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# RadioWorld®

Build Your Own  
 Cable Checker,  
 See p. 12.

Vol 19, No 5

Radio's Best Read Newspaper

March 8, 1995

## Cellular Sites Must Protect AMs

by Thomas Pear

**WASHINGTON** The FCC recently adopted a set of rules that require Public Mobile Service licensees—specifically cellular and paging system operators—to correct any interference that new or modified towers cause to AM broadcasters.

Cellular and paging operators must now prove they will not interfere with AM signals before they construct a tower, a significant victory for AM station owners and operators, who, without advanced notice, have increasingly found their signals disrupted rapidly by paging and mobile phone cell sites.

Crawford Broadcasting Engineering Director Cris Alexander said the rules should help to solve the increasing problem of cellular interference to AM signals.

Traditionally, AM towers were located on the outskirts of the markets they serve. But over the last decade, cellular operators constructed transmitting towers closer in to the suburban areas that they served, Alexander said. In some cases, the closer-in cellular and paging signals sometimes interfered with the AM signal.

In some instances, cell sites totally prevented AM signals from reaching certain listeners in their licensed contours,

National Association of Broadcasters Engineer Dave Wilson said. A loss of listeners can mean a loss of advertising revenue, he added.

"I can't tell you how many times I built an AM array thinking this is way out in

the country, and three years later they were building housing across the street," Alexander noted. "Then, later, cell sites were installed in those areas to accommodate that populace."

Although the rules have been around for a number of years through an FCC Public Notice, writing the policy into the

continued on page 6 ▶

## Some Fees Increase, Decrease Under Proposed FCC Schedule

by Thomas Pear

**WASHINGTON** A set of FCC proposed user fees hikes, recently released in the form of a Notice of Proposed Rulemaking (NPRM), could mean significant variations in the amounts broadcasters would have to pay.

Broadcasters had until Feb. 13 to file comments for or against the NPRM. At press time, the deadline had not yet closed. After that, procedurally, the commission will consider the comments and then issue a report and order that will finalize the new fees. Broadcasters were first hit with the user fees in 1994 as part of a federal government push to help agencies offset regulatory costs.

If the FY 1995 fee schedule is approved, Class A AM stations in Arbitron markets would see a 69 percent increase over the FY 1994 fee. In actuality, the fee would jump to \$1,525 from \$900. Class B AM stations in Arbitron markets would see an approximately 70 percent fee increase, from \$500 in FY 94 to \$850 in FY 1995.

Some stations, however, would see a fee decrease. Class A AM stations in non-Arbitron markets, for example, would see their license fees drop from \$900 to \$565, a decrease of approximately 37 percent.

In other cases, the difference is slight. Although Class C AM stations in Arbitron markets would see a 70 percent increase in regulatory fees, the actual amount is only raised to \$340 from \$200. Class C AM stations in non-Arbitron markets would see a decrease of approximately 38 percent in the fees between the two fiscal years—from

\$200 to \$125.

The fees also would increase for Class D AM stations in Arbitron markets and decrease for Class D stations in non-Arbitron markets. Class D stations in Arbitron markets would see their fees rise from \$250 to \$425, a 70 percent increase. Class D stations in non-Arbitron markets would see their fees decrease

from \$250 to \$155, a 38 percent decrease.

FM stations would see the same or similar changes in their regulatory fees.

continued on page 7 ▶



On-the-air with Ricky the K. Profile begins on page 23.

## NEWSWATCH

### Quello to Retire At Term's End

**WASHINGTON** Commissioner James Quello said he will likely retire from the FCC when his current term expires June 30, 1996. Quello told RW of his future plans in a recent interview that will be published in the next issue.

"I will not seek reappointment at age 83," said Quello who is currently approaching 81 years. He said he may remain at his post until a replacement is found.

Quello, a lifelong Democrat, was appointed to the commission by three republican presidents. President Nixon appointed him to serve his first term as commissioner in 1974 and he was reappointed by both Presidents Reagan and Bush.

The height of Quello's tenure on the commission came about two years ago when President Clinton asked him to serve as the FCC's interim-chairman until Reed Hundt was appointed to the position permanently.

After Quello retires from the continued on page 2 ▶

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# NEWSWATCH

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commission, he intends to accept a chair, a type of teaching position created and funded in honor of the person whom the chair is named after, at Michigan State University.

Although revenue derived from the chair would be used to fund a full-time professor. It would provide him with lecturing and opportunities in academic circles.

"That chair means quite a bit to me," Quello said.

The chair, however, is not a complete certainty. "It still has to

be funded," said Erwin Bettinghaus, the Dean of Michigan State's communication school.

"It (the chair) is likely," Quello said, "not a certainty, but it's likely."

If funding does come through, the chair would most likely be a telecommunications management chair, because of Quello's station management background as manager and vice president at Detroit's WJR.

Previous attempts to name a chair after Quello were thwarted because federal law prevents a sitting FCC commissioner from

accepting a such a position during his or her tenure.

"We put the whole thing on hold until he steps down," said Bettinghaus.

## FCC General Counsel's Office Reorganized

**WASHINGTON** The FCC recently reorganized its General Counsel office, "to make it more efficient and to reflect more accurately its current mission," according to an FCC news release.

