and listener parties applauding across the state.

In the spring of 1922, the Department of Commerce assigned Oklahoma's first two licenses. One went to 5XT, which would now be known as WKY, and the other to WEH, a part of the Midland Refining Co., owned by W.G. Skelly of Tulsa.

By 1928, Hull's financial problems

were so severe that his only course was to sell. He contacted E.K. Gaylord, publisher of The Daily Oklahoman, vacationing in Europe. Gaylord cabled his acceptance and bought WKY for \$5,000.

Skelly's station would later become KVOO, the clear channel 50,000 watt "Voice of Oklahoma." Both KVOO and WKY became dominant signals in the state's radio history.

By the end of 1929, the Federal Radio Commission had managed to bring order to the radio spectrum. The number of stations had stabilized at 608.

For this reviewer, "Radio Rollestone" is the most fascinating chapter in the book.

It tells the story of a young oil millionaire, E.H. Rollestone, whose dream in the early 1920s was to bring to a small Oklahoma town, Bristow, a super-powered station that would make Bristow a household world from coast to coast.

By mid-1924, his dream seemed about to come true. The station would draw talent from both Oklahoma City and Tulsa and would have studios in both cities. Its call letters became KFRU, which stood for "Kind Friends, Remember Us."

Rollestone's station was one of the first to realize there was an audience for country music. Among the most colorful country and western stars to open their careers on KFRU was Jimmie Wilson, whose Cat Fish String Band quickly developed a huge following.

But interference from WOAI in San Antonio, plus financial problems, led to the sale of KFRU to Stephens College, Columbia, Mo.

Rollestone then called a radio confer-

ence at the state capital, where he laid out plans for a 5,000-watt station that would cost \$100,000 to build and \$10,000 a month to operate. A statewide campaign to raise construction money for Rollestone's dream soon followed. In a letter to all chambers of commerce in the state, campaign manager Roy Griffin suggested that the citizens give the station to themselves as a New Year's gift.

Fame and despair

The campaign was to take place during "Voice of Oklahoma Week." It brought in only \$25,000, and Rollestone appealed to a number of rich friends to donate \$15,000 each so construction could begin.

With studios in both Bristow and Tulsa, the new station went on the air 24 hours a day, and ownership was transferred to the Southwestern Sales Corp. But even after the operation was transferred solely to Tulsa,

there was red ink on the balance sheets.

On June 28, 1928, William G. Skelly bought the entire stock of the parent company. KVOO later would be a springboard to fame for Gene Autry, Patti Page, Paul Harvey and others.

Two years later, in severe financial trouble and deserted by his wife, Rollestone locked the door to his hotel room in Tulsa, put a pistol to his head and pulled the trigger.

The handsome and effervescent promoter, who had spent his fortune pursuing a dream, was only 36.

These and other accounts of radio in Oklahoma make "Voices on the Wind: Early Radio in Oklahoma" a must-read for anyone interested in the growth of the medium. □ □ □

Harry Heath is a professor emeritus at Oklahoma State University.

In the book, Allen relates for the first time the stories of Oklahoma's pioneer broadcasters.



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Data Base Streamlines Arbitron

by Thomas Pear

LAUREL, Md. Zip! With the push of a button stations can now sort through Arbitron rating tabulations, eliminating hours of fumbling through unwieldy diary books.

The Arbitron Company added a computer imaging-based storage system—the radio ratings industry's first electronic storage-and-review system—to its library in Laurel, Md., last month. The system allows stations to collate and calculate different bits of diary information with the touch of a finger.

"It will eliminate the unproductive task of sorting through the diaries and let the clients spend their time looking through information," Arbitron Vice President of Communications Thom Mocarsky said.

Computer imaging

With the new system, Arbitron uses an electronic device to scan each diary onto a high-capacity optical disk, which then provides a high-resolution picture of each diary page—essentially an electronic photograph—preserving every entry exactly as the respondent wrote it in the original diary.

Within a matter of minutes Arbitron clients can have the computer cut through thousands of electronically stored diary pages and do multiple demographic rating searches.

Stations can see how they fared in the ratings with women ages 18 to 24. They can learn if their listeners identify them by call letters or nicknames like "Power Pig"—a famous, and sometimes notorious, station based in Tampa, Fla. They can read recorded comments about their station from Arbitron respondents. And stations can tabulate the latest Arbitron information about competitors.

Currently, Arbitron only has the system, which it jointly developed with IBM, in 20 of its 172 markets. But the ratings company expects to have the system phased into all of its markets by early 1995.

Speeds the process

Before the new system, clients had to wait for Arbitron archivists to retrieve rating diaries from a shelf and then the clients had to comb through, in some cases, a thousand different diaries by hand to get ratings information, Mocarsky said.

The new computer-video system will allow clients to devote more time to compiling their ratings information and alleviate long waits and time consuming information searches.

An Arbitron client in a market like Chicago can now review an "extra 1,000 diaries within the same eight-hour time period," Arbitron Vice President Jay Guyther said.

The computer will tabulate running totals for clients and give them a printout to take home, either as a tabular report or a full color graphic.

Under the old system, Arbitron had to book client visits from a particular market a day apart, so that its archivists would have time to refile the clumsy diaries.

In an area with 14 different stations, it could take a 30-day wait for any one station to review Arbitron diaries. Now "more than one station can look at diaries at the same time," Mocarsky said.

Actually, thirty clients from the same market can scan the Arbitrons at one time.

"We're capable of doing it," Mocarsky said. But doing that, he added, may not be feasible. After all, clients rarely enjoy researching the Arbitron diary library while their competitors are present.

Concerns unfounded

When Arbitron began developing the system there was some concern that it would use artificial intelligence, which sometimes lacks accuracy, to examine station nicknames and determine the appropriate call letters, giving ratings credit to the wrong station.

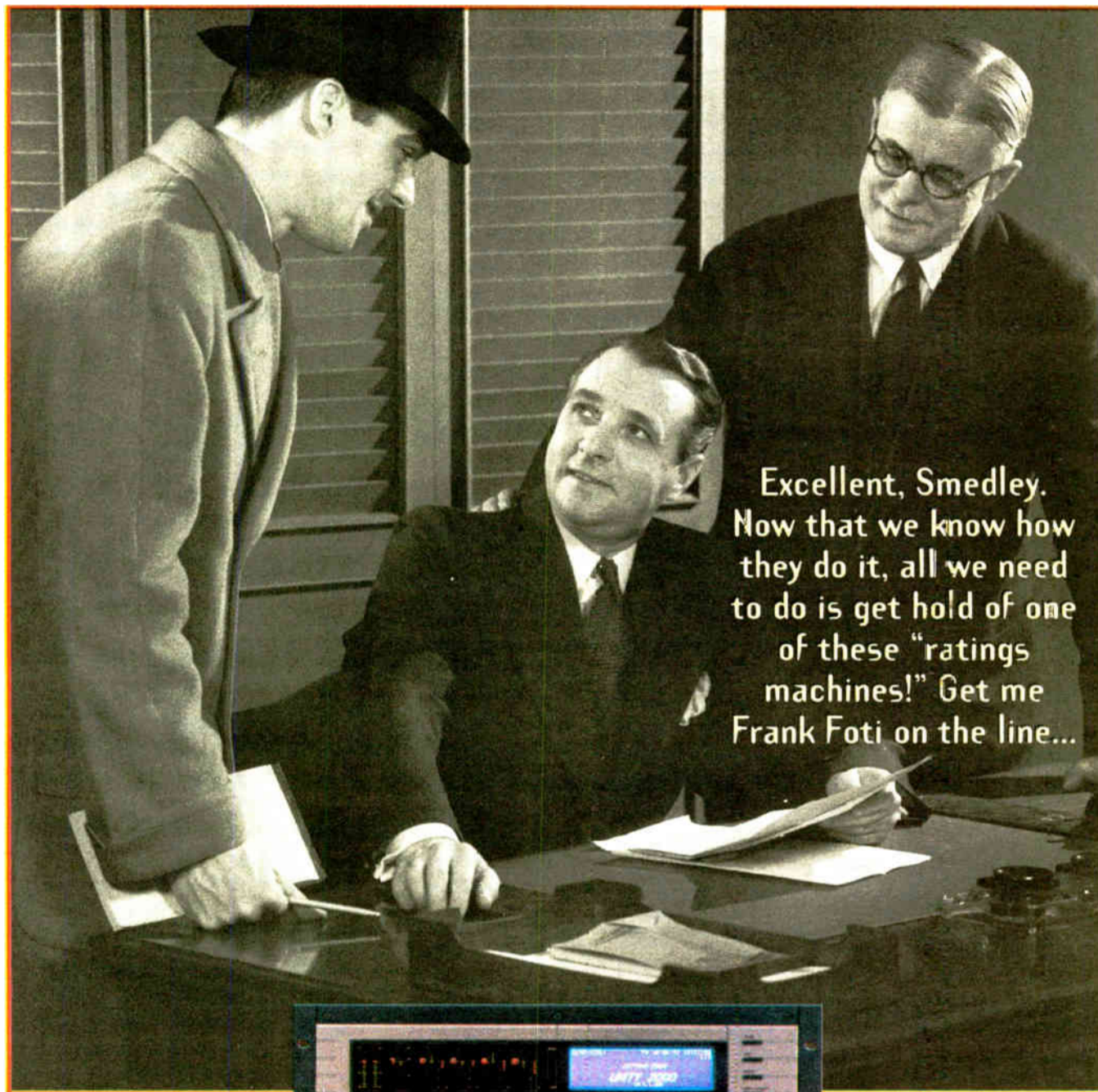
But Arbitron officials noted this would

not be the case. Human diary specialists will continue to read the diaries, with the help of the new system of course, ensuring that credit is given where credit is due.

"We're taking the tedium out of our diary processing system, while keeping the expertise of our diary specialists," Arbitron Operations and Research Vice President David Lapovsky said.



Client Services Manager, Pat Duggan, helps a reviewer access his data at one of the Electronic Diary Storage and Review Workstations.



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STATION SKETCHES

Rebuild Studios Using Modular Construction

by Tom Vernon

HARRISBURG, Pa. Building new studios on a limited budget can be a hellish experience. It's difficult to find experienced architects, and even tougher to find contractors willing to follow detailed plans necessary to insure that there are no sound leaks.

All too often the end result of this scenario are studios where sounds from one studio are plainly audible in the next, and it's always too hot or too cold to work comfortably for more than a few minutes.

Prefabricated rooms are usually custom designed to the user's specifications and include lighting, electrical outlets and ventilation as part of the package. Assembly time for a modest-sized room should be no longer than three days.

Planning for modular enclosures is similar to that for conventional construction. A rough drawing is prepared by the user indicating inside and outside dimensions, locations of windows, doors and ventilation ducts. As space allotment is planned, remember to allow at least four inches of space between existing walls and the new enclosure.

Additional clearance must be planned for air silencer panels. This added spacing is necessary to insure the acoustical integrity of the modular enclosure and to facilitate construction. The only point of contact between the existing building and modular construction should be the sound isolating rails on the floor. Speaking of floors, you may want to consult with an architect to be sure that yours can safely withstand the added weight of these steel enclosures.

An option worth considering is more space for cable than normally supplied. One-inch conduit is standard and probably adequate for other uses of these enclosures. This runs from a junction box on top of the roof to a junction box which is usually close to the floor. You may want to specify two-inch or larger conduit if you need to pull a lot of audio cable.

After your plans are submitted to the manufacturer, they will supply you with blueprints which must be initialed and returned before construction begins. It's a good idea to talk with the manufacturer's representatives about any questionable items you notice before "signing off" on the blueprint. After this point, changes may be impossible or very expensive.

After the blueprints are sent in, plans need to be made to unload and store the large crates containing the disassembled walls and doors. Most motor freight companies will only deliver items to the end of the truck. You may need to rent a forklift to take it from there. Plan on having a half dozen of your largest friends to help with the unloading, and later with the assembly.

Not only will it take longer with fewer people, but there's a real danger of personal injury. Some of the larger wall panels can weigh over 500 pounds and have sharp metal edges. Extreme caution must be exercised when setting these walls upright during construction.

Proper tools are also necessary. In addition to the usual collection of hand tools, you'll need several sets of vice grips to use as handles when carrying wall panels,

heavy work gloves, caulking guns and a pop rivet tool.

Because most modular enclosures are held together with No. 10 pop rivets, you may want to rent a compressor and air-driven rivet gun. Doing over 100 of these large rivets by hand could be tiresome and time consuming.

Assembly itself is pretty straightforward. Once you have the floor isolation rails and floor panels down, channels for the wall panels are installed. Joining most sections of these enclosures together entails laying down a 1/2-inch bead of caulking on the felt backing of the channels, putting them in place and securing the sections every

two feet with pop rivets. Wall sections are butt-



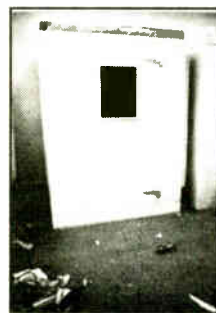
Phases of...



modular...



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construction.

joined together with wall joiners. Recesses in the top, bottom and sides of the wall joints are packed with fiberglass, and the inside corners of the wall joiners are beaded with caulking prior to assembly in the floor channels. Doing this process carefully and exactly to the manufacturer's specifications will insure compliance with sound isolation specs. Doors must be removed from wall sections prior to their installation.

The several pairs of vice grips you used to move the walls will be useful in securing the tops and drawing them up tight until the caulking sets. If everything has been set up properly, tolerances should be a quarter inch or less. Roof channels

mount on top of the completed wall in a manner similar to the floor channels. Roof channels mount on top of the completed wall in a manner similar to floor channels. These are topped off by roof sections on a bead of caulking.

Next, AC wiring between the roof and wall sections is completed. This is just a manner of securing wires in junction boxes with wire nuts. Conduit openings should be packed with duct seal before covering boxes. Any gaps between roof channels and sections should be caulked prior to installing fiberglass and roof aprons.

Mounting doors to completed wall sections can be very difficult. These units must be handled by three people and maneuvered onto the two large hinge pins simultaneously.

Mishandling them can result in damage to their rubber gaskets, not to mention mangled fingers and toes.

One solution I discovered was to place the door on a pallet mule and jack it up until the hinges are about an inch above the pins. Then your helpers can line it up with the pins as you slowly lower the lift.

With the construction completed, all that remains is pulling your own cable, connecting AC and tying into the building's HVAC system. Remember to pack your ducts with duct seal and fiberglass before installing cover plates. This will insure

the soundproof integrity of the enclosure.

The photos in this article illustrate most of the steps involved in modular construction. Both the client and I were quite pleased with the outcome. Within five days we went from empty space to two professional and fully functional recording booths.

□□□

Hard to believe, but Tom Vernon has been writing for RW for ten years! He is occasionally sighted around WXPB in Philadelphia. Call him at 717-367-5595.



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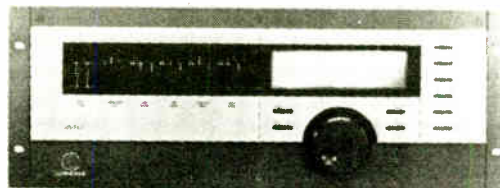
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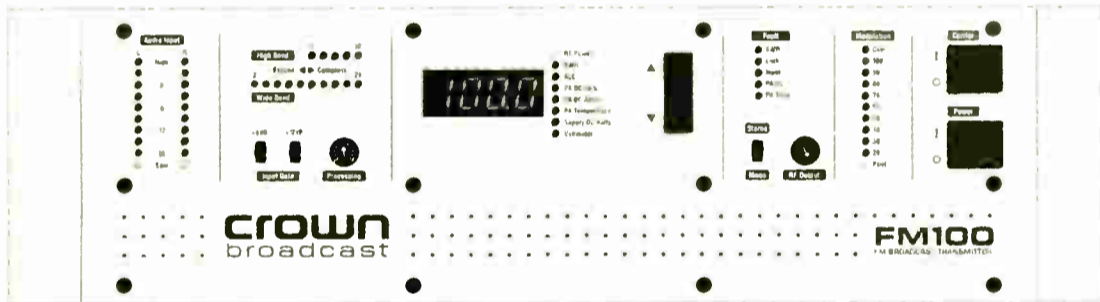
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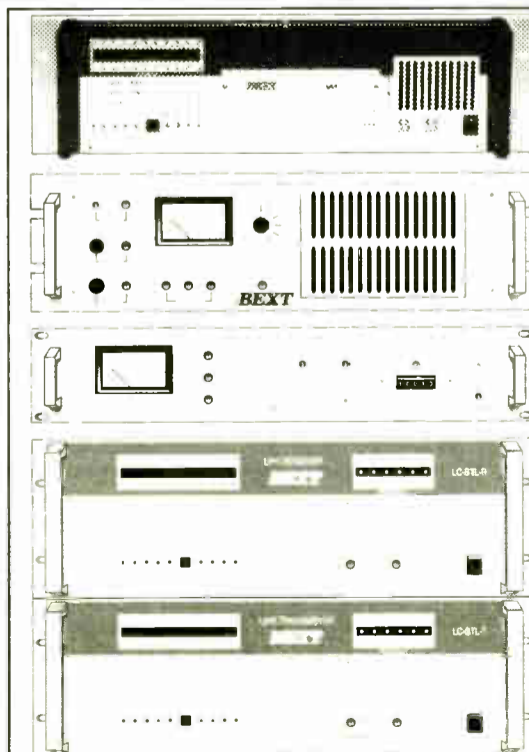
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Basics of T1 Service

► continued from page 14
access facilities.

Although beyond the scope of this article, T1 lines can be arranged in multipoint configurations, using central office equipment known as DCS or digital cross-connect system. The guide gives an overview of multipoint networks.

The cost?

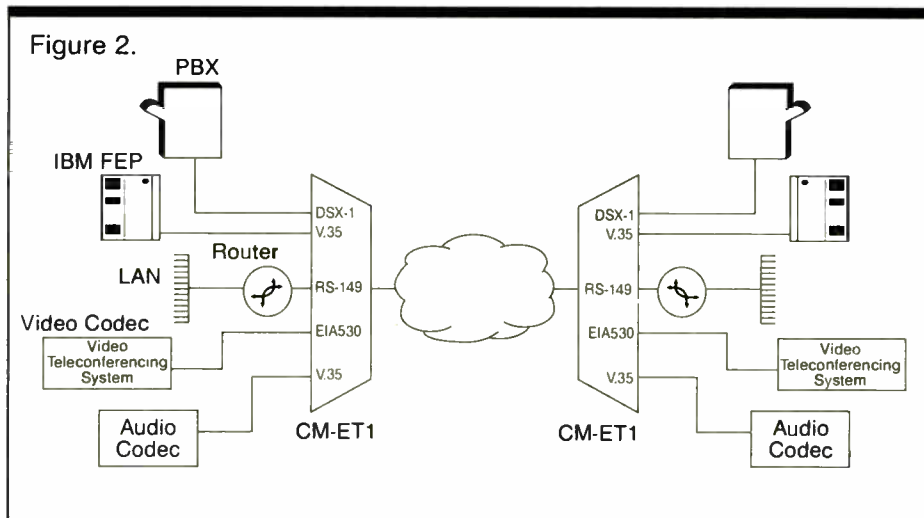
A complete list of charges on the monthly bill is broken out below:

Local channel—The access portion of the circuit from your premises to the LDC's POP. The range is typically between \$350 and \$700 per month per end. \$575 per month is a pretty good starting point for rough guesses.

Interoffice channel—The long haul portion of the circuit, from POP to POP. This charge depends upon the distance between POPs and the bandwidth. A full T1 line costs \$2,800 per month plus \$3.95 per mile between POPs. Fractional T1 lines cost proportionately less.

Access connection—\$260 per month fee charged by LDC for connecting a T1 line

basics, consider how T1 could benefit your situation. Think about each application's bandwidth requirements, then draw



a map of your network, connecting the applications with lines, just as they will be connected with T1 and fractional T1 lines. Label those lines with the required bandwidths. Aggregate bandwidth where possible to get the most out of your facilities.

Remember that the cost of terminating hardware (CSUs, DSUs, multiplexers, etc.) is a small part of the total cost equation.

You can contact the local or long distance carriers yourself. You may prefer to use a value-added reseller (VAR). The VAR can recommend equipment appropriate to your application, as well as make arrangements with the telcos. Whichever way you go, get quotes from a few different long distance carriers to get the best possible deal.