The commission recently

merged the office's adjunct division into its administrative law division, which will now be responsible for advising the commission on legal matters, adjudicating cases and interpreting statutes affecting the FCC.

The Office of General Counsel now consists of an immediate office, comprised of General Counsel Bill Kennard and two deputies; a litigation division; an administrative law division and a competition division.

## Claudy Named NAB Senior VP of Science and Technology

**WASHINGTON** The NAB has named Lynn Claudy as its

new senior vice president of NAB's Science and Technology Department. Claudy formerly was vice president of science and technology.

Claudy succeeds Michael Rau as the leader of the nine-person science and technology department. Rau resigned last year.

Claudy joined NAB in 1988 as a staff engineer. He also served as director of advanced engineering and technology prior to being selected vice president in 1993.

Claudy holds a BA in music from Oberlin College, a BS in electrical engineering from George Washington University and an MS in electrical engineering from Illinois Institute of Technology.

## NARRS Convention Slated

**SALT LAKE** The National Association of Radio Reading continued on next page ►

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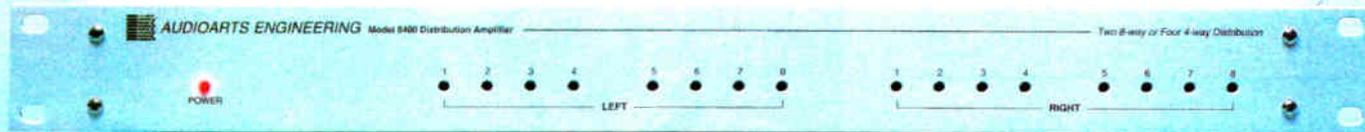
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# End of 1995 Likely Timetable For Completion of DAR Tests

by John Gatski

**WASHINGTON** The primary issues facing the National Radio Systems Committee (NRSC) are the completion of digital audio radio transmission system testing and completion of high speed data subcarrier standard by the end of 1995.

National Association of Broadcasters (NAB) and the Electronic Industries Association (EIA) members comprise the NRSC, which develops industry technical standards.

NAB Director of Technical Conferences John Marino, the NAB's

San Francisco as the field test location, but the procedures will not be finalized until later this spring, Marino explained.

"They should certainly should have all the details worked out by the NAB spring show," he said.

As for the lab testing that is being conducted at the NASA/Lewis Research Center in Cleveland, few details have been released, either officially or unofficially, about how the systems have fared.

New band proponents have previously said that in-band, on-channel broadcasting is extremely difficult under the real world conditions of FM broadcasting.

The in-band proponents said that digital technology has advanced far enough to allow an in-band system to work.

"They (lab officials) have been very careful not to leak any information," Marino said.

The NRSC's work on a high speed subcarrier standard is on schedule to be finished by the end of the year. The NRSC's goal is to enact a standard that would be compatible with the 1,220 bps RDS standard already in place since 1993.

High speed systems would operate at speeds up to 20 kps and fit anywhere from 60 kHz to 100 kHz on an FM carrier and could provide much more data intensive services than RDS. However, high speed is considered a somewhat more-in-the future technology than RDS, which already has acceptance by 250 broadcasters nationwide.

As with RDS, high speed subcarriers providers and equipment manufacturers will have to wait until the consumer industry produces receivers that the public can buy.

## The DAR process has taken longer than original estimates of late 1994.

liaison to the NRSC, said the lab testing of the five proponent digital audio radio systems is expected to be finished by April, but that field testing may not be finished until late 1995.

The digital radio task force and the appropriate subcommittees are still wrestling with the test plans and parameters for the field testing of the five systems: USA Digital Radio, AT&T, AT&T/Amati, MUSICAM and NASA/VOA.

Marino said the process has taken longer than original estimates of late 1994. Considering the process is "something brand new," Marino added, it is moving as "fast as possible."

The NRSC, which is primarily focused on the in-band systems, such as USA Digital and AT&T Amati, has selected

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Circle (25) On Reader Service Card

# NEWSWATCH

► continued from previous page

Services (NARRS) is preparing itself for its 21 annual convention here in Salt Lake June 1 through June 3.

The convention will be held in the Olympus Best Western, and broadcasters and equipment manufacturers should start making reservations now. The show will teach stations how to establish a radio reading service, a subcarrier audio signal that broadcasts newspaper, magazine and book readings to the blind and physically challenged.

Room rates are \$60 and \$70 for single and double rooms respectively. Reservations should be made at least two weeks prior to the start of convention.

For more information, call Steve Terry at 901-725-8833.

### New Communications Act Drafted

**WASHINGTON** As promised, the Senate Commerce Committee introduced comprehensive telecommunications reform that would encourage competition in the industry.

"America is ready to tear down the anti-competitive barriers that keep consumers from having all the choices they deserve," Committee Chairman

Senator Larry Pressler said (R-S.D.) in a written statement.

Although Pressler's goal for passing the bill is July 4, the powerful committee chairman hopes legislation passage will come as early as April.

Broadcasters would not be directly affected by the bill, according to Senate staffers, but there are other bills forth-coming, which would have more of a broadcasting impact.

Representative Michael Oxley (R-Ohio), for example, recently proposed legislation that would repeal the anti-foreign ownership clause of the 1934 Communications Act (see RW, Feb. 8).