The costs

The T1 private line market is quite competitive. As such, the following discounts may be offered:

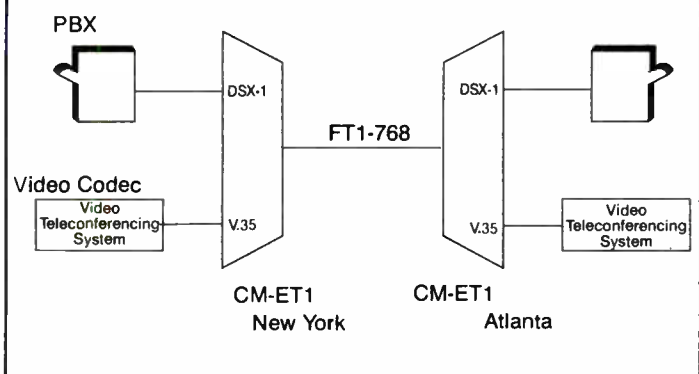
- Installation charges waived for a two-

year service commitment

- Discounts for multi-year contracts
- Discounts based on a combination of switched calling minutes and private line charges

Compare and contrast quotes from two or more sources. Ask about any special

Figure 3.



into their POP.

Access coordination—\$85 per month fee charged by LDC for arranging local access and long distance service; provides a single point of contact for trouble-shooting and ordering.

M24 multiplexing chargers—Assessed for multipoint circuits and for fractional T1 circuits, covers the cost of DCS.

Now that you've had a quick tour of the

promotions. Major metro areas are subject to intense competition, which is good news for your bottom line.

Summary

I have given a brief overview of T1 lines, what they are, their configuration, applications, costs, installation and quotation. For more complete information, call Integrated Network Corp. at 800-241-EASY and ask for a copy of "The Inside Guide to T1 and Fractional T1 Services." Normally \$5.95, it's available free to readers of RW who mention this article.

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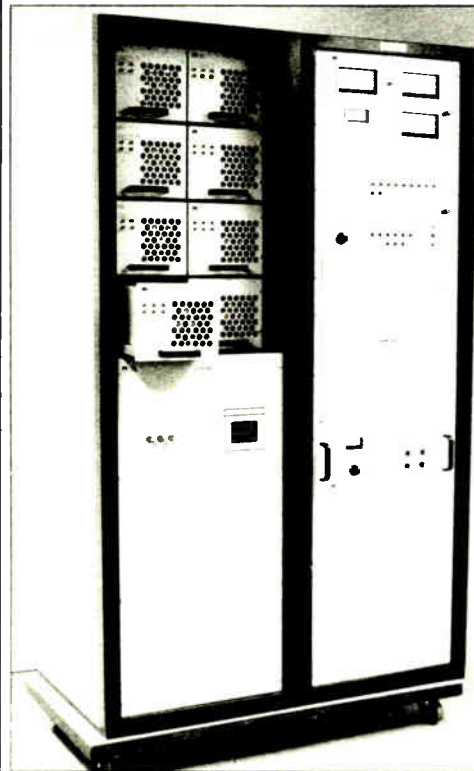
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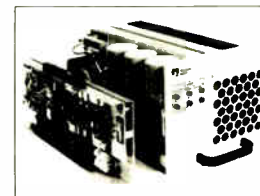
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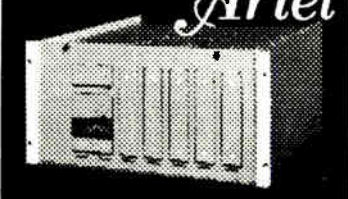


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OFFBEAT RADIO

DJs Go On-the-Road to Find New Jobs

by Dee McVicker

PHOENIX, Ariz. In the old days, they called them gypsies, nomads, vagabonds. These days, they call them radio people, that migrant group of people who roam across the countryside from one market to the next in search of radio.

Their stories are similar: get hired by a small to no-market radio station, move into medium, perhaps even large market radio and then spend a lengthy career zig-zagging across the frequency band and the United States in search of some good tunes, a little security and maybe even a decent living.

Some make it big. But the vast majority are like Pete McRae and Bob Pagani, both of whom found themselves in places even the Arbitrons never heard of.

New way to ride

These two, however, found a new way to ride the radio circuit. This February, McRae and Pagani headed out on the open road as a team of door-to-door DJs for hire. They called themselves Jocks For Hire, and McRae and "Uncle Bob" Pagani arrive cold-call at various radio stations around the country looking for work or perhaps a few minutes on the air as a morning or afternoon team.

During their month-long excursion, they experienced a few triumphs, more than their share of slammed doors and even national notoriety, including a mention in

Billboard magazine and television coverage by "Entertainment Tonight."

The idea, according to Pagani, was to "just walk in cold," which the two did in a dozen or so states and some 27 stations. The team finally broke up near the New Mexico border, traveling all the way from Pennsylvania down I-95 to gain some valuable insight into radio.

"We went to Jacksonville, West Palm, New Orleans, Houston, Dallas, Austin, Albuquerque, just a bunch of cities—it was a blur," McRae said.

Part of their journey was recorded by "Entertainment Tonight," which extended an invitation to videotape the DJs' excursion after reading about the upcoming adventure in Billboard. "We made arrangements to meet (Entertainment Tonight) in Baltimore and Charlotte, N.C., so they could roll some tape on us," McRae said. Unfortunately, McRae, Pagani and the "Entertainment Tonight" camera crew were not warmly received by most stations, according to the DJs. "We got a lot of slammed doors in our face," McRae said.

Said Pagani, "I was really surprised at the reaction. I always liked it when something like that happens, that's what made (radio) fun. They were so uptight, everybody would go into corporate mode."

"They can't handle people coming out of left field like that," McRae added.

Of the some 27 stations visited by the team in a month's time, only one radio

combo let the two on the air. Pagani and McRae took calls and interacted with the audience at WBT(AM) of Charlotte, N.C., for 45 minutes in the afternoon and were on the air for approximately 10 minutes at WBT's sister FM, also in Charlotte.

After a grueling month on the road, the

In search of good tunes, a little security and a decent living.

two split up. McRae headed out to Tallahassee, Fla., where he now works as talent for a station, and Pagani returned to Maryland, where he's looking for his next radio gig. But they both thought the trip was worth the hassle.

The beginning

The origin of the excursion was a small-market station on the East Coast, at which Pagani had just been hired as morning DJ and McRae had just left as morning DJ. According to Pagani, "It was another one of those wacky radio things" where living conditions and the station weren't all that much to write home about.

Pagani was living in half a trailer (the other half doubled as an office), where, according to Pagani, "the toilet was leaning 10 degrees to the left and was ready to fall through the floor."

McRae, having just left the station, wasn't living much better. He was staying in the house of the station's ex-program director, who had also recently left the station along with several others. Afternoons, after Pagani would finish his morning shift at the station, he and McRae would watch soap operas and talk over their string of good luck and bad luck in radio.

Both had started out in radio in small markets, gaining notoriety and market in their first several years as on-air personalities for afternoon and later morning drive. Pagani and McRae had worked together as a morning team at one point in their careers. But both had also experienced just about every radio misfortune in the book. During their more than 10 years in the radio business, each had lost radio jobs more often than they cared to admit. The job losses were due to the usual: cutbacks, format changes, management changes and the growing popularity of syndicated talent.

While working for one radio station, Pagani had lived in a train for four months.

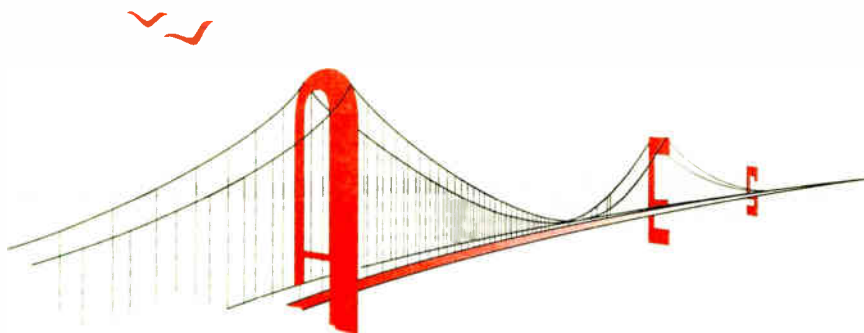
McRae's experiences in radio paralleled Pagani's; he has been known to sack out on the beach when times really got tough. "Somebody once said at a radio station (that) I worked at, and it was the most perceptive thing I ever heard. I said something about being temporary and he said 'we're all temps, they just don't tell you that when they hire you,'" Pagani said.

Still, the two admitted they had a hard time imagining doing anything else.

□ □ □

To reach Bob Pagani, call 301-441-3531. Dee McVicker is a free-lance writer and regular contributor to RW. She can be reached at 602-545-7363.

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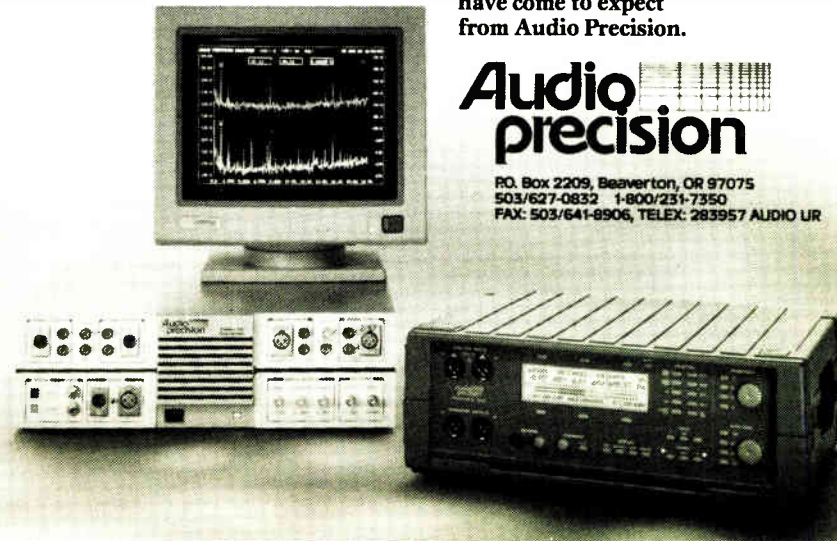
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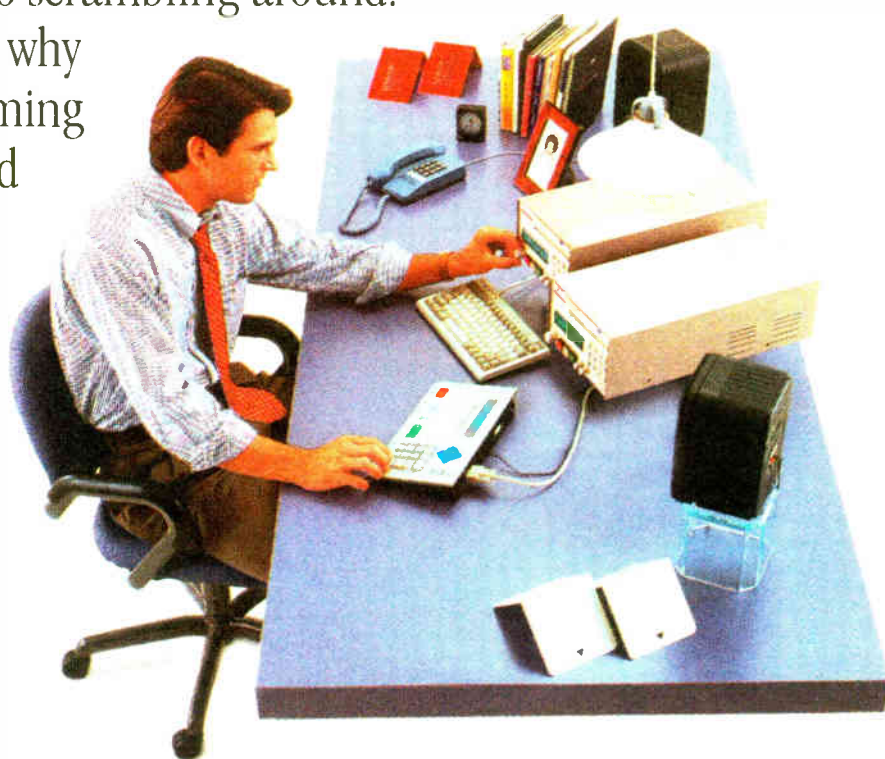
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See p. 32.

Country's Legacy Honored in Chicago

by Bruce Ingram

CHICAGO On his death bed two years ago, country music legend Roy Acuff, the greatest star of the "Grand Ole Opry," reportedly made a point of listening to the radio broadcast of the "Opry's" induction into the Radio Hall of Fame from Chicago's Museum of Broadcast Communications.

When he heard that story, Bruce DuMont, founder and president of the MBC, said he started thinking about how close the relationship between country music and broadcasting has been over the seven decades.

"That really struck me," DuMont said. "It made me think about the integral role radio has played in the evolution of country music."

"Country may have begun on the bumpy back roads of small-town radio stations, but it's now on the mainstream superhighway. On radio and TV,



country music has gone downtown, up scale, big town, in a big way."

The result of DuMont's reflections was this summer's "Country Music: On the Air" exhibition, which was on display at the MBC from June 25 through Sept. 30.

Country history

In association with Nashville's Country Music Foundation, the MBC acquired more than 100 programs, constituting a historical cross-section of country broadcasting for its permanent archives.

The museum and the CMF also sponsored a series of seminars designed to take a step back and see where country music has been, where it is today and where it's going in the future.

Chicago's WUSN-FM, voted the 1993 major market station of the year by the Country Music Association, provided moderators for seminars, including a historical perspective ("Cowboys and Crooners"), "The Nashville Network: Then 'N' Now," "Grand Ole Opry: Mother Church of Country Music," "The Future of Country Music" (featuring Tribune Entertainment's recently launched syndicated TV/Radio package

"The Road") and "Music to Look At: Country Music Videos."

The seminars served as more than a self-congratulatory pat on the back for the country music industry, which is currently enjoying popularity undreamed of 30 years ago when it was almost wiped out by rock 'n' roll.

The current boom in country radio (2,400 stations nationwide make it the number one format) combined with the phenomenal growth of cable TV broadcasting on The Nashville Network (64-million subscribers in the United States and Canada) and Country Music Television (25 million subscribers in North America and 8-million in Europe) have put country music in the unfamiliar position where it might possibly be overexposed.

Which direction?

Dr. John W. Rumble, chief historian for the CMF and curator for the MBC show, said some observers are concerned that many modern country acts, tailored for mass consumption, sound alike and burn out quickly.

Likewise, some observers wonder if country music's increasing dependence on glitzy music videos as a marketing tool, a la MTV, might be leading it away from its traditional roots.

"Could this be a case of the tail wagging the dog?" Rumble asked. "What will a country video look and sound like five years from now? Madonna?"

On the other hand, Rumble pointed out, traditionalists grumbled when many country artists in the 1950s donned rhinestone suits and tuxedos on TV and sang in a smoother pop style, trying to overcome "the hayseed and wagon wheels image of the country hillbilly" and reach a more mainstream audience. He added that country performers were once criticized for composing their songs so they would be radio friendly and therefore marketable.

"I tend to think in terms of continuity," Rumble said. While it's obvious that much has changed in country music ("It used to be if you were too good-looking it was a disadvantage"), he says much has remained the same.

Acoustic traditions

Traditional acoustic instruments are back in fashion, songwriting still draws on a realistic storytelling tradition rooted deeply in folklore, country music still retains its sense of humor and country artists still tend to remain down-to-earth compared to their rock 'n' roll counterparts.

"In fact, they've traded on that," Rumble said. "They like to say, 'Hey, I'm just one of the gang.'"

Indeed, Tribune Entertainment's "The Road," the freshest example of country

music broadcasting, which premiered at a gala Sept. 8 at the MBC before launching Sept. 19 nationwide, combines concert footage with documentary footage designed to let viewers get to know the stars as regular folks. The weekly syndicated TV show has been cleared in more than 175 markets and a weekly, two-hour, companion radio show has been cleared on roughly 150, including Chicago's WUSN.

The new breed

Performers who will be profiled on "The Road," such as Clint Black, Reba McEntire and Clint Black, are a direct through-line to country music's past, according to WUSN Program Director Dean McNeil.

"All of those people—in fact, just about everybody on the charts today—have heroes from the days gone by: Merle Haggard, Patsy Cline, George Jones," he said. "That's where their roots are, and

that's one of the things today's country music has in common with the old days."

Country music's ability to change with the changing times while keeping its traditions intact was one of the most dramatic features of the MBC exhibition.

Ralph Emery, a prominent country music TV interviewer for the past 30 years, claims that the first music ever played on a radio station—in 1920 on Pittsburgh's KDKA—was country. Country programs were featured on local radio stations around the country, notably on WBAP in Dallas and WSB in Atlanta. But country music got its first big marketing push in 1924 with the debut of the "WLS Barn Dance" (soon to be known as the "National Barn Dance") sponsored by Sears-Roebuck on Chicago's 50 kW WLS. The "Grand Ole Opry" got into the act the following year on Nashville's clear-channel WSM.

The "Opry" lagged behind the "National Barn Dance" in popularity for a decade or so thanks to Chicago stars like Gene Autry (who went on to greater fame and fortune in Hollywood) and

continued on page 41 ►

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Slow But Steady Format Can Thrive

by Jeff W. Shepherd

ROANOKE, Va. Whether you can call it easy listening, beautiful music or even elevator music, make no mistake, the format is a long-time radio staple that still reaps dollars and ratings for stations.

The key to easy listening success is loyalty. Programmers will tell you that the easy listening audience is among the most loyal. Proof of this audience loyalty and the ability of the format to stand the test of time is evident in BMI.

In 1993, BMI celebrated the 3-millionth performance of "My Way." "My Way" was written by Paul Anka 25 years ago

and became Frank Sinatra's signature song. If audiences did not want to hear "My Way" or thousands of other easy listening selections, they simply would not listen. But they do.

Longevity

Further proof of the format's audience loyalty can be found in the longevity of the format. Most stations doing well with easy listening have been doing so for 15 years or more—many for 25 years.

And it isn't that station managers and program directors programming beautiful music are not creative, but rather, they continue to enjoy the revenue generated

by their chosen format "All the Way" to the bank; month to month, year after year with success.

Whether you call it beautiful music, easy listening, or elevator music, the format still reaps dollars and ratings for stations.

It's true that country and adult contemporary are hot formats across America, but not every station in a given market can butt heads or dials by trying to compete.

The whole issue of competition—stealing each other's listeners and advertisers—is a rat race and a huge headache.

Furthermore, in all of this competition you can hardly find any distinction between stations in a market. What you do find are three stations playing country,

five playing adult contemporary and six playing top 40. There is not enough choice on the dial.

Station programmers are overlooking the fact that not only can they escape the rat race, the rut and the headache of trying to keep up or ahead of W—, they can benefit from the loyalty inherent in an easy listening audience.

Programming ease

Easy listening can be easy to program. Audience research reveals that with the right broadbased-program library, listeners in the 25-54 demographic can be targeted by your station. Research and census data shows that the 35-44 and the 45-55 age groups are increasing.

But the big kicker for stations is that this group of people is quite well off and

has disposable income. Your advertisers want to reach those people. They would like for them to buy cars, furniture, houses, appliances and other big ticket items that these people have the money to buy.

These people are a hot item with your advertisers. As a group, the older demographic tends to be brand royal. Likewise, this group is on the rise and easy listening will not only survive, it will thrive.

I have made the study of this format nearly a lifetime endeavor. I began gathering the music for production of the format of today more than 18 years ago. The actual production took three years to complete. It is a big library that is big on variety.

The original easy listening audience was brought up on instrumentals, and yesterday's young adults were brought up on vocals. Now the adults of yesterday are older and can enjoy the best of both worlds—the vocals mixed with the instrumentals—not canned instrumentals either. I'm talking the originals put together in a good 50/50 mix. That 50/50 mix is fresh and makes listeners eager to stay tuned longer.

And there, my friend, is when they are ready for commercial messages. Think about it—do something about it—your competition may be reading and thinking the same thing. It's EASY.

□ □ □

Jeff W. Shepherd owns Globe Music Productions in Roanoke, Va. He can be reached at 703-344-3283.

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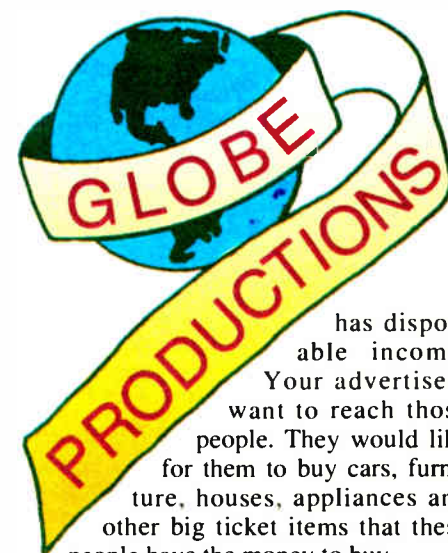
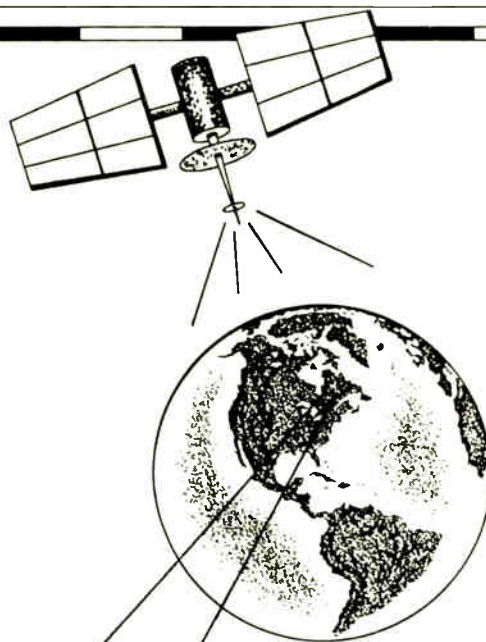
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such gear may be "cutting edge."