### FCC's OET Moves

**WASHINGTON** The FCC's Office of Engineering and Technology (OET) recently relocated it's offices. It's new street address is 2000 M Street, Washington D.C. 20554. This is just across the street from its previous 2025 M Street location. OET staff is located in suites 230 and 480.

OET's new phone number is 202-739-0700. Its fourth floor fax number is 202-887-0198. The second floor fax is 202-887-5637.

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# Ribbon-cutting Ceremony Launches New Era

**DALLAS** Flanked by James Arcara, president ABC Radio, on his left and David Kantor, executive vice president, ABC Radio Networks, on his right, Bob Callahan, president, ABC Radio Networks, officially opened the network's sparkling new headquarters here in Dallas.

Grand opening ceremonies were held on Feb. 16. ABC welcomed a couple hundred guests that night, both from the radio and the advertising community. I was in town covering the Radio Advertising Bureau annual conference and dropped by to see the state-of-the-art facility firsthand.

Champagne and assorted beverages flowed freely, and yours truly and The Radio World Magazine Editor, Chuck Taylor, got a tour of the facility from none other than Lee Abrams himself.

The shot of the atrium I've included does not do justice to the building. The building was originally built by an oil company as its corporate headquarters during the boom years. When ABC took over the facility, the building needed extensive modifications, but before that happened, ABC had all the interior wood paneling, flooring and moldings removed. After the facility was technically ready, ABC put all the wood back. The final effect is one of warmth and sumptuousness that really invites.

Tom Joyner, ABC's morning star, was scheduled to appear but got a last minute invitation to the White House (yes, that one) for a confab with his good friend President Bill Clinton. A good time was had by all though, and I enjoyed seeing some of radio's finest all gathered under one roof, including Gary Fries, RAB president and CEO, Paul and Julie Fiddick (from Heritage Media just down the road) and John David, NAB senior vice president of radio.

We also ran into Margaret Bryant, former chief engineer at Group W's WMAQ in Chicago and now the head engineer for the Dallas facility. Many of you may remember seeing her byline from time to time in *RW*.

Timing the event to happen while the RAB gathering was in town was probably a good idea. RAB '95 was a good gathering, coming on the heels of the RAB's release of last year's revenue figures.

Radio advertising grew at a rate of 11.3 percent in 1994, to an estimated \$10.65 billion, up from \$9.568 billion in 1993—its fastest rate of growth, says RAB, since 1985 when industry revenue grew at 11.5 percent.

National spot revenue grew an unprecedented 14.8 percent for the year, the largest increase in more than 50 years for that category! Locally placed radio advertising, the category that accounts for more than three-quarters of all radio advertising, increased 11.2 percent for a combined spot figure of 12 percent.

Last year was very important to radio in many other ways as well. For starters, 1994 is marks the first year-end radio advertising revenue total to break the \$10 billion mark. In May 1994, you may recall, for the first time ever, radio ad revenue totaled more than \$1 billion for a single month.

The Radio Advertising Bureau figures are based on that association's radio revenue index of more than 100 markets—radio network ad revenue is compiled by the Radio Network Association as reported by Miller Kaplan Arase & Co.

I'm delighted, of course to have such good news to report. The credit for all this success goes directly to the radio folks in the trenches and to the associations that serve radio. And it was encouraging to see this year's RAB gathering break all attendance records—up from

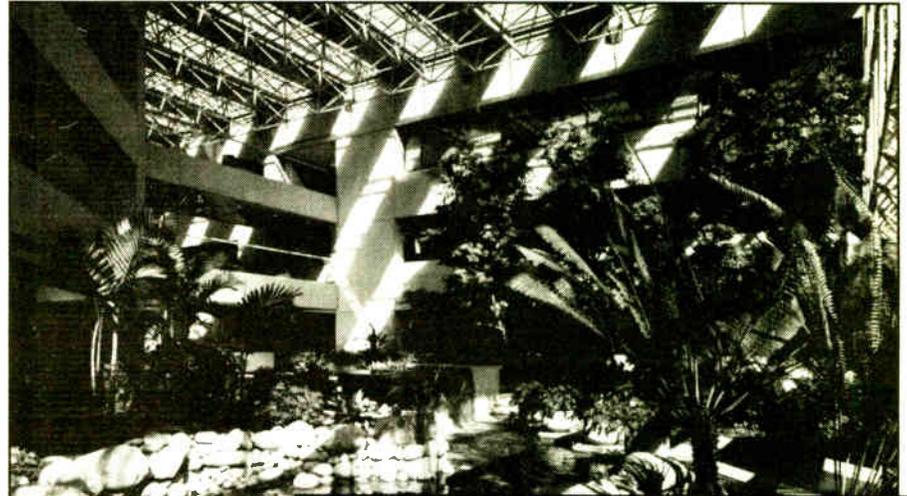
1700 registrants or so last year to 2002 this year (including 200 international attendees).

The RAB has much to offer a radio station and a radio sales manager—maybe it is time to consider joining the RAB if you don't belong already.

One of the most eye-opening events at the convention was the keynote address

phone) will read you the day's headlines, based on your preference for news stories. You can ask it to read you a story if a particular headline catches your attention.

In this world of his, we will all live as "electronic tribes," no longer joined by our geography or our ethnicity, but rather by the people who share our interests on-



ABC Radio's top brass (r) cuts the ribbon at its new network headquarters in Dallas.

by Don Peppers. If what this man envisions—a world where interactive radio rules and anyone with a telephone and a tape recorder can be a broadcaster—really does come to pass, life is sure going to change both personally and professionally for all of us.

In his world, we will move beyond niche marketing to one-to-one marketing. In other words, as you drive to work, your two-way radio (or cellular tele-

line. People we may never meet in person—only via PC. On the one hand, reaching out to new people and a community for like-minded individuals sounds fun, but are we driving ourselves into physical isolation here?

Anyway, in this world, Don Peppers sees radio broadcasters jumping on the interactivity bandwagon to survive. It seems to me you had better at least look into it.

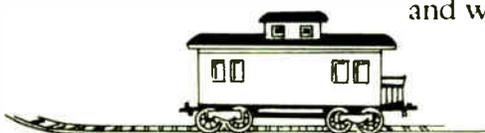


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## More info, please

Dear RW,  
 In your Dec. 28, 1994, issue on page 16, you ran the article "Editing Made Easy with SAW for PC." Unfortunately there was no direction of Innovative Quality Software given. I would appreciate very much if you please could be so kind and give this direction so we can contact these people.  
 Please also give the manufacturers address in all articles you publish in your magazine so they can be contacted. Thank you very much.

Rudolf H. Rahn  
 FM-92, Miami, Fla.

*Editor replies: Eagle-eyed readers can find that information in the product capsule that ran with the story. Innovative Quality Software can be reached at 702-435-9077.*

## Unfair comparison

Dear RW,  
 I read with great interest the Oct. 5, 1994, article titled "Alpha-Cor's Flat Cable" by Rich Rarey. I was heartened by the use of Belden cable as a comparison.

However, I am not sure it was a fair comparison. The resistance of the flat cable, listed as 0.0022 ohms/ft (equivalent to 2.2 ohms/1000 ft.) is approximately equivalent to 13 1/2 gauge wire. I am not surprised that you could tell the difference between 13 1/2 and 16 gauge Belden 8471, as that is a doubling of resistance.

Would it not be fairer to compare it to Belden 14 gauge wire such as 8473 or 9717? I would be glad to provide you with whatever length you require to test.

There also must be a misprint on the

capacitance: "0.600nF/Ft." This is the same of 600pF/Ft. This is a huge amount of capacitance for a cable and would cause severe roll-off of high frequencies. In a 1,000 ft. run, audio would be 3 dB down at 442 Hz! Maybe they mean 60pF/Ft., or even 6pF/Ft.?

Thanks for your excellent newspaper.  
 Stephen H. Lampen  
 Advanced Technology  
 Marketing Manager  
 Belden Wire & Cable, Richmond, Ind.

## Dinosaur era over

Dear RW,  
 Let me add my voice to that of Brett E. Miller (RW, Jan. 25) on the protection of clear channel stations. It is time that we realize that the dinosaurs are extinct. The 50 kW clear channel AMs no longer play an important role in the broadcast industry. In fact the only role these stations play is that of spoiler. They are not generating revenue from advertisers 300 or 400 miles away.

Yet local stations that serve their local communities are faced with constant interference from these dinosaurs. During the winter months, when the community needs information on storms, school closings, and so on, these local stations cannot get on the air soon enough in the morning to provide this service, with January sign-on times of 7:30 a.m., for daytimers.

If we are serious about reducing the amount of interference on the AM band, then we must power down the dinosaurs. If these stations reduced their power to 10 or 20 kW they will amply cover their market areas; suffer no loss of revenue, and even save on their electric bills. Small stations such as ours would have the opportunity to provide our community with the service to which it is entitled.

The FCC has prohibited the high power Class C FM stations from the densely populated areas; AM stations should be limited to 10 kW in these same regions. The small "hometown" AM stations are the outlets that provide substantial amounts of community programming. It is imperative to their survival that they be allowed to continue providing service to their listeners.

Gene Boyd, President  
 Tri-State Radio Inc.  
 WCHE(AM) West Chester, Pa.

Dear RW,

I must wholeheartedly agree with the letter from Bob Bittner in the January 11th issue of RW. If you put something good and interesting and right on the air, and nurture it with hard work and, in our case, prayer, it will work and be successful—yes on AM. I am talking music, 24 hours a day, and Christian Contemporary music at that. No block programming, even a top 10 countdown music show that I produce in our studios. We are commercial advertiser supported, and they stay with us because we get results for them.

How do we do it? We do it by first of all scrutinizing our advertisers and not

# FCC Guards AM Band

Interference has always been an enemy of AM broadcasting. From natural interference from lightning, man-made noise such as fluorescent lights, and station-to-station interference, the country's oldest commercial band has always taken it on the chin.

With that history in mind, the FCC's recent string of actions to reduce such interference is commendable. The latest action has strengthened a policy that, until now, had merely encouraged cellular phone and paging companies to safeguard against interference to AM broadcasts.

To put some teeth in its policy, the FCC codified the anti-interference decree, stipulating that if cellular or paging services interfere with AM signals, the services must correct the cause at their own expense. And, when these services put together their construction plans, they must avoid potential interference to area AM stations.