NACB offers potential donors a charitable destination for their excess equipment.

For information, contact NACB in Rhode Island at 401-863-2225; fax: 401-863-2221; or circle **Reader Service 69**.

Collectible Talk Show

NEW YORK Starting in January 1995, listeners will be able to call in to talk about collectibles. Hosted by Harry Rinker and produced by Dick Brescia Associates (DBA), "Whatcha Got" is a two-hour program airing live on Saturdays from 10 a.m. to noon (ET).

Rinker discusses, in a lively manner with listeners, items they find at garage sales and flea markets or things listeners have grown up with that may be worth a lot of money. Rinker is editor of the Warman's series of books on collectibles.

For information, contact David West in New York at 201-385-6566; or circle **Reader Service 171**.

Multimedia Radio for Kids

SEATTLE The Children's Media Network will bring KidStar, its multimedia radio network, to more than 12 million children by April 1995. By spring of next year, the

company plans to add stations in New York, Los Angeles, Chicago, San Francisco, Philadelphia, Detroit, the District of Columbia, Dallas, Boston and Houston.

KidStar integrates a radio station, quarterly magazines, an interactive phone system and computer access for children, providing a full-service menu of interactive media that is fun and develops imagination and self-image.

For information contact Bill Koenig or Jodell Seagrave in Washington state at 206-382-1250, ext. 210; fax: 206-624-7956; or circle **Reader Service 63**.

Talk America Turns Three

WOBURN, Mass. Talk America Radio Network is entering its third year. The Network provides 24-hour talk programming seven days a week with unduplicated programming at no cost.

Talk America hosts range from former California Governor Jerry Brown to Green Beret Bo Gritz to columnists and writers like Judy Jarvis, Jack Anderson and Armstrong Williams.

The Network currently has 35 talk show hosts. On weekends, it offers a variety of special programs geared to mass audiences along with sports highlights.

For information, contact John Crohan in

Massachusetts at 617-937-9390; fax: 617-938-3740; or circle **Reader Service 193**.

Expanded Production Library

DALLAS FirstCom Broadcast Services released six new CD titles for its Sound Designer II production and scoring library. New to the library are "Foreign Volume 3," "Inter-Urban Volume 3," "Novelty/Comedy Volume 2," "Promo/Commercials Volume 3," "Promo/Commercials Volume 4" and "Underscores Volume 13."

The collection will ultimately consist of 60 CDs, 36 of which are currently available and 24 more are to be released semi-annually to supplement the collection. Sound Designer II uses 10 quick-reference categories, ranging from rock and specialty to holiday/seasonal and dramatic.

For information, contact Andrea Bergeron in Texas at 800-858-8880; fax: 214-404-9656; or circle **Reader Service 55**.

24-Hour Sports Talk Makes Debut

DALLAS On September 12, the Prime Sports Radio (PSR) network made its debut. The 24-hour sports talk network offers scores, highlights, interviews and analysis, making use of an established worldwide network of experienced correspondents.

On-air talent at PSR includes Rich Lerner, Shireen Saski, Bryan Stanley, Tom Sauvlet, Jerry Overton, Chet Coppock and Bob Dahlgen.

For information, contact Bob Wheeler in Texas at 214-401-0069; fax: 214-869-2999; or circle **Reader Service 200**.

Spanish-Language Weather Updates

LOS ANGELES Cadena Radio Central (CRC) now offers a Spanish-language weather report, "ClimaCentro." Hosted by John Morales, ClimaCentro provides a locally customized service for each of CRC's 69 affiliates. Five to 30 weather reports are offered daily, with each segment running 10 to 60 seconds.

For information, contact Richard Santiago in California at 213-463-3800; fax: 213-463-5724; or circle **Reader Service 84**.

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Gerry House Pioneers Personality Radio

by Alan Haber

WASHINGTON Down in Music City, or Nashville, if you prefer, the crow flies high on pedal steel fury, loyal subjects profess their respect for the kings and queens of country music, and the line between pure genre and crossover is becoming harder to peg with every turn of phrase and head.

Twang Town, the land of tight jeans and sweet songbirds, has its share of media champions: The Nashville Network, Country Music Television. Plenty of radio stations, certainly. And plenty of jocks.

But, personalities. Ah... Ralph Emery and others laid the foundation; today it's the era of folks like Gerry House, three-time Billboard Magazine Air Personality of the Year and proud winner of a host of other awards. He is presiding over the syndicated five-day-a-week broadcasts of his House Foundation show, and he's hot: for example, how's a 21 share at Nashville's WSIX-FM, his home base, sound?

Consumed by radio

House grew up in Northern Kentucky, "which was really the Cincinnati market," he said. He was consumed by radio.

"I was your typical radio geek," he admitted. His radio persona was shaped, was formed by some of the personalities he listened to, like James Francis Patrick O'Neill, Richard King, and Jerry Thomas. "They were personalities," he said. "They did bits and did characters, and I thought, that's how you did radio. I didn't know any different; that's what I started doing." He added that another influence was Jack Benny, from whom he learned how to wait, take his time-to leave a big, long pause for effect. House said he's "living proof" that some of the worst material in the world can be made

really good by a good pause.

House spent his college years at Eastern Kentucky University, and worked at the school's FM station, WEKU, hosting a program called "The World of Music" ("Boy, did I suck," he noted). He said he knew he "was going to take a shot at" radio professionally. "If I had only known how hard it was," he theorized, "I would never have attempted it in a million years, but, you know, the ignorance of youth, huh?"

In the beginning

The first professional House gig was in 1972: he worked mornings for about a year at WCVR(AM) in Richmond, Ky. The station was situated above a Western Auto store; to get to the station, House said he had to "turn right at the tractors and come up the steps." He laughed. "I would play Led Zeppelin and then I would play a

Some of country music's biggest stars have been integral parts of House's on-air shenanigans.

show called "Back to the Bible," he said, admitting he was pretty happy at the station until he found out how far his \$115-a-week salary went toward feeding him and his wife. "The station was owned by a minister, and each week he would say, 'Do you want your check or do you want to give it to the Lord?'" said House. "I'd say 'Well, you know, I'll tell you what, the Lord's got more money than I do. Give me the check.'"

House made two more stops before first settling in Twang Town in 1976: Ithaca, New York at WTKO(AM) and Jacksonville, Fla., at WMVR(AM). A stint at KZLA-FM in Los Angeles from 1983 through most of 1987 has been the only interruption in his Nashville career ("I made a mistake," he said, referring to his stint in L.A. radio). While he was on "the coast," he spent his free time writing for a Rosanne Barr (remember when that was her name?) HBO special, and an NBC television series called "Our House." And, he hosted a trio of syndicated radio shows: Countryline, America's Number Ones, and The Saturday Night House Party, a live show.

House has been dabbling in country music songwriting; well, not a dabbler, exactly: his song "Little Rock" went to number one for Reba McEntire in 1988. He's had some other songs on McEntire's albums, and written for Hank Williams, Jr. ("Diamond Mine") and the Oak Ridge Boys ("Old Time Lovin'"), and Gary Morris ("How Did I Get Here?"), among other country artists. House even has his own music publishing company, called House Notes.

Syndicated

Gerry House and the House Foundation is currently syndicated by Premiere Radio Networks to more than 50 country music radio stations, including about 30 that are affiliated with Major Networks' Super Hit Country music format. In addition, the show is being offered to any other station, including those currently taking 24 hour

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House's format is tried and true: play a record, talk, and do a bit every break. About 35 percent of the show is prepared; the rest consists of House riffing on this and that, and a ton of phone calls from listeners. There's a solid cast of characters, too: Paul Randall ("Greatest laugh in show business"), Al Voecks ("The curmudgeon news guy"), Duncan Stewart (the sports and party guy), and Devon O'Day, his partner and on-air producer, who does national news, "and is on the air a lot."

Around six records are played during any given hour of the show. "We come really prepared," he said. "I come in with about 30 prerecorded pieces." And, he records every telephone conversation with listeners and edits them while on the air. "We're really doing a talk show during the records...and then a radio/records show when we're on the air," he noted.

Just real people in Nashville. "...being funny, I hope," said House.

Are any topics taboo for the Twang Town funnyman? "Only in the last year have I started to be a little more sensitive to upsetting people...I don't do any dirty stuff," he said. "I think that's so easy and cheap. I'd hate myself if we did it."

Localized

House counts himself lucky to be in Nashville. "I know just about everybody here, you know, they stop by," he said. "I mean, I know them. I know Mary-Chapin Carpenter, I know Dolly Parton. I know those people and they come in all the time. Well, they're not going to do that in any other city." Other House guests have included Johnny Cash, Wynonna and Naomi Judd, and Brooks & Dunn.

But in the other cities—the ones that are also sizzling with House's antics—the localized flavor of the House Foundation makes it seem as though the show is actually being broadcast from them. Plus: "There has to be a local guy (in each city)



Gerry House

to help with the show," said House, who added that, because of the technology used to make the show sound local (RW, May 4), "you can't tell when we're in and out."

(The show is delivered digitally to affiliate stations by satellite to a dedicated satellite dish, live from Nashville; a digital

audio delivery system stores the program on a hard drive at each station. A computer program, which was developed by California Digital, integrates each station's call letters and time checks, voiced by House, during each break).

House records a lot of material for use in local markets that carry his show. "We do an awful lot of stuff out of here, but there's plenty of room for local stuff," he said. He's recorded commercials, drops, promos

and bits for local use: "I pre-record 'em and they send them down the line to use that morning."

Phone city

House's wacky sensibilities come into play every time he picks up the phone. When people call thinking they've reached an airline, he takes their reservations. He's asked people to call in to say whether they've ever had their teeth stolen by animals. "A woman called up immediately and said 'I woke up the other day and a chipmunk was pulling my uppers through a knothole,'" he remembered. He's also asked listeners to give him a jingle and tell him if they've ever been hit with a frozen food product. And if they've ever been hit by lightning.

"There's an extraordinary amount of our listeners who have been struck by lightning," he said, laughing.

Some of country music's biggest stars have been integral parts of House's on-air shenanigans. He related that, one day, he announced that singer Marty Stuart was

quitting country music "to open a VCR repair shop in town; (he) said he was sick of the business. And so he came in, and we fielded phone calls from people who had problems with their VCRs, and Marty would answer. Of course, he didn't have a clue what he was saying. Trisha Yearwood called and said she was having problems. Reba McEntire called and said she couldn't get her clock to stop blinking."

Censorship

House's on-air antics don't seem likely to get him in trouble with the FCC. But, just the same, he has a few words to say about the personality who's become a magnet for fines. "I think Howard (Stern) has every right in the world to do (what he does)," said House. "See, I think Howard's funny. I think he's a hypocrite, but I think he's very funny." A hypocrite? "When you pride yourself on prying into other people's private lives, and yet he wants to keep his hidden, you know, I just don't get that."

House thinks Stern has done more for radio than "a lot of guys, because he's funny...he legitimately is clever and he has a warm side to him, even though it's, you know, kinda twisted...He oughta be able to say whatever he wants..." And as for the FCC? "Oh, I think they ought to butt out," he said.

Eye on the future

House would love to do a TV show "that basically reflects what I do on the radio, kind of like Howard's trying to do" (Stern's E! cable television program). He and O'Day are looking to produce a recording artist, but haven't found the right one yet. He's writing a "comic tome" for book publisher Rutledge Hill. And he'd like to have another number one record. "I want to do it all," he said, "before I croak." But surely there must be a long road to travel before that happens. "What, before I do it all or before I croak?," he wondered, laughing. "Yeah, I'm doing okay."

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READER SERVICE NO. 98

Stem the Red-Ink Tide at Your AM Station

by Ken Hawk

TIFFIN, Ohio For the operators of small-market AM radio stations, the past few years have been rough. Profits are decreasing. Competition with print and cable TV is increasing, taking a greater share of the revenue that was once yours.

To add insult to injury, the community's largest employer may have closed, leaving a substantial number of workers unemployed. Clients get hurt financially in the process and soon realize that they can no longer afford to advertise on radio.

General managers are left in the unenviable position of having to increase the bottom line without spending money that does not exist.

It is frightening but true: As both markets



Ken Hawk

and radio revenues continue to shrink, many small AM stations have become simulcast repeaters of a co-owned flagship station or, more commonly, have gone dark. The number of the latter continues to grow.

There is no way around it. General managers have to take a serious look at existing expenses and either decide what they can learn to live without or make inexpensive substitutions.

Here are some ways to stanch the bleeding, depending on the type of operation you run.

Know your limits

If you own a strict daytime (sunrise to sunset) only station:

First off, know the limitations of your broadcast hours and give your listeners the most with the little operating time you have. Forget about the younger demos. Today's generation was weaned on music-intensive FM, which is usually there 24 hours a day. Choose a format that appeals to the other end of the listener spectrum. Those are the demographics that have money. If you do not think that is true, why do you think so many media buyers have jumped off the CHR ship?

Keep your sign-on/sign-off times as consistent as possible. During the month of July, is any inventory between 6 p.m. and 8:45 p.m. actually sold? If it isn't, why not pull the plug at 6 p.m.?

Do not wait for national and regional accounts to come knocking at your door. You will still get a few, but do not rely on them for a major portion of the station's billing. Local clients make you money and enhance your local image.

If you have a live airstaff, cap the number of full-time announcers at two, each working half of the broadcast day. Use other

staff members with strong vocal abilities to add variety to your production.

If you own an unlimited time operation:

Consider how long your current broadcast day is. Is it to your advantage to stay on-air 24 hours per day? Are you saleable after the evening drivetime? Can you rotate part-timers overnight?

Consider format

Also consider your format. Do you have an impressive number of national and regional clients and a lesser, albeit substantial, number of local clients?

If you are doing well financially between

6 a.m. and 7 p.m., your nighttime revenues are either anemic or nonexistent, with bonus spots and promos polluting the program log.

This situation can be rectified: Is there a format missing in your market that you have avoided out of fear of losing your large national or regional accounts? Keep in touch with members of your community to see why local radio listeners tune (or do not tune) into your station.

Once you find this out, experiment by splitting your format into a daytime format and a nighttime format. Give your sales people six months to sell it. The end result

is an increase in local sales. Do not be surprised if some big-ticket revenue items like remotes and public appearances start to occur at night.

If your station needs to be on-air 24 hours a day, and you operate at a loss on overnights, part-time board operators and announcers might help minimize losses.

If you own either a daytime or full-time entity:

Keep operating costs lean and mean. Consolidate clerical functions. Refuse to reimburse for uncontrollable expenses. Do not reimburse for items they can write off

continued on page 37 ▶



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PROMO POWER

Exploit the Power of the Telephone

by Mark Lapidus

WASHINGTON Question: Which technical device is used more than any other to touch your listeners in a personal way? Answer: The telephone in your control room!

When used properly, it's a tool that binds you to your listeners. When abused, it's...well...allow me to demonstrate.

I was between PD gigs and was traveling on a train from South Florida to Washington checking out, courtesy of my Walkman, each radio city through which we passed. The big surprise came from a medium-market radio station, which shall remain nameless to protect the guilty.

Caught in the act

As I tuned in, a sports report was being delivered live via telephone. The sportscaster finished and turned it back over to the jock, who thanked him, went into a Pink Floyd song and forgot to pot down the telephone line. This meant, of course, that each call he answered on this line now was broadcast without his realizing it.

On-air processing even lowered the music level so that we listeners could hear each call clearly. The DJ proceeded to be cold, rude and indifferent to the next four callers.

The fifth caller was a young woman. She asked him what it was like to be a DJ. He bragged about the stars he'd met and then arranged a time and place to meet her.

The next caller said, "Hey man, do you know you're on the air?" The DJ replied, "Of course I'm on the air! I'm on every day...."

Keep the calls coming

We all know that only our most active listeners bother to phone the station. The younger the format, the more calls you receive. Guess who is most likely to fill out a dairy? Active listeners! Why is it that they pick up the phone?

Lots of reasons: to make a song request; ask a question; give a compliment; complain about something; or just to speak to a friendly voice.

The program director should set guidelines to deal with each of these areas. Odds are that each DJ does things differently. Let's pick up the phone and make some changes that will have a positive impact on your station.

• **Song Request**—How does your talent respond? If they can't say yes and give an approximate time of the song's next play, the best approach is open ended. Have them say they're not sure if they'll have time to play it, but they'll try. This can generate another quarter hour of listening and, because they haven't made a promise, no hard feelings.

If the request is off the wall, have the DJs say they don't have it and ask if there's anything else the listener would like to hear.

A few of the worst responses I've actually heard: "It's not in our format." "Our music's all on computer." "We don't take requests." and amazingly, "That's one of the

The DJ forgot to pot down the telephone line, meaning that each call he answered was broadcast without his realizing it.



worst tunes I've ever heard."

• **Questions Asked**—Where does your talent find the answers when questioned by a listener? Begin by making certain that every liner and public service announcement read on-air has details on the bottom of the card. If it's an event, include directions and a phone number for further details.

There also should be a notebook in your control room with up-to-date concert/entertainment information, including pricing and on-sale data; a telephone directory of bars, venues and ticket outlets; schedules for all major sports teams and phone listings for crisis hotlines.

This book also should note current contest rules, staff numbers (for emergency use only, never to be given out to the public on the phone) and the previous day's music log. The music log enables your talent to answer questions like, "Can you tell me the name of a song that played yesterday morning at 10:00?" True, a bothersome request but one whose positive response could influence the chance diary entry.

• **Compliments and Complaints**—To the former, a simple, "Thanks, we appreciate your listening" will do just fine. If a listener calls with a compliment directed for someone else, it's wonderful if staff members pass it along. Positive feedback goes a long way.

A sympathetic ear

Unfortunately, complaints can be difficult to handle quickly in the control room. If upon answering the phone the first sentence out of a caller's mouth is, "I want to complain about something," a DJ's best response is, "I'd be happy to listen, but it would be a lot more effective if you'd either call or write our program director...or if it's more convenient, I'll have him call you."

Sometimes this works. However, many times the caller wishes to vent. Jocks should be instructed to listen but at the end of the conversation to repeat the offer of having the program director call.

Frequently, complaints are legitimate and if stations receive enough about a single issue, a noticeable trend could be developing. Certain complaints need to be sidetracked immediately. Contest complaints, complaints about station staff members and threats of lawsuits should all be referred directly to management.

• **Lonely Callers/Friendly Voice Scenario**—Here's a trap door that's easy to fall through. Who among us doesn't enjoy talking to someone who clearly admires us?

However, when a DJ gets more than a few calls from the same person and this caller proves to be a nuisance, a "no-

win" zone definitely has been entered. These types—and every station has them—hinder a jock's ability to handle other calls, can disturb the on-air performance and even can be dangerous.

You've probably got 10 people calling your control room and occupying a large chunk of time. These calls must be stopped—and they can be. All DJs have to do is tell the caller that their time limits on the phone have been shortened and that the call is now being monitored.

Pick up the phone

Too busy to say hello? We'd never allow our business line to ring more than a few times before the receptionist answered. Call your control room right now and see how long it takes to get an answer.

Consider these solutions: 1.) Interns/part-timers to answer phones during your busiest times; have the lines wired into more than one room. 2.) After 10 rings, have the call go to your receptionist or an automated machine that tells them the DJ is on another call or is preparing to go on-air. 3.) Put most of your detailed information on a digital multiline answering system. This is recommended only for formats targeted to listeners under 40 years of age. Older folks hate "press five for concert information."

And it's true, many stations are jumping into on-line computer services so they can provide the latest to those now "wired."

But before you leap into the next technology, look into mastering the one that most of your listeners already use: the phone. Gotta run now...So many calls to make, so little time.

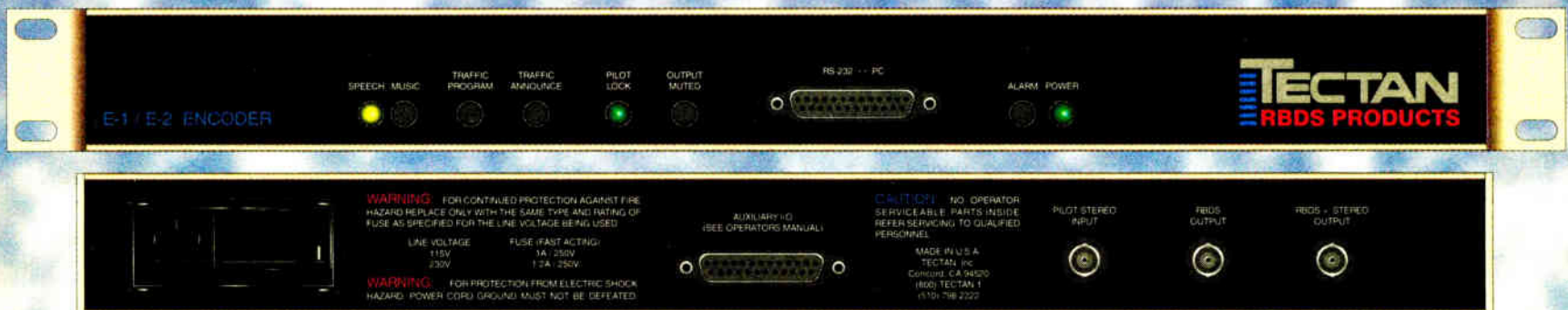
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Mark Lapidus is director of marketing for Liberty Broadcasting. Liberty owns WXTR-FM and WHFS(FM) in the Washington market; WGBB(AM)-WBAB-FM on Long Island, N.Y.; WGNA-AM-FM Albany, N.Y., and WMXB(FM) in Richmond, Va. Mark can be reached at 301-899-3014; or write him care of RW.

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Stemming the Red-Ink

► continued from page 35
at the end of the tax year.

More and more AM stations are jumping on to the satellite bandwagon. Unfortunately, many operators forget the essence of AM radio and depend on the bird to carry the entire broadcast day. If you do this, you will lose. If you do satellite, do it right—do it for a portion, not all, of the broadcast day.

You know where you sell the most inventory: Open that up to local programming where you can cram in as many avails as you like. Try adding some local and national talk during your midday. Some national talk shows may be available for barter. Whatever you do locally reinforces your "community commitment."

For example, when I first came to WKPA(AM) New Kensington, Pa. (now WGBN), it simulcast a co-owned Pittsburgh FM with local programming—Pittsburgh-style oldies, Sunday ethnic and church broadcasts—on the weekends.

Format launched

After several months of market research, we launched a new weekday format with a live news-intensive morning show that included sports, weather, traffic updates, features and four or five AC songs per hour. We also aired a local buy-sell-trade program and national talk shows, with news and traffic in the evening drive. Due to the station's strong market heritage, we left the weekends alone. Within four months, we saw a 20 percent revenue growth, without increasing our salaried staff or payroll.

A key to our success was how we maintained client relations. The number one gripe among our clients who advertised elsewhere was that once an account executive sold them advertising, he literally took the money and ran. No contact was maintained with the client, until they got angry because the account executive fouled up.

If a client is unhappy with his or her ad, such as when the wrong spot is aired, do

not charge him for it. Too many general managers are too arrogant to admit that the station made a mistake: They completely forget that their role is similar to that of a customer service clerk in the local department store. Remember the old business adage "the customer is always right."

Alternative means

Look for alternative means of generating revenue. A per-inquiry spot has more money-making potential than a PSA or a show promo. It is a good way to fill in avails on weekends and overnights too.

Will a specialty program you are interested in going to make money or just barely pay for itself? Do not buy it if you can barter.

If you use a rip-and-read newswire system, see if it can be computerized so that you only print what you need. With an old-fashioned printer, 90 percent of the paper is thrown away unused. You might even be able to print your local stories on the system.

Examine employee benefits and perks. Can you save money on health care benefits by giving your staff the option of what they need most and would use least? Enrolling in an HMO is another good idea.

Look for ways to save on the station Christmas party without cutting it. Freebie tickets and other gifts should be offered to your staff before clients and listeners. Staff members will probably never be happy with their salaries, so what you cannot give monetarily, make up for it this way.

Spend some time in the control room. Do not be afraid to ask your jocks if something is not working properly. If you are considering outfitting the studio with a consumer-grade CD player or replacing a cassette deck on trade, consult your chief engineer first. Find out if it is worth it to spend the extra money for broadcast-quality or if you want to replace consumer equipment every few years.

Whatever the case may be, remember that

the audio quality of AM radio is far from superior. Do not rub salt in the wounds by having unreliable equipment in the control room.

Keep track of long-distance calls and fax transmissions. Make a log stating the length and nature of each call, who placed it and at what time. If your airstaff uses the phone to get weather and temperature readings, buy them a weatherband radio and thermometer.

Ban smoking from the on-air and production studios. It not only damages equipment but is an annoyance to non-smoking employees who have to share the same space.

Instruct your airstaff to clean cart decks before the end of their shifts. Wowing carts sound bad; eaten carts sound worse and feel worse when you have to replace

them. If you use vinyl, leave a dust brush and cleaning fluid for the airstaff to keep the discs clean. Dirty records not only sound bad but also shorten the life of an expensive stylus.

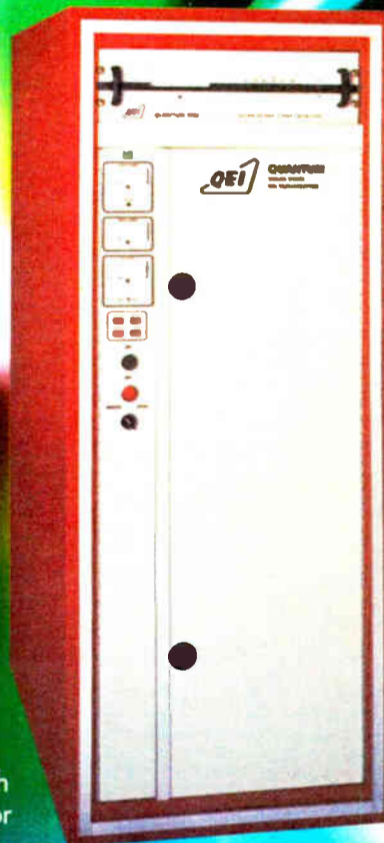
If radio is to survive into the 21st century, it will depend on owners and operators spending their revenue wisely and decreasing their expenditures likewise. AM and FM radio will both survive and prosper but hinge upon how well-rounded future general managers are. The effective general manager will need to fully understand both the programming and marketing departments of their station, not just one.

□□□

Ken Hawk is an independent programming and economic consultant to the broadcast industry. He can be reached at 419-447-0825.

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UPLINK

Make Value-Added Work for You

by Karl Baehr

ALBUQUERQUE, N.M. Are you creating value or headaches with regard to the "value-added" campaigns at your satellite station? Are your incentives really hitting the target? Has your "database marketing" system been effective or a waste of time and money? These are a few of the topics we will take a look at this week.

Value-added vs. free

The nice part about adding substantial value to a client's campaign at your sta-

tion is that, chances are your network has already created the platforms providing some of that additional value. Special daily and weekly programs, promotions, etc., are already there, all you really have to do is package them for a local sponsor(s).

When creating the added value, make sure you do not subtract the listener from the equation. The fallacy is, "We don't have numbers (yet) so we have to throw in the store to get the buy from Hobie's Hotdog Hut." The problem is your listeners may not want to hear news and "This Week's Top 10" and "Entertainment

Right Now" and the "Z95 Bikini Contest" and "The Morning Farm Report" all sponsored by Hobie's. Every hour of every day for the life of the schedule. A negative of this type of incentive is the clutter it can create. Spots, liners, promotional announcements. Hobie's. Hobie's. Hobie's.

Rather than continually trying to create value-added opportunities for clients, try working the equation backwards. Create (identify) those value-added opportunities at your station and then identify those complimentary ideal sponsors for each. This effort can cut down on dupli-

cation of sponsors and scheduling problems as well as clutter.

Another consideration with regard to minimizing potential clutter is to consider how much of the added value can be done off your air. Print, television and location support such as point-of-purchase can help to cut that clutter and add impact to the whole campaign.

Here for the duration

The term value-added has been around for a while and will continue to be a fact of life. Advertisers are always looking for something "extra," but don't forget that they need to buy into the station before they buy into the options. Sell them on your station first and then on the added value of a sponsorship or promotion. If you do not, your sales staff will spend its time writing special value-added stuff for everybody. Make sure that the value-added has a purpose, the purpose being to enhance.

Although there are many philosophies and checklists regarding value-added, the list I use has two items:

- 1) Do the station, the advertiser and the listener benefit?
- 2) Is it worth it?

We are currently completing a value-added promotion for our client, The European Hit Survey. The show, a weekly two-hour trip through Europe's hottest new music, is new to the U.S. What we have done is structure a trip promotion that enhances the show (to a European destination) tied in an airline with regular service to Europe and provided additional prizes, ranging from European designer clothing and music product giveaways to EHS t-shirts. The station and its listeners win, the advertisers win, the show's syndicator wins. It all relates to the show's content, audience and is fun for everybody.

Incentives or traps?

Using incentives to market your radio station can be a good thing for advertisers who can "win" everything from trips and other goodies, to listener and sales staff prizes. This can create a healthy competitive environment in-house and a stimulating shot at winning something on the air. The trap is burying yourself with buying these people off. If your listener comes to expect money for listening and the money goes away, so may the listener (see *Uplink*, June 1).

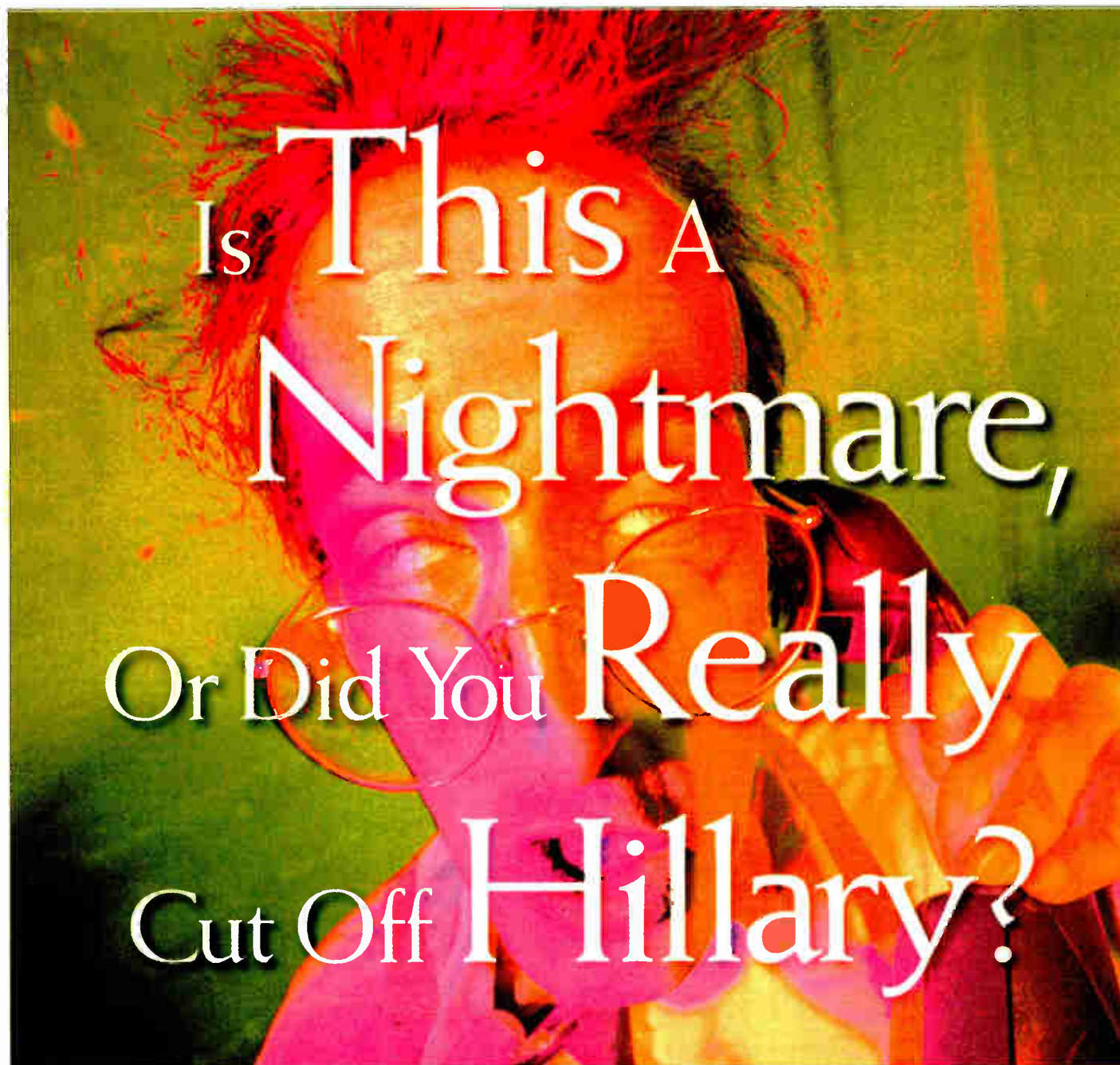
As with value-added, do not sell the product, i.e., your station, short. Sell your station first. That way, CDs, t-shirts, free pizzas, etc., become added incentive but not the reason for listening.

Sales incentives are good, but make sure they do not create an environment that may be potentially damaging. If a sales executive is scrambling to write up orders for a dollar/unit volume incentive so he or she can win a trip to Cancun, you may wind up with a bunch of worthless paper, cheaply sold advertising and ragged out sales people. Give them what they want, but make it realistic.

For every approved annual contract sold during a specified period of time, increase the commission structure. Provide cash incentives to the sales person who has the highest percentage of paid up current accounts in. Give them the tools they need to get the job done effectively; do not just throw them on the street with a quota.

Though very few advertisers will buy your station just to get a trip, rewards for

continued on page 41 ►



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MANAGER'S NOTEBOOK

How Effective a Station Manager Are You?

by Sue Jones

BURKE, Va. As a general manager, you are always monitoring the station's ratings, sales volume and expenses. While you are monitoring those pulse points of the station's business, make sure that you assess your leadership abilities as well.

Your ability to communicate the station's goals and objectives and inspire the staff to achieve those goals will impact your station's position in the market and ratings.

Three of the most common qualities found in successful managers include charismatic leadership, individual consideration and intellectual stimulation. How does your management style incorporate each of them?

Charismatic leadership

Charisma comes from an ability to see what is really important and to transmit a sense of mission to others. It is found in people throughout business organizations and is one of the elements that separates an ordinary manager from a true leader.

This is a double requirement. You may have the ability to know what is the most important, but without the ability to effectively communicate that to the staff and inspire them to work toward that goal, you will not achieve charismatic leadership.

Individual Consideration. General managers who practice the individualized consideration concept of leadership treat each staff member as an individual and serve as coaches and teachers through delegation and learning opportunities. It may take longer to coach someone through a learning process than to simply direct every activity.

However, if you coach/teach your department heads to think their way through the task, they will be trained to do it in the future. For example, your job will become easier when your department heads can prepare an annual budget for their department. Instead of your doing it for the entire station, each department head prepares it for his or her department. Then you just have to compile the department budgets to create the station's operating G&A budget.

Intellectual Stimulation. Leaders perceived as using intellectual stimulation successfully are those who encourage others to look at problems in new ways, rethink ideas and use problem-solving techniques. If your ratings are slipping, it is time to take another approach to your programming, customer service or performance. Teach all staff members (not just the department heads) to be alert to new concepts, thinking and market trends. Encourage everyone to contribute their ideas, no matter how ridiculous they may sound.

Crazy ideas

Group think tanks with crazy ideas often spark creative thinking in other participants. One idea often feeds another.

Leadership requires the following characteristics:

• **Courage.** A courageous leader stands for unpopular ideas, does not avoid con-

frontations, gives negative feedback to staff members, has confidence in his or her own capability, desires to act independently and does the right thing for the station or staff members in spite of personal hardship or sacrifice.

• **Dependable.** A dependable leader follows through, keeps commitments, meets deadlines, takes and accepts responsibility for actions and admits mistakes, works effectively with little or no contact with the owner(s) and keeps the owner(s) informed on the station's status.

• **Flexible.** A flexible leader functions effectively in a changing environment, provides stability to the staff, remains objective when confronted with many responsibilities at once, handles several problems simultaneously, focuses on critical items and changes course when required.

• **Integrity.** A general manager with integrity adheres to a code of business ethics and moral values, behaves in a manner that is consistent with the station climate and professional responsibility,

Your ability to communicate goals and objectives will impact your station's position in the market and ratings.

does not abuse management privilege, gains trust/respect and serves as a role model in support of station policies and professional ethics.

• **Judgement.** A leader with judgement uses logical and intellectual insight rather than gut feel to reach sound evaluations and evaluate alternatives. Decisions are based on a collection of factual information and consideration of human factors. He or she uses past experiences and information to gain perspective on pre-

sent decisions and makes objective evaluations.

• **Respect for Others.** A leader with respect for others honors rather than belittles the opinions or work of others, regardless of their status or position at the station, and demonstrates a belief in each individual's value regardless of each individual's background. This characteristic should be the foundation of how you interact with all of your staff.

And then some

In addition to the above characteristics and qualities, a leader must:

1) Develop and communicate a rallying vision. Where do you want the station to be a year from now? Two years? Five years?

2) Be a strategic thinker. How will you achieve those goals?

3) Be a risk taker. Make sure that it is a researched and calculated risk, not a seat-of-the-pants guess.

4) Have a proven track record implementing innovative ideas.

5) Be a catalyst for change. Encourage ideas from everyone. You do not have the only creative mind in your station. Your sales staff with daily contact with your advertisers will have a better sense of what is on the clients' minds. The jocks who take requests will have first-hand

information about what the listeners like and dislike.

6) Have earned the trust of the station personnel.

7) Be a listener and enabler. You will not be able to use every idea that your staff has, but you might get some of your best ideas from them. If the idea will not work, say that you will take it into consideration instead of saying that it is impossible and/or a dumb idea.

8) Develop good, strong subordinates for

succession. This is one of the most frightening objectives. However, to be considered for other opportunities in a multiple station/entertainment organization, make sure that someone is at least halfway trained to step into your position. Otherwise, the owner(s) may determine that you cannot be moved because the learning curve for someone else to take your position would be too long and costly.

9) Be an optimist and have a sense of humor.

10) Be financially adept.

Open your mind

11) Understand and know how to deploy technology.

12) Be able to deal with doublespeak.

13) Be skilled at interdepartmental management.

14) Manage by fact. If you think of the station as a car, you have within view all the gauges and indicators you need to assess the condition of the station and to decide what to do next.

15) Understand your listeners' needs and expectations. Because quality is defined by the listener, you need to spend time with your listeners and compare what you learn with what others at your station know about them and about your market. Only then will you know if your station is truly being driven by listener needs and expectations.

How would you rate with these guidelines? If you do not possess all of the above qualities, take comfort in the fact that management excellence is an art that is developed over several years of experience and training. Striving to include all of the above in your management style will enhance your value to the station and promote your own career objectives.

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Sue Jones is a senior manager for Computer Data Systems Inc., in Rockville, Md. She can be reached at 703-323-0491.

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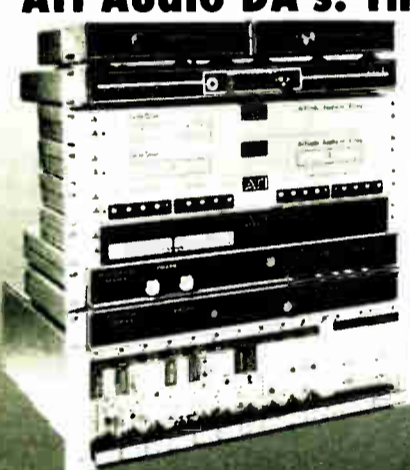


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READER SERVICE NO. 213

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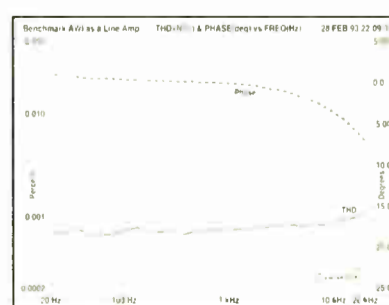
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READER SERVICE NO. 62

Country's Legacy Honored in Chicago

► continued from page 25

Patsy Montana, whose "I Want to be a Cowboy's Sweetheart" was country's first million-selling record by a woman.

Grand Ole Opry

Eventually, though, the "Opry's" doggedly traditional rural style won out. By the 1940s, it was the leading show in country music. Both programs inspired numerous imitators across the country. By 1946, roughly 600 country shows like Fort Wayne, Indiana's "Hoosier Hop" and Philadelphia's "Hayloft Hoedown" were broadcast every week.