Although the FCC's old policy said that Public Mobile Services (cellular phones, pagers, etc.) had to protect AM broadcasts, radio industry observers said that the old policy was weak and lacked the authority of the new regulation.

With the FCC strongly enforcing the regulation, cellular/paging companies will have to take into account AM broadcasts, and AM stations that do suffer interference should be able to resolve the problem quicker. This is a positive step that stems, in part, from the AM Improvement docket that was approved in 1992 to reduce station-to-station interference as well as reduction of other out-of-service interference.

AM broadcasts are inherently susceptible to various kinds of natural interference and noise. However, the cellular/paging interference is a recent phenomenon brought about as a result of cellular and paging towers being located closer to cities and suburbs. Although AM stations may have their transmitters located further away from those communities, they still have had their signals interrupted by the closer-in, strong paging/cellular transmissions.

Many of the U.S.'s 5,000 or so AM stations are having a tough enough time trying to stay solvent in light of declining listenership (and as a result, revenues), lost to FM stations. They should not have to endure unnecessary interference from other services that further alienate their listeners.

—RW

allowing them on air unless they pass the rigid trust and dependability factors outlined by the Crawford Broadcasting Company. We do not deliver listeners to advertisers related to an "arbitrary ratings system." We deliver advertisers worthy of listeners' trust to the listener. I personally know and visit the advertisers on my afternoon show once a month, we don't just send a salesperson to "get accounts" on the air. We send a salesperson and a writer to scrutinize and find out why these people are worthy of our listeners' trust.

Think about that, a writer to service and get new ideas on the campaign to profit the advertiser. A salesperson dedicated to making sure the advertiser is right for the station. And then, I tell my listeners why they should support KLZ and its 24-hour music by giving our tested advertisers first chance at their business, an added measure of "I Use" in most cases as I put my name and reputation on the line by recommending the advertiser. A major market station with small-town service and trust.

A success story (one of many): One of our advertisers was advertising on a major player in the market with the one-time (if not now) leading program on the air in Denver. We got eight times the results for the advertiser that this ratings leader did. The advertiser quit them and upgraded with us. Radio done right. On AM. Commercially successful, and indispensable to our listeners as well.

K.C. O'Brien  
 KLZ(AM) Denver

## Scanning history

Dear RW,  
 Slow-scan television probably no longer lives on any radio station, but it positively thrived on one in Michigan's Upper

Peninsula from 1975-77.  
 That's when I was project director of the system that used two of Houghton-licensed WGGL-FM's SCAs to carry thousands of hours of educational programs to students from kindergarten on up to Northern Michigan University Education majors.

WGGL-FM's then-station manager, Read Burgan, says in the January 11th article, "Early Innovation Using FM Subcarrier;" no money was committed and nothing happened after some 1974 engineering trials.

In fact, I had funding from the Michigan Dept. of Education, U.S. Office of Education (now the Dept. of Education) and HEW (now the Dept. of Health and Human Services) and other sources that allowed my staff of 10 to produce and broadcast about a dozen programs.

We served scores of schools through four cable systems, including WGN and TelePrompTer, plus a handful of rural schools with their own receivers. Many schools got their only meaningful instruction in music, fractions, the metric system and teacher "inservice" training from my Hancock-based Slow-Scan Television Project.

We got a lot of media attention for successfully broadcasting TV on the radio, *Broadcasting* magazine, the *Detroit Free Press* and the *New York Times* did stories on us, as did the local paper and the Marquette, Mich., CBS affiliate, so I'm particularly surprised Read's memory slipped.

Slow-scan TV seems quaint from a 1995 perspective, but it was a pretty big deal to lots of students and teachers 20 years ago.

John Kircher  
 Director-Corporate  
 Marketing Department  
 WGMS(FM) Washington, D.C.



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Next Issue of  
**Radio World**  
 March 22, 1995

# USA Digital to Headline in 'Vegas

by Alan Carter

**LAS VEGAS, Nev.** When USA Digital Radio goes on air at the 1995 NAB convention in April for the first public mobile demonstration, the AM program will be direct from the exhibit floor while the FM will simulcast a Las Vegas station.

"We're going to go completely digital on AM from the studio to the receiver," said Jeff Andrew, project manager for USA Digital Radio.

The FM signal will be carried from an existing station—which Andrew could not identify at press time because the final agreement was not signed—by digital microwave to the transmitter. The final signal will be 20 kHz stereo.

## Live from NAB

The AM demonstration will be a mixture of live and automated programming from a digital studio organized and set up by Harris Allied in the Radio Hall. The 15 kHz stereo program will be broadcast on the expanded AM band at 1660 kHz during exhibit hours on April 10-13.

Disc jockeys from Gannett, Group W Radio and CBS, the three radio groups that comprise the USA Digital Radio consortium, will rotate air shifts using the Radio Systems DDS digital audio system in the live-assist mode, with the remaining time operating under automation. Other source material will be from the Audiometrics CD 10E single-play CD player with Orange Book capability.

The AM studio also will include a digital radio mixer, according to Jim Woods, director of product distribution for Harris Allied. While Woods declined at this time to identify the U.S. manufacturer of the console, he said the unit is fully digital with mixing in the digital domain and AES/EBU outputs.

"There are only two places (the demonstration) will be analog," said Dave Burns, studio product manager at Harris Allied. "That is the voice of the DJ and when people hear the sound."

Harris Allied is extensively involved in the transmission end of the demonstration, too.

The AM broadcast will use a Harris DX 10 standard transmitter with "a couple of minor modifications," said Harris Allied AM Product Line Manager John Delay.

The FM setup will use the Harris DAB 2000 transmitter, which is based on the Harris Platinum TV series. "This is a product we've conducted extensive tests with," Delay said. "The system is very straightforward."

## Mobile tour

As part of the presentation, USA Digital Radio will have a half-hour bus tour around Las Vegas to demonstrate the effects of multipath and how USA Digital Radio holds up under mobile conditions.

Listeners will be able to make a four-

**The AM program will be direct from the exhibit floor while the FM will simulcast a Las Vegas station.**

way comparison among digital AM, analog AM, digital FM and analog FM.

In addition, the tour will include a stop at the AM transmitter site just south of the famous Las Vegas strip where broadcasters can examine the set up. Organizers are concerned about including an FM visit because the site at the main Las Vegas transmission point on Black Mountain is more difficult to reach.

"There is nothing complicated on the RF side," Delay said.

And that is exactly the point USA Digital Radio developers want to make with the demonstration.

"This system can be implemented very quickly," Andrew said. "We're talking about adding a digital exciter that could cost between \$10,000 and \$50,000."

Developers just are not sure about the cost of the exciter, Andrew admitted.

This is the first public mobile demonstration of USA Digital Radio. The group held demonstrations by invitation on AM in Cleveland, Ohio, and on FM in Chicago and also has presented video and taped audio programs.

## Similar to '91

The 1995 demonstration is very similar to what the developers of the European Eureka-147 DAB system did at NAB in 1991.

Eureka-147 had a DAB and standard FM transmission broadcast at 30 W ERP from atop the Las Vegas Hilton. The FM signal was broadcast on 94.9 MHz and the DAB was broadcast at 479 MHz, with a transmission bandwidth of 3.5 MHz. The program included two different DAB channels, although the DAB actually broadcast eight separate CD-quality channels. A 1 W gap filler was installed atop the Golden Nugget hotel.

That same year, USA Digital Radio had a DAT tape fed to a MUSICAM encoder.

For those wanting to make a comparison between USA Digital Radio and Eureka-147, Andrew maintained listeners will hear no difference. USA Digital Radio is using a ISO/MPEG MUSICAM encoder at 256 Kbps on FM, the same as Eureka, he said.

"We're providing mirror coverage," Andrew said, "no more, no less."

As USA Digital Radio developers have said, the current system is designed for the American market. But Andrew suggested it can be adapted for other countries and he said there have been discussions with "two major international networks."

"Everyone believes the issue (of adapting the system) is solvable," Andrew said. "You have to take one step at a time."

"We're broadcasters protecting our own interests in the beginning." ☺

# FCC Rule Protects AM Radio

► continued from page 1

Federal Code of Regulations solidifies the rules. Because the policy statement was not an official regulation, cellular owners could sometimes get away with constructing interfering cellular towers, leaving AM station owners with little recourse.

"It was difficult to enforce the statement," Alexander said. "It didn't have any teeth in it." Once cell sites were up and running, he noted, it was extremely difficult to have them removed.

But Public Mobile Service licensees will now have to assure their signals do not interfere with AM signals before constructing a cellular tower. And when they do interfere with AM signals, cellular operators must pay the cost of having the interfering signal corrected.

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

Whenever a cellular tower is scheduled to be located within a kilometer (.621 miles) of a non-directional AM antenna, the cellular licensee must give the AM station advanced notice of the planned construction.

The new rules also require Public Mobile Services to take measurements to determine whether or not a particular site construction would affect an AM station's antenna pattern. The rules then hold Public Mobile Service licensees responsible for the installation and continued maintenance of de-tuning equipment "necessary to restore proper non-directional performance of the AM station tower."

The same rule applies if a cellular operator also plans to make a tower modification within a kilometer of a non-directional AM antenna.

In the case of directional AM stations, the rules are a little more stringent. If cellular tower construction or modification is planned within three kilometers (1.8 miles) of a directional AM broadcast signal, the cellular licensee must again notify the AM station in advance and cellular operators must again take measurements to determine whether or not cellular construction or cellular tower modification would affect the AM station antenna pattern.