Country music even made the transition to television in the late 1940s to 1950s with jamboree shows like Springfield, Missouri's "Ozark Jubilee" and showcases for individual stars like Pee Wee King, Eddy Arnold and Tennessee Ernie Ford.

Rock 'n' roll was a different story, however. Elvis (who actually had country hits during of his career) and those who followed wreaked havoc on the country music industry infrastructure as radio stations hurriedly switched to rock. By 1961, only 81 stations in the U.S. played country full-time.

The industry was saved from extinction by the formation in 1958 of the Country Music Association. By promoting country music to broadcasting and advertising

execs and making sure radio programmers got the music they needed, the CMA was able to multiply the number of country stations in the U.S. nearly tenfold by 1970.

Format revival

The revived country radio base gave country performers the exposure they needed to branch out into TV again, with Jimmy Dean fronting an ABC series from 1963-66 and "The Glen Campbell Goodtime Hour," "The Johnny Cash Show" and "Hee-Haw" appearing in 1968 and 1969. All were short-lived on network, but "Hee-Haw," of course, became a phenomenon in syndication.

Country radio, meanwhile, profited by the gradual splintering of pop music formats during the 1970s and 1980s. "Rap, heavy metal, alternative rock, new age, those formats all appeal to very specific audiences," Rumble said. "And frankly, they turn off a lot of people. Country doesn't."

McNeil, WUSN's program director agreed.

"When you listen to a country station, it doesn't matter if you're 5 or 95," he said. "We're a very wholesome, milk and cookies format. There's nothing that's going to turn anybody off."

McNeil believes country has cultivated a new generation of listeners with better-sounding music—in terms of more sophisticated recording techniques. But

the music's old-fashioned values remain the same and account for its appeal.

"That's why we keep our family audience," he said. "Our station consistently ranks in the top three among listeners 25 to 54. Those are moms and dads with kids in school who don't want to hear songs about killing cops."

Make Value-Added Work for Your Station's Listeners

► continued from page 38

referrals are a great way to say thank you to a strong advocate. Again, do not get roped into vacationing, wining and dining advertisers. Rather than rebate, bonus their next schedule on your station. Add an appropriate sponsorship or promotional tie-in that is coming up. Of course they will want to purchase a supporting schedule.

Database or data-waste

If you are just mailing or calling to ZIP codes or census tracts or block groups or even blocks, you may be wasting your time and money. Many things, including radio formats, audiences and consumer groups, are becoming more and more fragmented. You should not just blanket a ZIP code that "fits the profile" of your ideal listener with promotional material and feel you are doing all you can do. The fact is, people who live on the same block are not homogenous. If they live in your market area, can hear your station and are potential listeners, they may well live outside of the profile area. So how do you get to these people?

There is a form of research called "uses and gratifications,"—Effects Research. How do people utilize media, what do they gain from this use and what do they do with this information? Your target is not a college educated professional with a median income of \$65,000, 2.3 kids and three cars unless this individual is going to listen and respond. In order to get this person to respond you need to know what they respond to. In order to get that information, you need to look beyond demographics, median age income and education and acquire lifestyle information. What are their interests? What products do they buy regularly?

Now do not throw out your database. Look at it differently and add to it. If you have a major vacation promotion coming up where the prize is a Caribbean cruise, do not target simply demographic and income by ZIP codes. Locate the people whose interests are travel-related, whose hobbies are water sports, recreation and leisure activities.

If you have an in-house data base you regularly mail to, send out a short response piece to fill in some of these blanks. If not, there are companies out there that can provide either a database or research report of this nature to help you further target your data base marketing and maximize the response rate.

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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.

STATION SERVICES

► continued from page 28

jingle packages.

The "Lazer Impact Plus" CD product library features a total of 122 cuts including instrumental stingers, stager music beds, musical accents, swooshes, Touch-Tone effects as well as a wide range of laser effects.

Also on offer are market-exclusive jingles packages. The "Superstars" package is aimed at hot AC stations and includes a variety of talkover intro beds, shotgun and a capella liners, a traffic bed and news stager.

The "Superhighway" contemporary country jingle package features 10 primary cuts and a variety of additional versions after mixing.

For information, contact Leslie Erak in Washington state at 206-839-9414; fax: 206-839-5112; or circle Reader Service 92.

New Shadow Bureau

SAN FRANCISCO In an effort to better serve the eighth most-affluent market in the nation, Shadow Broadcast Services opened a South Bay News Bureau.

Shadow offers traffic reporting services as well as live, customized, format-specific news sports and weather.

For information, contact Don Bastida in California at 415-777-2151; or circle Reader Service 115.

The Real Dirt

NEW YORK The Gossip Editor for the National Enquirer, Mike Walker, will soon begin "dishing" on Westwood One. Beginning October 24, "The Mike Walker Show" will air weekdays from 10 a.m. to noon (ET).

Originating from studios in West Palm Beach, Fla., and New York, the show will also

go on location with remotes from Los Angeles to London and everywhere in between.

In addition to Walker's exclusive chat about people and stories making headlines, celebrity guests will make in-studio appearances to tell their side of the story.

For information, contact Laurie Peters in California at 310-840-4383; fax: 310-840-4068; or circle Reader Service 181.

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CONTRACTOR'S FORUM

Good Contractors Need Efficient Structure

by Mark Persons

BRAINERD, Minn. It is my understanding and direct observation that more than half of the radio broadcast engineering work in this country is being done by contractors rather than staff engineers.

This certainly is a major turnaround from the days when each and every station had a full-time chief engineer. When I started, many stations had assistants to the chief. Change came, but I continue to do the radio engineering work because I have made a business of it. Fortunately, the work is mostly enjoyable to me.

I am not a contract engineer, but instead bill myself as a "technical consultant." A contract engineer, in my view, is someone who is paid by the month to oversee the maintenance of one or more radio stations.

As a "contractor," I personally work with 40 radio stations on a regular basis doing repairs, updates and rebuilds as requested by each client. The clients are charged by the hour with half time for travel plus mileage. Shop time is 10 percent less to encourage clients to send equipment back with me for repair rather than attempt a repair at the station. This is a situation-dependent call but usually results in shop repairs at a lower cost to the client because my shop is well equipped to do this kind of work. In addition, it allows me to be at the office while still billing time.

What makes a successful contractor? Mostly it is good sound business practices. Here are a few examples:

- Be on time. If you have an appointment, don't be late.
- Be clean and neat in your dress. I do not wear blue jeans on a job anymore unless it is going to be really dirty work and management knows it is not my normal dress.
- Have a neat haircut and bathe daily. Scraggly beards are out. Neatly trimmed beards are acceptable.

In essence, the preceding recommendations tell you to look and act like management. In a small market, it is very likely that you, as a contractor, will be paid as well as the management of the radio station you are working for during your brief visit there. Dress clean, act humble and work hard for the client.

Cards on the table

Before I do any work for a new client, I put a copy of my rate card in the station manager's or owner's hands and ask if he or she has any problems with the charges.

To date, I have not had clients sign written contracts that might cover me personally in case of any legal action, etc. However, I plan to do that kind of thing soon. The Society of Broadcast Engineers recently released a ten-page standard contract form that appears to be a bit lengthy. Something in the two-page range sounds

better to me.

The most successful contractors I know are organized. My wife Paula is my business office manager, secretary, bookkeeper and UPS shipper. She keeps the business running, especially while I am on the road. A large part of what she does is professional-looking paperwork. Here is what the paperwork chain looks like at our place:

I carry a standard sheet of paper folded into one-eighth size which fits into my shirt pocket along with one pencil and one permanent marker pen. There is no pocket protector and the paper is not visible because the pocket is deeper than the paper is high. On that paper, I write notes showing what time I started work, when I went for lunch, when I restarted work, etc.

If I am interrupted by a telephone call from another client, the time involved is noted. That time is not billed to the job I am working on. It is usually billed later to the client who called. Parts used and observations are noted on this paper as well.

When back at a motel, I type the report into a notebook computer. If I am at the office, it is into a computer on my desk. The report is saved on floppy disk and included with a hand-written bill for time, material and mileage.

Paula edits the floppy disk report and prints it along with the bill which she does using the computer spreadsheet program Excel.

I sign the field report and review the bill before inserting it in an envelope which she has also typed. Paula just about doubles the office efficiency which means we are in essence a double income family. We each spend at least 40 hours a week in the business. It took a while to get to this point.

Paula takes care of most collections. If an

invoice is more than thirty days old, she sends a reminder and often follows up with a telephone call to the client. Once an invoice is more than 90 days old, it is much more difficult to collect. The client may not remember being off the air and wanting the job done immediately. Paula also takes care of posting all checks, ordering many parts, pricing parts as they come in and paying all invoices. She meets with our accountant, insurance agent, attorney and banker when necessary. The idea is to have me doing as little paperwork as possible which allows me to be paid for doing technical work rather than office work.

Two-person shop

We are a two-person company and work out of our home which has a lot of advantages. We rent office space to ourselves and share the telephone lines. About ten years ago we built a new home. Our business is not in the basement or garage. The house is divided into clearly defined business and personal areas. The office even has its own bathroom which visiting clients can use. We had to get a conditional use permit from the city before building a home/business.

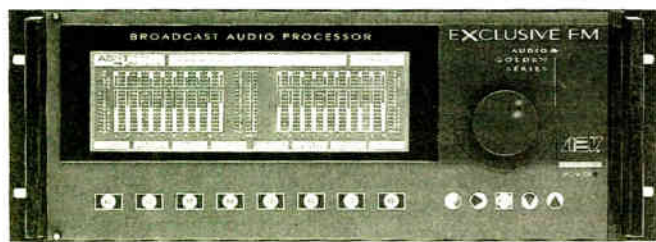
Check with your local zoning authorities concerning this matter. Some areas are much stricter than others. In our area, if we did not have a conditional use permit and a neighbor complained, we could be forced to move our business. As it is, the only walk-in traffic is from our regular customers dropping off or picking up equipment. We also have UPS delivery and pick-up daily.

It is my understanding that in most states I cannot be a contractor to a single

continued on page 49 ▶

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Live Assist Screen Pictured

The screenshot shows the SALSA software interface. At the top, there's a timer displaying '02:29:32' and '22:09'. Below the timer are 'L' and 'R' channel indicators with level meters. A central 'SALSA' logo with a chili pepper is present. To the right, there are control buttons: 'ON AIR', 'PAUSE', 'STEP', 'MENU', 'CLOCK', and 'TIME EVENT'. Below these are search and text input fields. A large playlist table is visible, listing tracks with their titles and durations. At the bottom, there's a 'SPORTS NEWS' section with a short article about the Philadelphia Phillies.

00:	ALABAMA	BORN COUNTRY	03:07
03:	HIGHWAY 101	WHO'S LONELY NOW	03:09
06:	ALAN JACKSON	CHASIN THAT NEON R	02:58
09:	THE JUDDS	LOVE CAN BUILD A	04:04
13:	THE BROWN ADOBE	SALSASPECIALS	00:30
14:	WVBU LEGAL ID	SPRING MARATHON ID	01:00
14:	LEWISBURG PHOTO	SPRING FEVER SALE	00:30
15:	CARLENE CARTER	COME ON BACK	02:46

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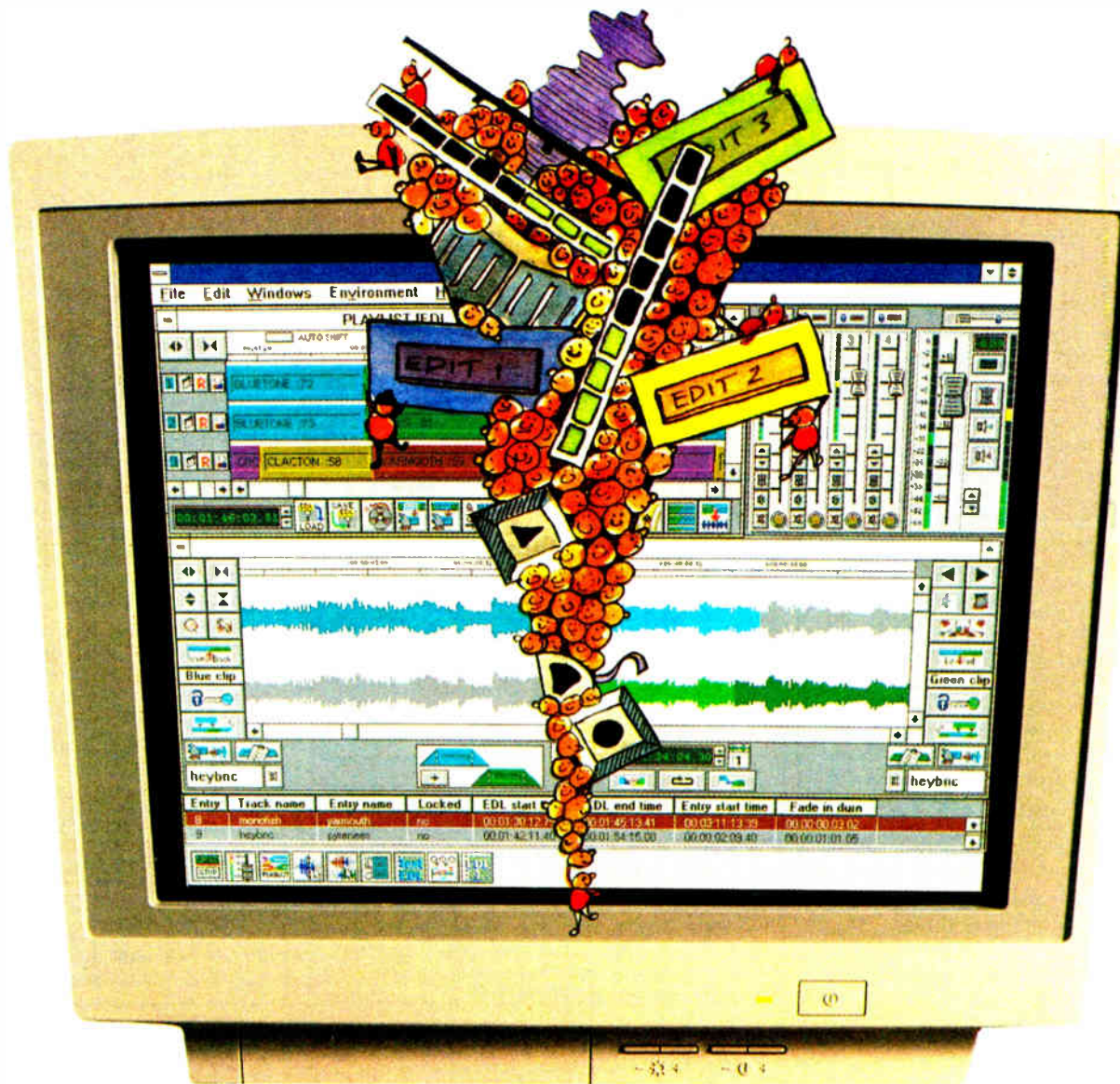
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WORKBENCH

Avoid Headaches by Labeling Cables

by John Bisset

SPRINGFIELD, Va. We recently worked with a client who does remotes nearly every day; talk about a revenue generator (and an energy sapper for the engineer). In any event, because the remotes take place in a variety of locations, he's developed a mic cable identification system that simplifies running lines and sapping energy.

One of the biggest hassles in setting up a remote is running a cable, only to find it's a couple of feet too short or extremely long. Too often the engineer spends wasted time digging through a cable box trying to find the right length cable.

Cable labeling

The solution to this nonsense came in a couple dollar rolls of white electrical tape. Around the lower body of each cable XLR, the length is written using a Sharpie pen. Three-foot long cables have a row of "3's" circling each XLR. Ten-foot long cables have the number "10" written several times around the shell. Each cable is secured by a Rip-Tie cable wrap (circle Reader Service 58) which is a velcro fastener that we featured some months back in *Workbench*.

One of the biggest hassles in setting up a remote is running a cable, only to find it's a couple of feet too short or extremely long.

The cables are rolled, fastened with the velcro strap and dropped in an oversized tool box for storage. When needed, you consult the labeled XLR to find the appropriate cable length. I'll grant you that the cable marking takes a little time, but even if you can't borrow an intern from the promotions department to do the work, you'll appreciate the effort at your next remote.

★ ★ ★

We've written a little about ISDN remotes. I'd be interested in your comments on ways to jock-proof the ISDN gear so an engineer isn't required to babysit each setup. If you have some ideas that work, fax them to me at 703-764-0751.

★ ★ ★

Lynn Distler at Comrex faxed a note saying *Workbench* readers have responded to Comrex's Fax-On-Demand application notes service that we described in September (Sept. 7, *RW*). Distler said the marketing of broadcast products has changed over the years.

It seems like only yesterday I was answering product questions on the phone at Delta. Now we have instant answers via systems like Comrex's Fax-On-Demand and its latest venture onto

the information superhighway—CompuServe's Broadcast Professional Forum. Lynn says the folks at Comrex have been impressed with the number of participants and subject matter discussed on BPF, so much so that they are establishing their own Comrex Section there. Watch the pages of *RW* for more information—or tie into CompuServe.

Who knows, maybe some day in the

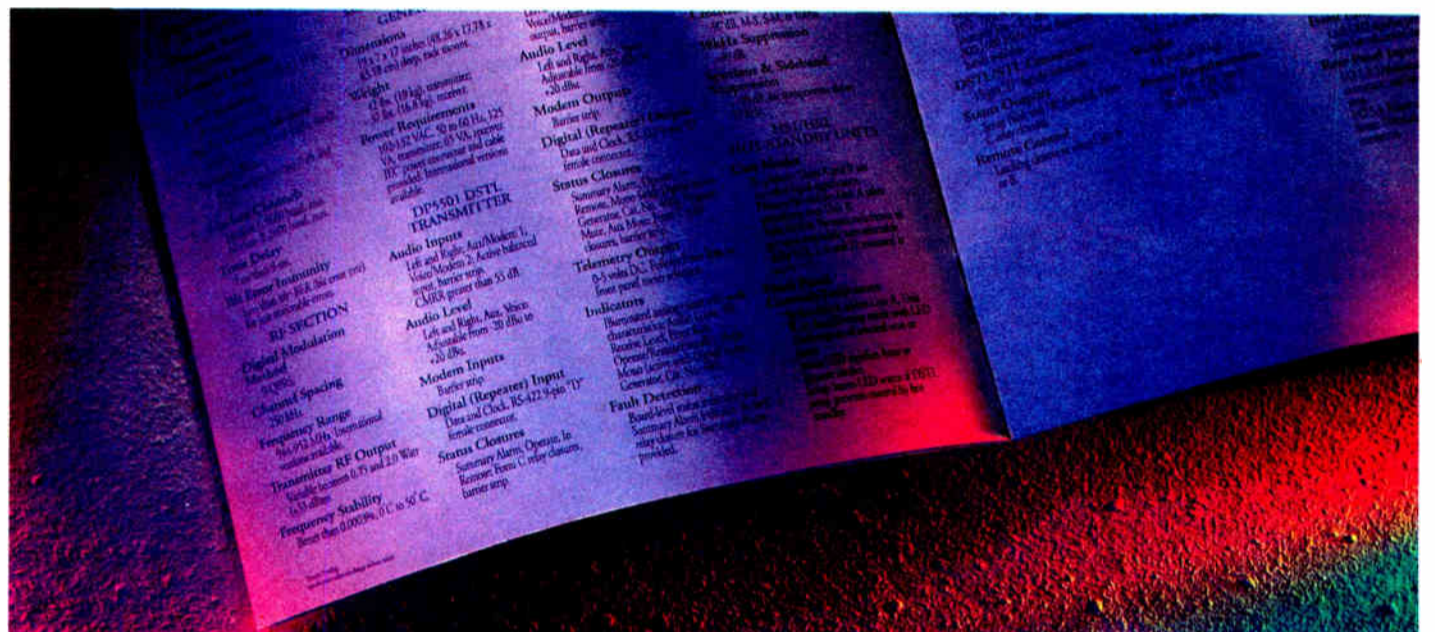
future, NAB will develop a BBS trade show. Can you imagine seeing all the greatest products and gadgets from the comfort of your computer terminal? I know, I know, what about Vegas? And you're right, maybe that's carrying the information superhighway a bit too far.

★ ★ ★

Although October may not be known for its lightning storms—unless you are

from Florida—we still get errant storms in the fall, so this tip from Kevin Clayborn at CRL should be considered. Circuit Research Lab uses 13 volt Transorbs across the plus and minus of the audio lines to ground. Transorbs are manufactured by General Semiconductor Industries, and their part number is SA13CA.

The Transorb acts like two zener diodes connected cathode to cathode. The device is rated at 500 watts for one millisecond and has a peak pulse current of 23A. continued on page 47 ▶



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WORKBENCH

► continued from page 45

Whenever a voltage greater than 13 volts is felt, the Transorb will then conduct, shorting that voltage to ground. Use of these devices protects the input and output circuits of CRL gear from greater damage.

The Transorb can handle small spikes, but larger spikes will normally short the Transorb, requiring replacement. Granted, you've lost your audio until the Transorb is replaced, but the cost of the Transorb is much less than a new circuit board.

There is a way around the replacement time, too. We took Clayborn's suggestion and wired the Transorbs into a barrel male to female XLR adapter. To help other engineers that may service a station after we're gone, the barrel is plainly marked, indicating that there are Transorbs inside and that a short between pins indicates failure. The information was typed onto a label using a small font generated by a word processor. One set of spare XLR barrels were then kept on the shelf for emergency replacement.

The male-to-female barrel works well for CRL products with XLR inputs and outputs. For the barrier strip input/output configuration, I suppose you could run an XLR pigtail to spade lugs, though best performance may be found with the Transorbs tied directly to the barrier strip. Making up some spares with the spade lugs already fastened would make the replacement job easier.

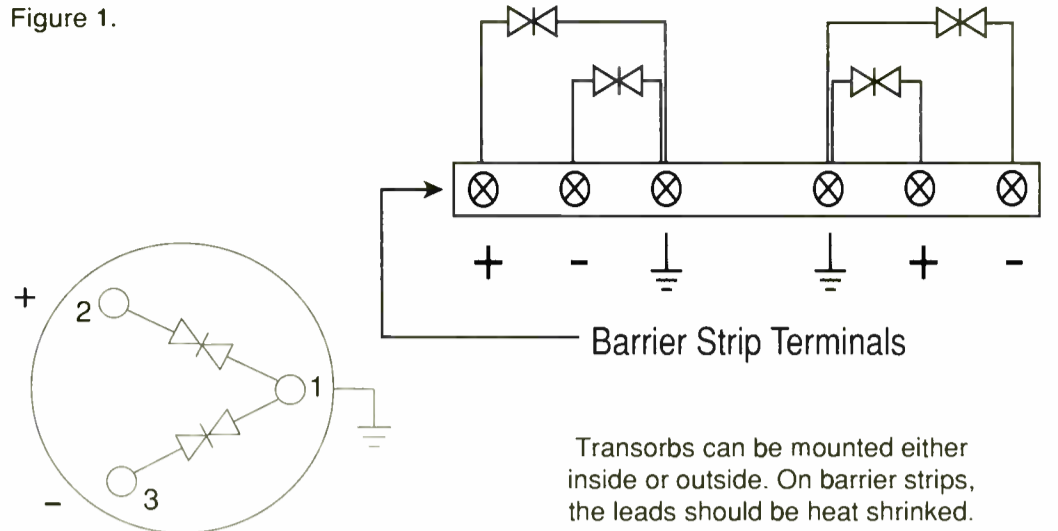
Clayborn advises using the Transorbs not only on CRL products, but on any audio gear where protection is needed. Unlike some transient protection devices, the Transorb will not degrade audio fidelity. As you look around your site for possible uses, don't forget the STL audio output or the telco equalizer. Figure 1 demonstrates some typical connections. Keep in mind there is no polarity on a Transorb. Connect either end to ground.

If you have difficulty finding Transorbs, a kit can be ordered from CRL. A mono kit, consisting of four Transorbs (two for the input, two for the output) costs \$5. The stereo kit doubles the number of Transorbs and costs \$10. Kits can be obtained by sending a check or money order payable to CRL, mailed to CRL, Attention: Transorbs, 2522 West Geneva Drive, Tempe, AZ 85282. By pre-paying, CRL will ship the kits the day the order and check are received. If you'd like more information, give Kevin Clayborn a call. He's the Customer Service Manager at

CRL, and his numbers are 602-438-0888 (phone) and 602-438-8227 (fax). If you'd like more information about Transorb's use, circle **Reader Service 201**.

□ □ □
John Bisset is a principal with Multiphase, a contract engineering and special projects company based in Washington, DC. He can be reached at 703-323-7180. Fax submissions for the Workbench column to 703-764-0751. Printed submissions qualify for SBE Certification credit.

Figure 1.



Transorbs can be mounted either inside or outside. On barrier strips, the leads should be heat shrunk.

CM86

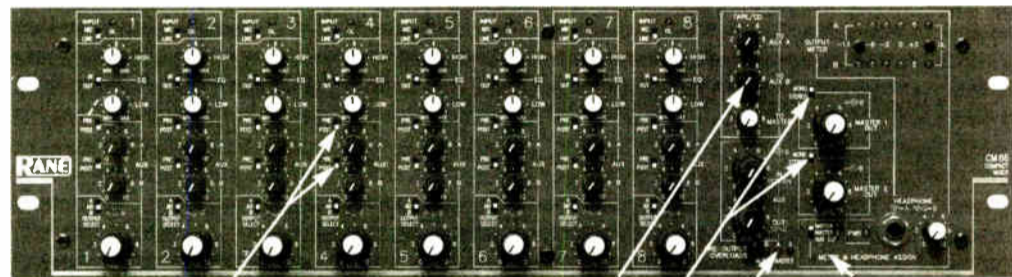
SUPERIOR FLEXIBILITY

You really only have to remember two things about the CM 86 mixer.....

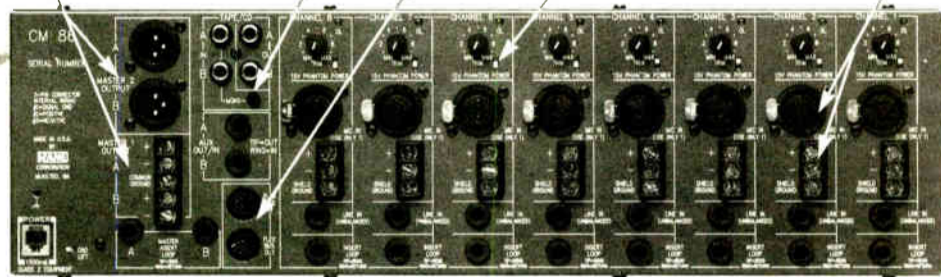
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2 SUPERIOR PERFORMANCE

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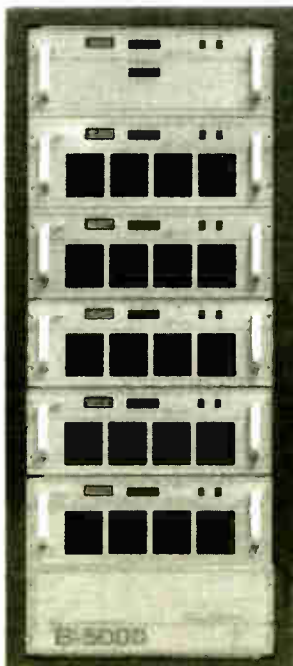
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FEEDLINE

When to Use Electrically Short AM Antennas

by W.C. Alexander

It's no secret that many radio stations—and real-estate hog AM stations in particular—are being squeezed out of their transmitter sites. In some cases the squeeze comes in the form of an offer too good to refuse from a developer. It's tough to pass up an offer from a homebuilder that amounts to several times the annual billing of the station.

Other times the squeeze comes in the form of eminent domain. Another source of pressure may be from nearby residents, who can become hostile when they can only get one station—yours—on their radios... and telephones, CD players, microwave ovens, refrigerators.

A lot of stations have gone "dark" as a result of transmitter site loss. Sometimes it is just too expensive to find and purchase or lease a new site and start over. It's a shame, too. In light of the site squeeze, it may be a good idea to examine some of the alternatives to conventional series-fed towers that are available to broadcasters.

The insulated-base series-fed radiator has long been the antenna of choice for AM stations. If the antenna is of the proper height (electrical length), this platform can provide an efficient, stable radiator. Sometimes, it may be preferable or even necessary to use a shorter tower at a new site. This is more often true on lower frequencies where a quarter-wave tower can exceed 500 feet in height.

Real estate constraints plus FAA restrictions may dictate the use of an electrically short tower along with an abbreviated ground system. This goes against the grain of conventional thinking, but such antennas are possible—and even permissible—provided that the antenna is capable of producing an unattenuated field strength of at least 282 mV/m at 1 km.

Sometimes it may be necessary to use a tower with a grounded base as an AM radiator. This would perhaps be the case where an existing non-insulated tower were to be adapted for use as an AM radiator. This is

certainly possible, with several configurations available.

With the base grounded, the impedance at that point is essentially zero. The impedance increases, however, as we move the feed point height above ground. The most common method of feeding a grounded-base tower is using a slant wire. This wire extends from the point at which it leaves the transmitter building upward at an angle (thus the name) to a point on the tower at which a desirable input impedance is obtained.

The easiest method to determine the proper feed point height is cut-and-try, although modern moment-method computer modeling techniques may give a good starting point for the trials.

Slant-wire feeds have a couple of drawbacks. First, the current in the slant wire is usually significant, and thus there is a relatively high RF radiation level in the vicinity of the wire. It may be perfectly safe to be very close to the tower base itself while the station is operating, but the area around the slant wire can be quite "hot."

Another drawback is that the slant wire feed tends to distort the omnidirectional radiation pattern of the antenna, with radiation on the side where the slant wire is attached being suppressed.

Another alternative for use with a grounded base tower is the folded monopole. In this configuration, a skirt of six wires is run up the outside of the tower. This skirt is insulated from the tower at the base and bonded to the tower at either the 90 degree point or at a point that results in a desirable feed point impedance.

Fed at the insulated skirt base, this arrangement creates, in essence, a quarter-wave open-circuit transmission line that creates the equivalent of an insulator at the tower base. Performance of this antenna will resemble that of a base-insulated tower.

By increasing the capacitance to ground from the top of an electrically short tower, it is possible to considerably improve the performance of such a radiator. This is

achieved through "top loading" which can take the form of either a flat, circular disk attached to the top of the tower (called a "top hat") or by bonding sections of the top guy wires to the tower.

A lot of stations have gone "dark" as a result of transmitter site loss.

The latter method is much more popular to the former, as top hats are mechanically troublesome, difficult to maintain and less effective than other methods of top loading.

Guy wire top loading is relatively easy to achieve. Guy wires, which are endemic to most towers anyway, are usually insulated from the tower and then broken up into non-resonant lengths by compression insulators. To achieve top loading, the top set of guy wires is bonded to the tower at the top. The top loading is then achieved by the portion of the top guy wires between the tower and the first set of guy insulators. Sometimes, the lower ends of the top-loading guy sections are tied together. This increases the capacitive affect to a degree, but this increase comes at the expense of construction and maintenance problems (how do workers get to those connections, anyway?). Other times, several non-struc-

tural guys are added to increase the capacitance, again resulting in greater maintenance and construction costs. The same increase in capacitance can often be achieved by simply lengthening the three or four top-loading cables somewhat.

Top loading tends to increase the base resistance of an electrically short tower while decreasing the capacitive base reactance. This in turn lowers the Q and improves bandwidth.

Another variation of top loading employs an elevated, tuned counterpoise. A variable inductor is inserted between the counterpoise and the ground system and tuned to minimize the top loading field through the counterpoise to ground.

Several options exist for AM stations that must use limited height and/or grounded base towers in order to stay on the air. Shunt fed, folded monopoles, top loading and counterpoise systems are just a few of the many variations that are possible. As long as the minimum efficiency specified in 73.189 is met along with all co- and adjacent-channel protection requirements, any of these configurations and many combinations should be acceptable. I think that if my back were against the wall and the only way to stay on the air after losing a site was to use an antenna with less than the minimum efficiency, I would petition for a waiver of that rule and file it anyway. If the public interest is truly served by keeping the station on the air, there is a good chance that the waiver would be granted.

□ □ □

Cris Alexander is director of engineering for Crawford Broadcasting in Dallas.

Contractor Efficiency

► continued from page 45

employer. If I get a single check every month from just one company, then I am probably an employee of that company in the eyes of the IRS.

I must also be careful if I supervise any employees at a radio station. If I have the station owner hire an outside person to help me and that person takes direction from me as to when to arrive for work, what work to do, uses my tools, that person may be considered my employee and not an employee of the station. If that person would be injured on the job, I could become liable.

Insurance is something that many contractors try to skimp on, especially in the beginning. There are a few insurance companies out there who will insure you. You may have to work to find them, but it will be worth it if you are ever involved in litigation. The Society of Broadcast Engineers is working on an insurance program. A good relationship with an accountant, insurance agent, banker and possibly an attorney may be time well spent. We carry liability insurance in addition to regular accident and theft insurance.

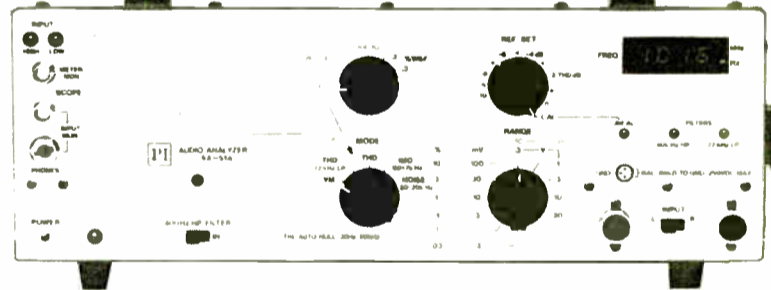
When you are working as a contractor, it is important to keep a positive attitude on the industry. Be eager to discuss with management the many and varied engineering alternatives to the many new challenges that face the industry and the station. No one wants to work with a negative person. Be positive and your business should follow suit.

See you further down the road. I'll leave the soldering iron on for you.

□ □ □

Mark Persons has 30 years of radio broadcast engineering experience. He has run his own contract engineering company for the past 15 years with the help of his wife Paula. Mark Persons can be reached at 402 Buffalo Hills Lane in Brainerd, MN 56401; or by calling 218-829-1326.

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Build Your Own Decade Box in the Shop

by A.W. Edwards

CORPUS CHRISTI, Texas In the late '70s, I was employed as an applications engineer for TRW precision resistors. (TRW Resistors is today IRC Resistive.) During this employment many special applications for precision resistors were processed by the plant. Although application engineers are typically more salesmen than engineers, an overlap of disciplines was an interesting and beneficial aspect of the work.

Because of the quality and high precision available in the manufactured resistors, the author decided to construct a decade box using some of the excellent products available in the plant. The unit developed by the author was built on his own time, at his own expense, except for the resistances, which were readily available from manufacturing overruns.

A technique was employed that used four discrete values of resistance per decade to obtain the nine desired values. By using properly wired switches for each decade, the four values could be used singly, or in combinations, to give all nine values. Instead of 54 (6 x 9) precision resistors, only 24 were needed.

The resulting product was a precision

decade box. It offered at its output terminals resistance values from one to 999,999 ohms in one-ohm increments. Typical resistor accuracies of the units were 0.5 percent for the lower values to .01 percent or better for the higher ranges. While this degree of accuracy is not required in most everyday work, it was there, and, in any event, accuracy in measuring instruments is never amiss.

Before discussing applications of the precision decade box, some information about its construction is in order. There are six separate decades, two binding posts. A third, optional binding post connects a one-ohm, non-precision variable

(one through nine) times the multiplier for that decade. For example, the tens decade presents 10 at the "1" dial setting (1 x 10), 50 at the "5" dial setting, etc. The ranges offered are:

Units	1-9 ohms
Tens	10-90 ohms
Hundreds	100-900 ohms
Thousands	1K-9K ohms
Ten thousands	10K-90K ohms
Hundred thousands	100K-900K ohms

The decades are in series, each end of the assembly going to a binding post.

The 0 setting presents a low-resistance bypass route through the decade unit. The 10 setting is open; these terminals connect to the wiper commons. Position 11 is unused.

The circuitry which permits full-resistance ranges from only four basic resistances per decade is shown in Figure 1. The objective in using this method was to minimize the number of parts needed without sacrificing accuracy or available resistance selections.

From resistor banks composed of 1, 2, 3 and 6 ohmic units (and decade multipliers of these basic values), the 999,999 discrete values are available at the output terminals.

While this device could be a handy source of trial resistances for prototypes or other bench projects, a statement of caution must be made. Care should be exercised to avoid approaching or exceeding maximum power ratings. The precision elements could change permanently in value, with a loss of accuracy. For such uses it would be a better idea to build a resistor substitution box using this same circuitry, with regular resistors of, say, 5 percent tolerance, and use 2 watt units.

Figure 2 illustrates the use of the decade box as one of the known arms of a Wheatstone bridge used to measure an unknown resistance. Two other known resistances are required in this method. The author keeps a few selected standard resistance pairs for the purpose. Typically these might be a matched pair

of 500 ohm, 5K ohm, 50K ohm and 500K ohms.

With the decade box connected at "C," when a null is obtained the unknown resistance may be read directly from the dial settings. This is true when the resistances at "B" and "D" are known to be equal.

Notes: The digital voltmeter is an excellent null or balance indicator. These devices are sensitive, accurate, can handle large variations in voltage without damage and offer minimal circuit loading. When presented with polarity reversals (which occur while defining the exact balance point), the only effect is that this change is indicated in the display—a desirable condition. Their only small disadvantage is that each change in the decade box requires a little settling time for the new reading to be displayed.

The optional "null pot" terminal inserts a 0-1 ohm variable resistance in series with the decades. This gives a vernier control that permits seeing the exact bottom of the null when the measured resis-

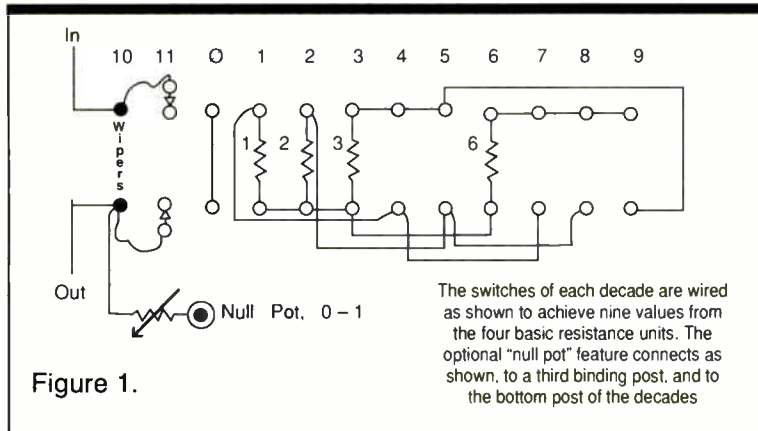
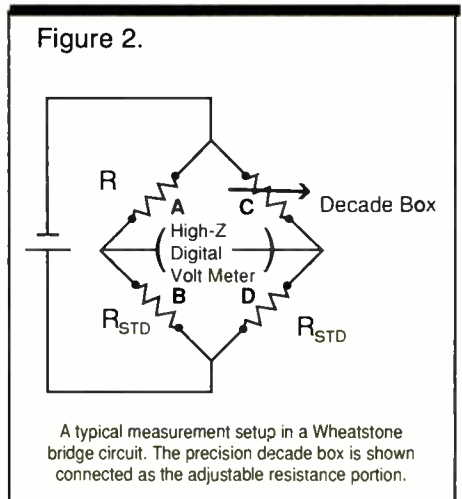


Figure 1.

resistance in series with the decades. All switches are Centralab PA-1005.

Each decade provides resistances according to the selected dial position

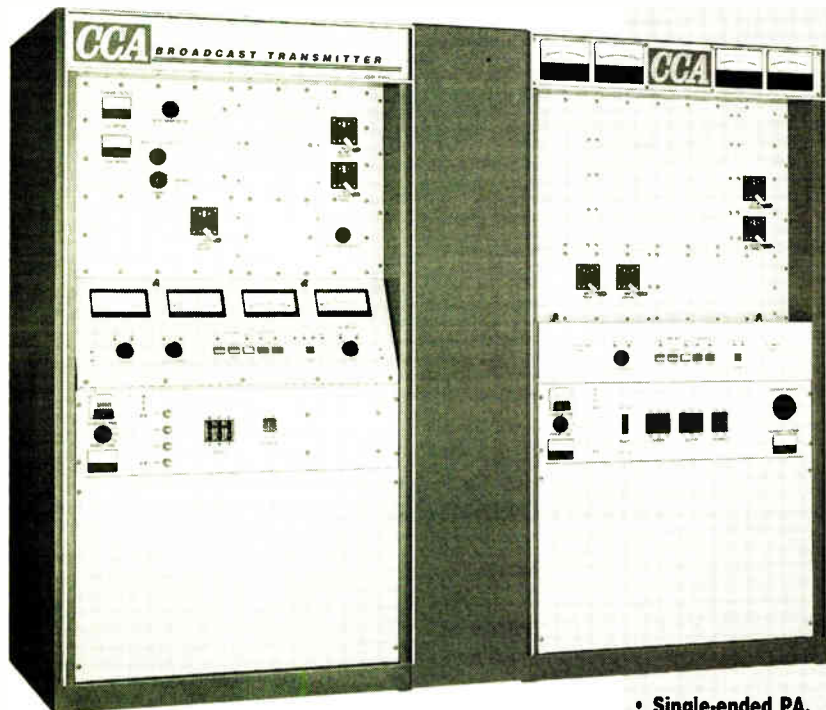


tances are in the lower ranges and when it might not be presented with the incremental selections only. Although the null pot is not a precision resistance, it may be calibrated and offers useful interpolative values in the tenths of ohms.