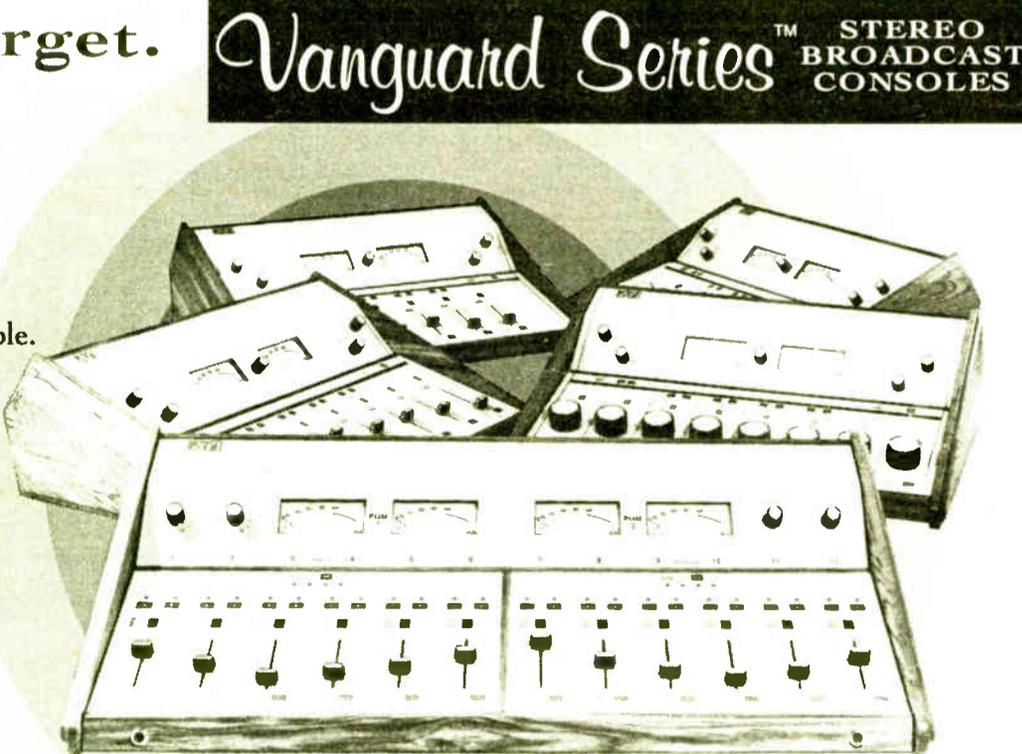
The burden again falls on cellular operators to install and maintain the necessary de-tuning gear to restore the proper performance of the AM station's signal. ☺

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# Proposed FCC Schedule Adjusts Fees

► continued from page 1

FM Class A, B1 and C3 stations in Arbitron markets would see their regulatory fees jump from \$600 to \$1,025, an increase of almost 71 percent. FM Class A, B1 and C3 stations in non-Arbitron markets would realize a decrease of approximately 38 percent, from \$600 to \$375.

For FM Class C, C1, C2, B stations in Arbitron markets the fees would increase

posed fee increase, the notion of increasing fees has the association concerned.

Broadcasters agreed with the NAB's assessment.

"It's just another attempt by the government to tax business to support government," said Dan Kelley, operations director for group owner J. Thomas Development of New Mexico, Inc., which operates KKFG, KDAG, KCQL and KPRZE. "It's just another attempt at sending a tax our way to raise funds as opposed to cutting programs and cutting waste."

Others in the broadcast industry are afraid the FCC is setting a bad precedent

with fee increases.

Jeremy Lansman, an engineering con-

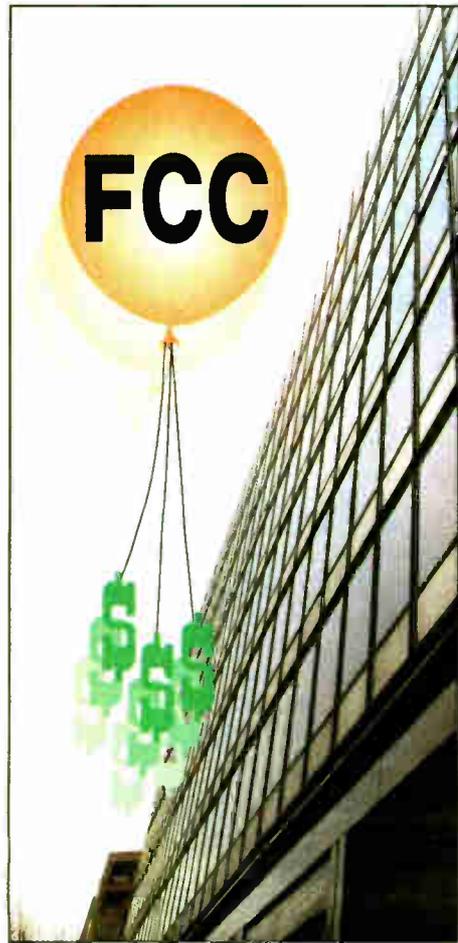
sultant for KRUA in Anchorage, Alaska, said the fee hikes may result in a vicious circle of annual increases and

the subsequent hiring of more staff to administrate the hikes.

"If the FCC can increase fees, it can increase regulations every year and hire new people, and, thereby," he said, "increase the fees again each year as the cycle continues."

Lansman, who is also the owner of KYES-TV in Anchorage, feels that the FCC's system of assessing fees is unfair. He said that other types of communication services like cellular phone services and cable television providers are assessed by the size of their customer bases.

Broadcasters, on the other hand, he said, are assessed a flat fee that could prove more burdensome to locally owned stations than to corporate-owned stations.



The FCC is considering changes in regulatory fees.

from \$900 to \$1,525, about 69 percent, and for the same class station in non-Arbitron markets the fees would decrease from \$900 to \$565, or about 37 percent.

The commission also plans to increase its fees for new station permits. The proposed permit fee for constructing an AM station would be raised to \$120 from \$100, and the proposed permit fee for constructing FM stations would be raised from \$500 to \$595.