□ □ □

A. W. Edwards, K5CN, retired in 1992 as a ship radio operator. He holds First Class Radiotelegraph, General Radio telephone and Amateur Extra Class licenses. First call (1946) was W5KZG. He prefers operating CW but operates phone on several bands. He was an intelligence officer/electronics engineer with the CIA during the U2 years.

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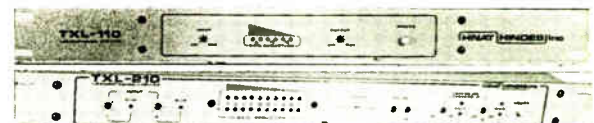
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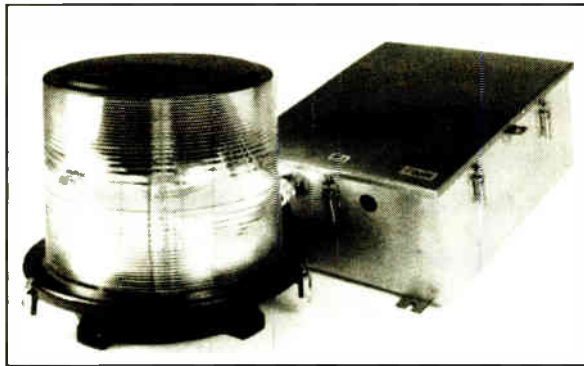
For information, contact Yamaha Corp. of America in California at 714-522-9011; fax: 714-739-2680; or circle Reader Service 119.

Lens with Less Wind Loading

Flash Technology Corp. of America offers a new 400mm Fresnel lens for use in advanced medium intensity strobe L-864/L-865 lighting.

The new 400mm lens optimizes Fresnel optics by giving more light output with less power consumption, less wind loading, less ground light and a 30 percent narrower beam than the 300mm lens.

For information, contact Ron Brown in Tennessee at 615-377-0600; fax: 800-4-A-FLASH; or circle Reader Service 51.



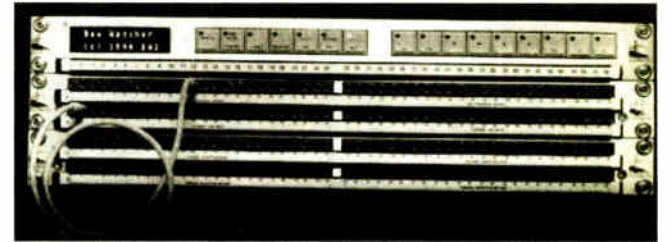
Patch Bay Monitor and Recall System

The BayWatcher patch bay monitor and recall system from BayWatcher Inc. is a complete standalone system for monitoring and recording patching in today's complex patch bay systems.

BayWatcher monitors each patch as the user makes it and automatically stores the information for later recall. It prompts the user through a repatch with LEDs located at each jack, as well as with voice and visual displays. If patches are made incorrectly or "permanent patches" are disconnected, BayWatcher sounds an audible alarm.

The system consists of optical patch bay panels that replace the front panels of

existing patch bays. Installation is simple and does not involve any jack or wiring changes. It also includes a remotely located micro rack and power supply, as



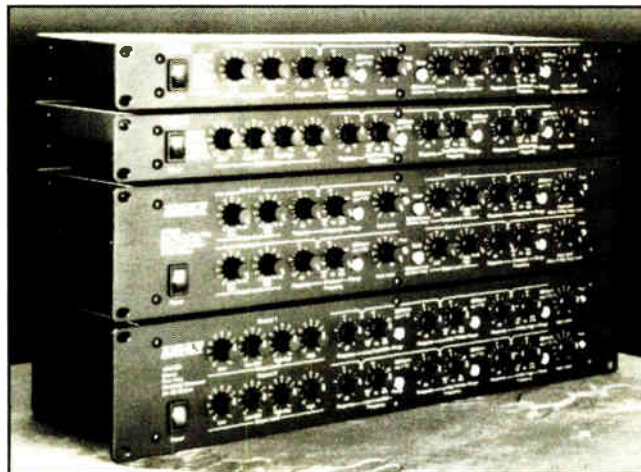
well as a 1U Display and Switch Panel that mounts atop the bay. Its software is Windows-based.

For information, contact B. Morgan Martin in California at 213-256-4048; fax: 213-256-0673; or circle Reader Service 38.

New Electronic Crossovers

Three new models of electronic crossovers are available from Ashley Audio. The XR-Series II units feature 24 dB per octave filters, an infinitely variable selection of crossover points and both 1/4-inch TRS phone jacks and XLR connectors on all I/O.

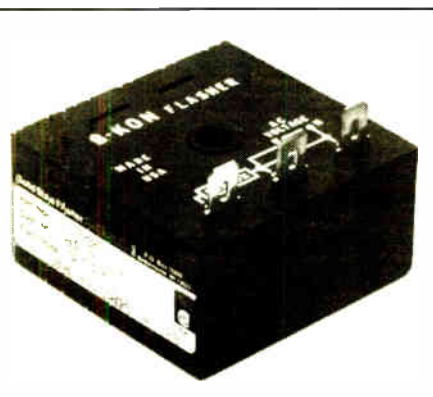
The XR-1001 is a stereo two-way or mono three-way crossover.



The XR-2001 can be set as a stereo three-way, a mono four- or five-way or even in a four-channel two-way configuration for bi-amplifying on-stage monitor systems. Four-way stereo needs are filled by the XR-4001 model.

All Ashley crossovers have a Response Control feature allowing users to select the best filter performance for a particular application. A peak overload circuit monitors all critical points in the circuit, ensuring low-distortion operation.

For information, contact Bob French in New York state at 716-544-5191; fax: 716-266-4589; or circle Reader Service 110.



RF-Resistant Beacon Flasher

SSAC Inc. offers a new RF-resistant, totally solid state beacon flasher—the FS155-30RF. Beacon flashers are used to control the red flashing anti-collision lighting required by the FAA on many tall structures including radio antennas.

The FS155-30RF is designed to perform well in the high RF energy regions found around AM transmitter sites, including AM "Hot" towers. It fully encapsulated in a small molded plastic package to protect against shock, vibration and humidity, and the FS155-30RF contains no moving parts to freeze and fail.

For information, contact Dave Eastwood in New York state at 315-638-1300; fax: 315-638-0333; or circle Reader Service 209.

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World Radio History

Weather Relief for Satellite Stations

by Hal Kneller

PORT CHARLOTTE, Fla. Recently, WKII(AM) and WEEJ-FM Radio in Port Charlotte, Fla., installed a Digital Weatherman II from Weatheradio to automate weather forecasts. This product is unique because it always provides the latest forecasts at the press of a button (or trigger from an automation system) without personal attention.

With the aid of a personal computer, digital audio card and a 28.8 Kbps modem with 115.2 Kbps throughput, broadcast quality audio is achieved from Weatheradio, located nearly 1,000 miles

from the stations.

Tom Churchill, owner of Weatheradio in Dubuque, Iowa, assembled the system after we inspired him with the concept. Our problem was trying to get up-to-date weather (and weather watches and warnings) in a satellite-automated environment. Tom wrote the special software for computer control and audio manipulation, while using off-the-shelf computer products and communications programs.

In the rack

Our unit is in a sharp-looking 19-inch rack mount. It has a 40MB hard-drive and a floppy drive but no keyboard or monitor.

In addition, the system contains a ProAudio Spectrum 16 sound card and Boca V. fast class modem. Churchill tells me he is happy to supply a desk-top or mini-tower configuration if that works better for your particular installation. With just four connectors (including the power cord), the system can be installed and on-the-air in under one hour.

User interface is provided by a bi-directional parallel port. While Churchill has certain "standards," he is able to program specific functions to various pins. To play our AM station's weather, we simply ground pin five. A ground on pin six will trigger the FM forecast. Other pins control

alarms for weather bulletins, print weather products, synchronize the unit's clock and provide play status so the customer may connect lockouts.

Status lights may be connected, and text forecasts and warnings or graphics maps may be printed automatically or on user command from a second port. An additional interface is provided so that the customer may tailor when forecasts are switched (such as morning to afternoon to evening to overnight). The system will rotate any sequence of cuts for any given period. The unit is pre-loaded with tags and current weather and temperature conditions that are assembled along with the forecasts each time the play button is triggered to create a new audio cut every time.

Churchill said that for any current temperature and sky condition there are over one million possible feed combinations to keep our listeners from hearing the exact same cut more than once. Optional weather instruments are available that allow the unit to read current conditions right at the station.

Automated

Additional sensors may be installed at any site in the listening area to set up an automated spotters network—with all of the information available instantly for on-air use. We receive two new base forecast cuts for each day (one for overnight) plus current weather conditions at certain times of the day. We also receive three weather teasers for the morning man that run about 10 seconds each.

If the announcer listens to these cuts in cue, he can engage Churchill in a conversation on the air that sounds live. Because the teasers are different, the announcer can ask a question and Churchill answers it on the second punch. The regular AM cuts are 30 seconds long but 20 seconds in length for the FM.

The system looks like a cartridge machine to the announcer or automation system. Exact timing of cuts is available for those like us working in satellite windows.

One problem with out-of-town weather services is that they sound out-of-town when they come in over a regular telephone. Not so here. Tom will send the forecasts at whatever frequency and sampling size you desire (from 8-bit mono, 8 Hz to CD-quality standard 16-bit, stereo, 44.1 kHz). At 8-bit, 16.1 kHz sampling rate, it's not quite as good as the studio microphone, but it has full low end and about 8 kHz top end. On the AM station, that audio on my car radio is hard to tell from the studio mic. On FM there is a slight audible difference but still very acceptable. It sounds similar to our Marti remote pickup system, which was our original design goal. As an experiment, Churchill sent us a 32 kHz sample rate forecast. That was very good and had a full high end.

The hitch? You pay for the phone calls. Our entire load for AM and FM separate weathers runs under 10 minutes per day, with an additional four or five 35-second calls daily to inform the machine of current weather conditions. When the weather forecast changes, just those cuts requiring revision are re-sent. The update process is automatic, and the stations never know that it happened. By the way, our cuts are sent early in the morning when the phone company is on overnight rates. If they prove wrong, they can be re-sent and updated at any time.

□ □ □

For more information, call Tom Churchill at Weatheradio at 1-800-728-4647. When his computer answers, input extension 100. Hal Kneller is president of WKII-WEEJ Radio. He can be reached at 813-639-1112.



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Ft Worth, Unarco, Rohn, Pi-Bod, (6) self support, starting at 120' up to 200', must remove. M Egloff, Warner Cable, 6709 Van Kirk St, Cincinnati OH 45216. 513-761-2061.

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Circle (164) On Reader Service Card

Shively 6810 8 bay directional, 100.3 MHz, 10 kW power rating/bay, max 40 kW for 4 or more bays. T Lewis, Inter Urban Bldg, 8701 S Kimbark, Chicago IL 60619.

Phelps Dodge 4 bay, lw pwr, 91.5 MHz, \$500. T Toenjes, WREN, 201 NW Hwy 24, Topeka KS 66608. 913-437-6549.

Want To Buy

High pwr on or near 94.7. J Davis, SCB, POB 7762, Amarillo TX 79114. 806-355-1187.

Phelps Dodge FM CHP complete or partial center fed FM CHP antenna system. E Moody, KJEM, 216 N Main, Bentonville AR 72712. 501-273-9039.

Scale TVO-8, chnl 9. G Kenny, KCL, Neosho MO. 417-451-1440.

AUDIO PRODUCTION

Want To Sell

dbx 157 type NR, mint, \$350. E Toline, 525 W Stratford Pl, Chicago IL 60657. 312-975-6598.

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20899 Kelvin Pl.
Woodland Hills, CA 91367

Circle (118) On Reader Service Card

Roland DM-80-8 8 trk, inc DM-80R remote and DM 80F fader unit, mint cond, in box, \$11,000/BO. M Roberts, WISZ, 3090 28th Street, Grand Rapids, MI 47505. 616-949-8585.

UREI 527A _ octave graphic EQ (2) w/tamper proof covers, \$200/ea. Kevin, Brown & Brown, POB 224, Portage MI 49081. 616-327-8352.

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HARRIS ALLIED

Howe Tech 2300A Phase Chaser, \$1000; ESE 790 1000 event prog clock, \$500. M Ripley, KOZE, POB 936, Lewiston ID 83501. 208-743-2502.

Sony PCM-501ES digital DCM adapter, 14/16 bit quantization, 44.1 kHz, \$450. P Combs, Only Son Prods, 2170 Bataan Dr, Kettering OH 45420. 513-253-1912.

Sony pulse code modulators for Beta or VHS based rec, BO. F Zeiler, WBJC, 2901 Liberty Hgts Ave, Baltimore MD 21215. 410-333-5100.

ADC 96 & 144 Pr TT patchbays, excellent condition, 1 rack space, 3 rows of 48, top 2 rows normalised, \$149, 96 is 2 row normalised, \$129 (you remove old wiring) or we totally refurbish w/new front panel, ready to install, \$199-229. TT cords up to 10 per bay at \$9 ea, reg \$13.95, also 1/4" bays. Audio Village, 619-320-0728, or Fax 619-320-2454.

Demeter 4 channel rk mt tube direct box NEW \$795. W Gunn 619-320-0728.

Want To Buy

Howe Audio 2300 Phase Chaser, must work, have docs. C Layno, WGHP-TV, 2005 Francis St, High Point NC 27263. 910-841-8888.

AUTOMATION EQUIPMENT

Want To Sell

Schafer 903, \$750. M Ripley, KOZE, POB 936, Lewiston ID 83501. 208-743-2502.

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Valley 400 Mic Processor -	Rebuilt	\$ 349
Urei LA-3A Classic Leveling Amplifier -	Rebuilt	\$ 495
Gentner TC-100 Hybrid/Coupler -	New	\$ 359
ITC Premium Mono RP Cart Machine -	Rebuilt	\$ 795
BE 3000 Stereo RP Cart Machine w/ Fast Forward -	Rebuilt	\$ 795
Audi-Cord A-15R Stereo Cart Players (2) -	Factory Rebuilt	\$ 295
Revox A-77 1/2 Track Stereo Reel -	Rebuilt	\$ 595
Tascam 22-2 1/2 Track Stereo Reel -	Rebuilt	\$ 495
Tascam 32-2 1/4 Track Stereo Reel -	Rebuilt	\$ 795
Otari MTR-10 Spare A, B, C, & D Plug-In Cards -	New	\$ 395
BBN 1 x 10 Stereo Remote Audio Switcher (2) -	Rebuilt	\$ 75
West Penn 432 6 Pair Shielded Audio Cable ~800' -	New	\$ 195
ITC Omega Mono Cart Player -	Rebuilt	\$ 395

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100W to 500W Solid State Up to 20KW tube

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AUDIO PRODUCTION...cont'd

Arrakis DL CD-85C CD multi play controller, Digiliink, \$1000; Pioneer PD M501 CD plyrs, \$1000. E Moody, KJEM, 216 N Main, Bentonville AR 72712. 501-273-9039.

Cetec 7000 automation cntrlr, Carousels, Audiofiles and more, BO. E Moody, KJEM, 216 N Main, Bentonville AR 72712. 501-273-9039.

Revox A77 (4), play only with rack mount, BO; Otari ARS-100, good condition with book, BO. C Gennaro, WIMI, 222 S Lawrence, Ironwood MI 49938. 906-932-2411.

Schaefer 903E 3 day mem, Audiofiles (4), ITC TSO stereo play R-R, ITC delay rcdr, ITC mono carts (4), BO. J Curtis, KFRO, POB 4299, Longview TX 75601. 903-663-3700.

SMC 350 RSB (3), 24 tray Carousels, exc cond, \$850/BO for all 4 pieces. B Christie, Grande Radio Group, POB 907, La Grande OR 97850. 503-963-4121.

Sono Mag Mini Pro, brain (3), Revox PR-99, R-R, Carousels (2), random selections, 2 racks, \$1500/BO. S King, KGFL, POB 33, Clinton AR 72031. 501-745-4474.

SMC 250 Carousels (21), wking cond, \$100. D Morgan, KJYE, 1360 E Sherwood Dr, Grand Jct CO 81501. 303-241-9230.

Smartcaster 8 kHz mono HD audio computer, 4 hrs rec time, \$3500. R Miller, WTIM, POB 169, Taylorsville IL 62568. 217-824-3395.

The advertising
deadline for
November 30
issue of
Radio World:
November 4, 1994

DP 1, including 450 Carousels (3) and 250 Carousels (3), plus 2 for parts, dual-plays, AS 16 switcher, AS-20 for parts, remote cntrl, encoder. WSMI, Box 10, Litchfield IL 62056. 217-324-5921.

IGM cart encoder, inc video terminal, IGM FSK encoder and cables, barely used, BO + shipping. T Anderson, KXLY, 500 W Boone Ave, Spokane WA 99201. 509-324-4000.

SMC DP-1 (2), will part out, \$1000/BO. D Morgan, KJYE, 1360 E Sherwood Dr, Grand Jct CO 81501. 303-241-9230.

Schaefer 7000, 47 tray AudioFile cart machines (2), Int'l Tapetronics (6) R-R, terminals (2), 4 tall system racks, \$7500. M Van Ouse, WTLR, 2020 Cato Ave, State College PA 16801. 814-237-9857.

Sentry FS-12C, good/excellent condition, \$2900; TS-1 also available. Call 806-372-5130.

Want To Buy

Insta Cart, good, used. D Ball, KREP FM, 2307 W Frontage Rd, Belleville KS 66935. 913-527-2266.

CART MACHINES

Want To Sell

ITC cart R/P, mono, \$350; ITC SP cart player, mono, \$250; Spotmaster 500B, R/P deck \$200, play only, \$125. E Moody, KJEM, 216 N Main, Bentonville AR 72712. 501-273-9039.

ITC 99 R/P, \$600; ITC RP-003 (2), R/P, \$150. C Peterson, IGM, 4041 Home Rd, Bellingham WA 98226. 206-733-4567.

Sonomag mono (2), w/rec manual, \$200; Tapecaster 700P, exc cond, \$175; Collins Twin Tape, rec, PB, \$250. J Vukelich, American Bdct, 4551 Flag Ave, Minneapolis MN 55428. 612-537-1431.

ITC stereo triple deck and R/P stereo, 200 slot cart rack, gd cond, \$600/all. D Rogers, KXAX, POB 465, St James MN 56081. 507-375-3386.

BE 2200 RP, mono, \$200. D Green, KNGT, 9555 Jesus Maria Rd, Mokel-vase Hill CA 95245. 209-286-1166.

ITC Delta stereo: Playbacks and Record/Playbacks BE SCDG151032 Stereo five high deck. Motivated Wes 800-798-9127

SMC 521 dual play PB cart deck, \$25. J Coursolle, WPKR, 3891 Waukau Ave, Oshkosh WI 54903. 414-236-4224.

IGM Instacart, \$1000. M Ripley, KOZE, POB 936, Lewiston ID 83501. 208-743-2502.

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HE HALL Electronics

Tascam 122B(2), parts machine, BO + shpg; Technics RS M85MKIF, fair cond; BE 3200 RP, exc mono machine, BO. H Widsten, KGNB, 1540 Loop 337 N, New Braunfels TX 78130. 210-625-7311.

Cetec/Sparta Century series 4615; BE Spotmaster 5000; SMC cart machines; \$50 ea + shp. D Morgan, KJYE, 1360 E Sherwood Dr, Grand Jct CO 81501. 303-241-9230.

ITC RP mono, vgc, \$350. D Morgan, KJYE, 1360 E Sherwood Dr, Grand Jct CO 81501. 303-241-9230.

ITC 99B comp refurb, R/P, stereo, new logic and audio, \$2950. J Katowah, WFGB, POB 777, Lake Katrine NY 12445. 914-336-6199.

Tapecaster rec and P/B, gd cond. A Ishkanian, 132 Arbor Oak Dr, Ashland VA 23005. 804-752-6942.

AudiCord mono cart machine, mint cond, \$650.00. Call 806-372-5130.

Tapecaster X-700 rec (1), PB (3), \$100 all/\$25 ea. S Sabot, WYBF, 610 King of Prussia Rd, Radnor PA 19087. 215-971-8360.

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

Want To Buy

ITC R/P good, used; ITC triple deck. D Ball, KREP FM, 2307 W Frontage Rd, Belleville KS 66935. 913-527-2266.

ITC Delta stereo PB, must have all tones; IGM 60 24 tray cart in gd cond; Ampro PB; Delta I record module. H Zeve, WHYL, 717-249-1717.

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

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Want To Sell

Ampex 440B _ track stereo, 7 _/15 ips in roll around, \$575. Kevin, Brown & Brown, POB 224, Portage MI 49081. 616-327-8352.

Ampex 601 works, but needs work, \$100/BO. E Dawson, WNNS, POB 7167, Springfield IL 62791. 217-787-0800.

Ampex/Schaefer AG440 reproducer (2), 2 trk reproduce decks, rk mt, \$200. D Bailey, Rock Shoppe Prod, 3422 Beech St, Rowlett TX 75088. 214-475-9796.

Crown Int'l 800 series (3), heavy duty units, R/P, \$180/all. M Van Ouse, WTLR, 2020 Cato Ave, State College PA 16801. 814-237-9857.

Fostex 250 capstan motor for porta studio, \$50/BO; Crown BX-800, tube type, 2 trk, 10 _ reels, 7 _ & 15 ips, BO or trade. E O'Brien, Imperial Sound, 383 N Studio St, Terre Haute IN 47803. 812-877-2663.

REVOX PARTS/SERVICE

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Rebuilt A77s, \$850.00
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Nashville, TN 37203 (615) 244-6892

Nagra 402L 3 speed crystal sync, 2 mic preamps, auto level control, leather case, VGC, \$4200. D Shirk, Shirk Audio, Box 357, Terre Hill PA 17581. 710-445-7864.

Revox A77, _ trk, good condition, \$400. C Niebauer, American Artist Studio, POB 131, Erie PA 16512. 814-455-4796.

Otari MTR-10 2 spd, 7.5, 15 ips, 2 trk, mint cond, \$2600. E Toline, 525 W Stratford Pl, Chicago IL 60657. 312-975-6598.

Otari ARS 1000 fair, \$350; Revox A-77 and Otari ARS-1000 parts. B Spitzer, KKLS, Box 460, Rapid City SD 57709. 605-343-6161.

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North Hollywood, CA 91607 fax 818-784-3763

Otari ARS 1000 DM (4), 2 track _ stereo, PB, exc cond, \$500 ea. R O'Quinn, POB 967, Dublin GA 31040. 912-272-9270.

Revox A77 R/P stereo _ track with rack mount, BO. C Gennaro, WIMI, 222 S Lawrence, Ironwood MI 49938. 906-932-2411.

Studer A80 16 track, mint condition, BO. A Polhemus, Excalibur Sound, 750 8th Ave, NY NY 10036. 212-302-9010.

Tascam 234 Syncast 4 track R/P 3/34 ips, less than 10 hours use, \$600. D Veldsma, 2292 S Thrush Ct, Grand Rapids MI 49506. 616-940-0156.

Tascam 38, _ 8 trk open reel rcdr, BO. P Cibley, Studio C Music, POB 787 Murray Hill Stn, New York NY 10156. 212-532-2980.

METROTECH DICTAPHONE LOGGERS PARTS AND SERVICE

SEQUOIA ELECTRONICS
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FAX (408) 363-0957

Otari MX5050BII2 comp refurb, exc cond, \$2600. J Katowah, WFGB, POB 777, Lake Katrine NY 12445. 914-336-6199.

Otari ARS1000DC (10) 25 Hz decoder, \$250 each including shipping. E Monskie, Hall Communications, 717-653-0800.

Otari MK III 8 trk, mint, \$2750. E Hand, Studio 70, 904-224-9570.

Revox A77 R/P (10), wood boxes and rack mts, \$100 ea. D Morgan, KJYE, 1360 E Sherwood Dr, Grand Jct CO 81501. 303-241-9230.

Scully 280B, 2 track R-R, servo, \$600; ITC RP stereo cart R/P, \$750. T Toenjes, WREN, 201 NW Hwy 24, Topeka KS 66608. 913-437-6549.

Sony/MCI JH-24 24 track recorder with add'l 16 track head stack, AL-III locator, exc cond, new, all manuals, \$15,500 FOB. J Block, Prod Block Studios, 906 E 5th St, Austin TX 78702. 512-472-8975.

Telex Copyette 1 & 3, mono high spd dup (3), \$600. E Brouder, Man From Mars, 159 Orange St, Manchester NH 03104. 603-668-0652.

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.

Marantz PMD221 cassette recorder, \$225/BO; Sony TC-150 cassette recorder, \$25/BO. Satisfaction Guaranteed. Troy 612-443-3637.

Otari Mark II-IV 1/2" 4-track, multi-track, mint, less than 50 hours, Best Offer. R Kaufman, Pams Productions, POB 462247, Garland TX 75046. 214-271-7625, after 3PM CDT.

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

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

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

Want To Buy

Superscope or Marantz prot mono cassette recorders, C Or PMD-200 series, working repairable or for parts. P Helm, Sonlight Recorders, 2109 Glenwood Rd, Vestal NY 13850. 607-754-8507.

Otari 5050II or equiv, pref recond w/warranty, Sony TC 355 for parts. D Schauer, RR 7 Box 16, Quincy IL 62301.

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

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

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

COMPUTERS

Want To Sell

Acer 710 8088 IBM compat, DOS 6.0, WP, PC File, ORCAD, games, Q Modem, incl monitor, keyboard and CPU, \$175/BO. B Cunningham, S & B Comm, 24 Jr Ave, Buffalo NY 14210. 716-823-4524.

IBM 5362 System 36 with 4 terminals and 4234 dot band printer, BO. G Foldessy, WAKR, 1735 S Hawkins Ave, Akron OH 44320. 216-869-9800.

Weng CS-D, 2 terminals, one not operational, BO. C Loughry, WFRB, Rt 2 Box 373, Frostburg MD 21532. 301-689-9971.

BigMouth voice mail card for PC with DOS software and developers kit, \$100; Cybex 50' keyboard and monitor extender for mono/CGA/EGA, \$100. G Wachter, KFYI, 631 N 1st Ave, Phoenix AZ 85003. 602-258-6161.

NEC Ultraite, 640k, 2 Meg disk, external, 3.5", all manuals, internal modem, MSWorks, Best Offer. E Monskie, Hall Communications, 717-653-0800.

Want To Buy

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

CONSOLES

Want To Sell

Gates 4 chnl mono, \$125. M Van Ouse, WTLR, 2020 Cato Ave, State College PA 16801. 814-237-9857.

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

5 yrs exp, 1 yr TV weather anchor, versatile, in-depth reporting, Portuguese and Spanish, BA/Political Science. Ann, 801-377-5714.

Board Op at semi-auto AM/FM seeks same, DJ, Prod, eve pref, resume avail. Andrew, 602-684-0265.

Call and hire Janet, FT announcing, programming aspirations, computer literate, in radio since 1980, PT announcing, marketing exp, metros, bedroom communities preferred. Janet, 502-895-5888.

Combo Mgr, Sales, PD, CE, Anncr, Prod, Tampa Bay area, coastal FL or prfl sig in gd area, 30 yrs exp. Bill, 813-844-3823.

Energetic young, with 5 years experience, avail now for anncing/prod work, glad to relocate. Christopher, 402-551-4665.

If Generation X is your audience, then I should be your next air talent. Brandon, 618-344-1721.

Morning Sidekick, PD, MIDI, Roland digital, voices, comedy, stellar record with great stations, Win 3.1/DOS literate, desire position in NE. 717-541-5154.

Multi-talented CE seeks FT position, will relocate. G.B., 805-473-0871.

PT Volunteer, to learn all phases of bdctng, Orange County NY. Mark, 914-344-1118.

Let's fly ... the eagle here ready to soar w/future in bdctng prod. Todd, 405-677-8847.

Call and hire Janet, FT announcing, programming aspirations, computer literate, in radio since 1980, PT announcing, marketing exp, metros, bedroom communities preferred. Janet, 502-895-5888.

Recent bdct grad with station experience, dependable, humorous, seeks on-air pos, great news, copywriting and production, will relocate. Mark, 405-748-5905.

Combo Manager, sales, PD, CE, Anncr, production, Tampa Bay, coastal FL or powerful sig in good area, 30 years experience. Bill, 813-844-3823.

Hey Omaha! Prod wizard, overnight voice, 12 yrs exp, mgmt exp, computer wiz, avail October 1. 502-753-7229.

Maw Albert, Oral Roberts, Peter Jennings and Ted Koppel all have to retire sometime, why wait until the last minute for that replacement? Call Chris, 405-376-4280.

Pro personality, pipes, prod, writing in AOR, CHR, Talk, BA/BS, 14 yrs exp. 704-372-8128.

CE/TD 25+ years domestic & intl experience, AM stereo to 150 kW, FM to 100 kW, digital audio and computer literate. Bill, 915-833-7651.

Chief Engineer, Group-owned 50 KW clear channel AM and Class B FM need qualified broadcast engineer. Please send resume to Michael Whalen, WGY-AM/WRVE-FM, One Washington Square, Albany, NY 12205. EOE.

S.E. Florida - Chief Engineer AM/FM/FM duopoly. Transmitter and computer a must. RF, studio maintenance, digital audio. Mostly new equipment. Rush detailed resume and salary requirements to: Radio World POB 1214, Falls Church VA 22041. Attn: Box # 94-10-19-1RW.

ABOUT OUR EMPLOYMENT SECTION

HELP WANTED: Any company or station can run "Help Wanted" ads for \$1.50/word or buy a display box for \$60/column inch. Payment must accompany insert, use your MasterCard or VISA; there will be no invoicing. Blind box numbers will be provided at an extra charge of \$10. Responses will be forwarded to listee, unopened, upon receipt. Call 800-336-3045 for details.

POSITIONS WANTED: Any individual can run a "Position Wanted" ad, FREE of charge (25 words max), and it will appear in the following 2 issues of Radio World. Contact information will be provided, but if a blind box number is required, there is a \$10 fee which must be paid with the listing (there will be no invoicing). Responses will be forwarded to the listee, unopened.

Mail to: **BROADCAST EQUIPMENT EXCHANGE**
PO Box 1214, Falls Church, VA 22041
Attn: Simone Mullins

CONSOLES...WTS

Amek/Tac Matchless recording console, 26/24/8/2 with patch bay, excellent condition, \$13500; Soundcraft Spirit Live 243, 24 channel with flight case, \$2100. Sloyer Snd Studio, 1400 Moravia St, Bethlehem PA 18015. 610-691-5056.

Cetec 5 chnl mono in portable/remote cabinet w/shelf and TT, \$500. E Moody, KJEM, 216 N Main, Bentonville AR 72712. 501-273-9039.

Gates Stereo Yard 8 input w/solid state elec, completely rebuilt, \$600+shipping; Arrakis Copy Bridge for Gates Yard boards, \$100. G Dunn, N CA News, 5383 Willow Lake Ct, Byron CA 94514. 510-516-0299.

LPB Signature II S-20 stereo P&G pots, \$2750 + shipping. R Joslyn, Double Exposure Studio, 24273 Park Granada, Calabasas CA 91302. 818-222-5188.

MCI JH 416 18x4x2 recording console with patch bays and producers desk, updated with 5534 chips, clean with spare faders, parts, manuals. \$3000. D Bailey, Rock Shoppe Productions, 3422 Beech St, Rowlett TX 75088. 214-475-9796.

McMartin B802 stereo (2), 8 channels, stereo output, \$350/both. M Van Ouse, WTLR, 2020 Cato Ave, State College PA 16801. 814-237-9857.

Russco 505S, 5 channel, stereo, rack/table mount, good condition, \$500/BO. R Velez, KNBR, 55 Hawthorne St, San Francisco CA 94150. 415-995-6974.

CCA Ultimate II 10 channel, stereo, \$540 cash. P Lotsof, KAVV Box 18899, Tucson AZ 85731. 602-290-9797.

Harris Gatesway 80, 8 chnl mono, good cond, \$250. S Sabot, WYBF, 610 King of Prussia Rd, Radnor PA 19087. 215-971-8360.

Ramko DC5AR 5 channel mixers, very good cond, \$175 each. 916-725-2434.

Yamaha MC802 8 channel mixer, \$515/BO. Satisfaction Guaranteed. Troy 612-443-3637.

Advertising deadline for November 30 issue of Radio World: November 4, 1994

Want To Buy

Gates Yard, schematic for mono tube, original or photocopy. E Lightman, WEDL, 550 Merchant St, Ambridge PA 15003. 412-266-2802.

Sony MXP-21 12V DC powered stereo mixers, good condition. C Quinn, WMMS, 1660 W 2nd St, Cleveland OH 44113. 216-781-1420.

Sparta or any brand 8 chnl stereo. S Davis, WWKG, POB 1951, Dunn NC 28335. 910-891-4673.

DISCO-PRO SOUND EQUIPMENT

Want To Sell

BTX Shadow 4700 2 synchronizers and cntrlr, BO or trade. A Polhemus, Excalibur Sound, 750 8th Ave, NY NY 10036. 212-302-9010.

Phase Linear Auto Corrolator, single ended NR/expander, excellent condition, \$200. D Bailey, Rock Shoppe Production, 3422 Beech St, Rowlett TX 75088. 214-475-9796.

Want To Buy

360 Systems pro MIDI bass sound chip. A Polhemus, Excalibur Sound, 750 8th Ave, NY NY 10036. 212-302-9010.

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LIMITERS

Want To Sell

CRL SMP850 stereo processor w/manual. V Uecker, KEWE, POB 1340, Oroville CA 95965. 916-533-1340.

dbx 165 comp/limiter, mint cond, \$600. E Toline, 525 W Stratford Pl, Chicago IL 60657. 312-975-6598.

Orban Optimod 8000 excellent cond, \$1200. Wxer, Plymouth WI. 414-893-1045.

Orban 424 stereo compressor/limiter/de-esser, gd cond, one bad meter, \$250; Harris MSP-90 Stereo AGC amp, \$200. M Holderfield, WOO, 2518 Columbia Hwy, Dothan AL 36303. 205-792-1149.

CBS 4110 Volumax FM, \$50 + shp. D Morgan, KJYE, 1360 E Sherwood Dr, Grand Jct CO 81501. 303-241-9230.

Inovonics MAP II Mod 23, 10 band AM, \$500; CRL System 4, APP300A (2), SEP400A (2), SMC-600 FM, \$700. T Toenjes, WREN, 201 NW Hwy 24, Topeka KS 66608. 913-437-6549.

Want To Buy

Gates Stalevel. E Lightman, WEDL, 550 Merchant St, Ambridge PA 15003. 412-266-2802.

Optimod 8100. J Davis, SCB Inc, POB 7762, Amarillo TX 79114. 806-355-1187.

Orban XT2 chasis for Optimod 8001A. J Curtis, KFRO, POB 4299, Longview TX 75601. 903-663-3700.

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.

Russco DA2416 new rack/table mount, individually trimable DA, 2 x 4 \$100; DA 2816, 2 x 8, \$150; DA 4428 4 x 4, \$200. R Velez, KNBR, 55 Hawthorne St, San Francisco CA 94150. 415-995-6974.

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Want To Sell

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44BX, nice cond, will trade for 77A -DX w/orig network id plate or LA-2A compressor. J Harding, SSI Audio Sys, 550 Crain Hwy, Glen Burnie MD 21061. 410-766-1072.

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Sennheiser 224 Sportcaster mic/headset, working or not. B Clain, POB 51978, Indian Orchard MA 01151. 413-783-4626.

77-DX's, 44-BX's, WE KU-3A's On-Air lights, recording lights & audition lights. Top price paid. Fast response. Bill Bryant Mgmt, 2601 Hillsboro Rd, G12, Nashville TN 37212. 615-269-6131, FAX: 615-292-3434.

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RCA 77DXs/44BXs ribbon, chrome/TV grey, good condition, BO. R Kaufman, Pams Productions, POB 462247, Garland TX 75046. 214-271-7625, after 3PM CDT.

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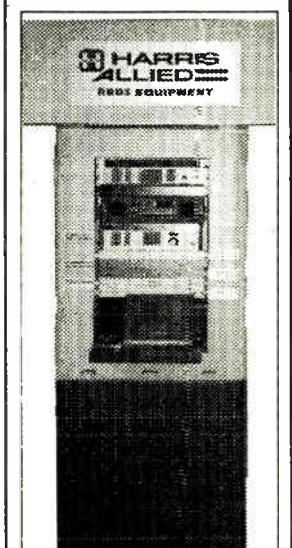
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Want To Buy

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360 Systems 16x16 audio router expansion unit, \$395; Shure ST-3000 telephone interface/teleconference system w/mics, spkrs, control unit and keypad, \$245; AT&T orig speakerphone & mic, \$50. G Wachter, KFYI, 631 N 1st Ave, Phoenix AZ 65003. 602-258-6161.

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Want To Buy

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Want To Buy

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Want To Buy

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Andrew 3 " connectors, \$200. D Green, KNGT, 9555 Jesus Maria Rd, Mokelvase Hill CA 95245. 209-286-1166.

BE FX-50 exciter, still in box, \$5800. D Magnum, Magnum Radio, 1021 N Superior Ave, Tomah WI 54660. (800) 736-WBOG.

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Gates FM1-C 1000 W FM, \$1000/BO; Gates BC250Gy, 250 W AM on 1550, \$1000/BO; ITA FM 250B, 250 W FM, \$900/BO. T Toenjes, WREN, 201 NW Hwy 24, Topeka KS 66608. 913-437-6549.

Cunningham 50 tube type, with system for antenna or leaky cable, 50 W, \$1500 + shipping. A Anello, 1915 W Waters Ave, Tampa FL 33604. 813-933-6009.

Gates Vangaurd I 1 kW - 1340 kHz w/manual. V Uecker, KEWE, POB 1340, Oroville CA 95965. 916-533-1340.

CSI EX-20F FM exciter, gd cond, \$1500. M Holderfield, WOOF, 2518 Columbia Hwy, Dothan AL 36303. 205-792-1149.

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Peter Dahl 1 kW plate xfrmr, new, \$400. B Spitzer, KKLS, Box 460, Rapid City SD 57709. 605-343-6161.

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BE FX-50 exciter, still in box, \$5000. D Magnum, Magnum Radio, 1021 N Superior Ave, Tomah WI 54660. 608-372-9600.

Gates FM-10G needs TLC. M Stram, WMNF, 813-831-8551.

ITA-FM 10 kW, 10,000 C, gd cond, trade for 3.5 or 5 kW single phase. M Jones, KEZP, POB 471, Alex LA 71309. 318-449-1999.

Thomson CSE 10 W, Chnl 2 TV. R Paskuan, WBJI, 102 Lincoln, Bemidji MN 56601. 218-751-3077.

McMartin BFM 8000 on 95.9, manual, \$1500. R Miller, WTIM, POB 169, Taylorsville IL 62568. 217-824-3395.

CCA ELECTRONICS has the following trade-in equipment for sale: Harris FM10H3 10kW FM, CCA AM1000D 1 kW AM and Demo CCA FM60G watt FM exciter. Also RCA BTA-50 50 kW AM. Please contact Steve, Howard, or Darrin at 404-964-3530. Se habla espanol - Pregunte por Tyler.

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MTS Lab 100TX, 100 milliwatt J Kesler, WDBZ, POB 644, Livingston KY 40445. 606-843-9999.

Collins, RCA, WE, 1 kW AM and accessories. G Goldsmith, POB 5786, Beverly Hills CA 90209. 310-696-0177.

McMartin AM/FM transmitter, any model, exciter or stereo modules. Goodrich Enterprises, 11435 Manderson, Omaha NE 68164. 402-493-1886.

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Russco Cue-Master (2), \$120/BO. M Van Ouse, WTLR, 2020 Cato Ave, State College PA 16801. 814-237-9857.

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BE with microtrak tonearm and BE BETMS 100 TT preamp, \$100. J Coursolle, WPKR, 3891 Waukau Ave, Oshkosh WI 54903. 414-236-4224.

Gates Harris Intertype Corp (2), \$140/both. M Van Ouse, WTLR, 2020 Cato Ave, State College PA 16801. 814-237-9857.

Newcomb self contained transcription TT w/amp, \$295. R DeMars, 222 Lakeview Ave, W Palm Beach FL 33401. 407-832-4607.

Russco FPSB Fidelity Pro, stereo preamp w/individual gain, low-high filters, \$30. Kevin, Brown & Brown, POB 224, Portage MI 49081. 616-327-8352.

Russco Studio Pro 2 spd (4) w/tonerms, Micro-Trac, preamp, \$100/ea. D Rogers, KXAX, POB 465, St James MN 56081. 507-375-3386.

Empire 909 E/X diamond cart, never used, \$20. G Finney, WPWB, 7137 Heather Lane, Macon GA 31206. 912-788-2124.

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Russco 720, 3 spd w/Micro-Trak arm and Shure cartridge, BO. B Clain, POB 51978, Indian Orchard MA 01151. 413-783-4626.

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