The proposed permit fees are assessed by dividing the 1995 fiscal year cost requirements for permits by the number of stations applying for permits, according to the text of the FCC's NPRM. In the case of AM stations, the revenue requirements are \$9,480 divided by 79 permits. In the case of FM, the cost requirement is \$418,285 divided by 703 FM construction permits.

## Broadcasters react

Despite a decrease in many fees, the National Association of Broadcasters still objects to what they see as an unfair system that makes broadcasters finance the cost of running the FCC.

"We think they (the fees) are arbitrary head taxes," NAB Spokesman Doug Wills said. "We don't think the FCC should be financed off the backs of radio and television stations."

Wills noted that although the broadcasters would not be hit too hard by the pro-

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# FCC Foresees New EAS As 'Hot' Topic in 1995

by Whitney Pinion

**AVON, Colo.** Addressing an attentive audience at an FCC open forum at Cassidy's Hole-in-the-Wall restaurant, FCC Representative Jon Sprague predicted that 1995 will be a "hot issues" year for the commission and for broadcasters. Some of those issues are likely to be the new Emergency Alert System (EAS) and reworking of fines.

The first evening of National Supervisory Network's (NSN) Ski and

Sky Summit, Jan. 26-29, Sprague and Nikki Shears, both from the Denver FCC Field Office, outlined these specific issues, some controversial, and fielded questions.

At the top of Sprague's list was the changeover from the Emergency Broadcast System (EBS) to the Emergency Alert System (EAS) in radio. Sprague said that he expects EAS expansion into cable in 1996, and, eventually, into paging companies.

Of particular interest to radio broadcasters



An FCC open forum was part of NSN's Ski & Sky Summit, set in the Rocky Mountains.

at this forum was the issue of unattended operation of broadcast stations. "With

technology that can self-correct," Sprague said, "stations don't need 24-hour attention." Although unattended operation has not yet been approved and approval could take time, Sprague foresees the transition, and that it's "not just talk."

Another concern addressed by Sprague was the recently announced hike in regulatory fees for broadcasters. The new fee schedule is out, and Sprague said that broadcasters might as well "break open the pocketbooks, 'cause it's gonna happen." He added that this money doesn't get funneled directly to the FCC but goes instead to a general fund.

Sprague also discussed the FCC's role as disciplinarian. "Wrongs used to equal dollars," Sprague said. With the prodding of the National Association of Broadcasters (NAB), the whole concept of the FCC's issuing fines is being scrutinized by the Court of Appeals to determine whether or not it's constitutional.

As a result, he said, some fines may be reduced from a many-thousand-dollar amount to "a slap on the hand, a written warning," he said. Not that broadcasters won't still be expected to comply with regulations, he added.

Another issue facing the FCC is the review of Part 73 and Part 74 to determine if the rules in them are necessary, or if they need to be modified or rewritten. The commission is open to suggestions during this review process.

The FCC also is rewriting, in its entirety, Part 17, which deals with the ownership of towers. The commission wants to "turn the whole ball of wax over to the FAA," Sprague said.

"There are a lot of unnecessary rules out there," Sprague said. "The government wants to eliminate superfluous rules." According to Sprague, the FCC is attempting to slim itself down somewhat, to be less of the bureaucratic creature as it has come to be perceived. To make ordering forms faster and easier, the FCC has established a toll-free number, 800-418-3676, for form orders.

Besides complaints about bureaucracy, another gripe voiced to the FCC by radio broadcasters is telephone and TV interference, according to Sprague. In fact, Sprague said, interference generates the greatest number of complaints and, thus, comprises the biggest area of enforcement for the FCC.

"This problem is 50 or 60 years old," Sprague said. He added that standards to minimize interference caused by telephones should be in place soon. Otherwise, and as is the case with other issues facing the FCC and broadcasters, there are "no easy answers." ☺

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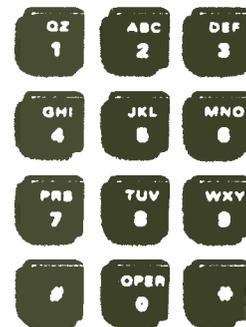
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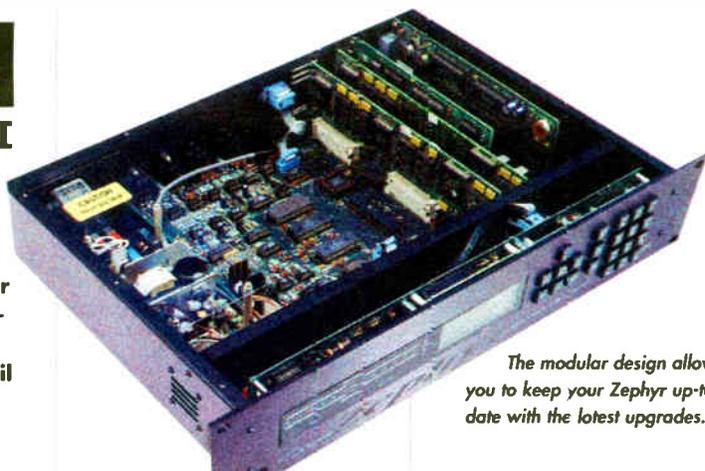
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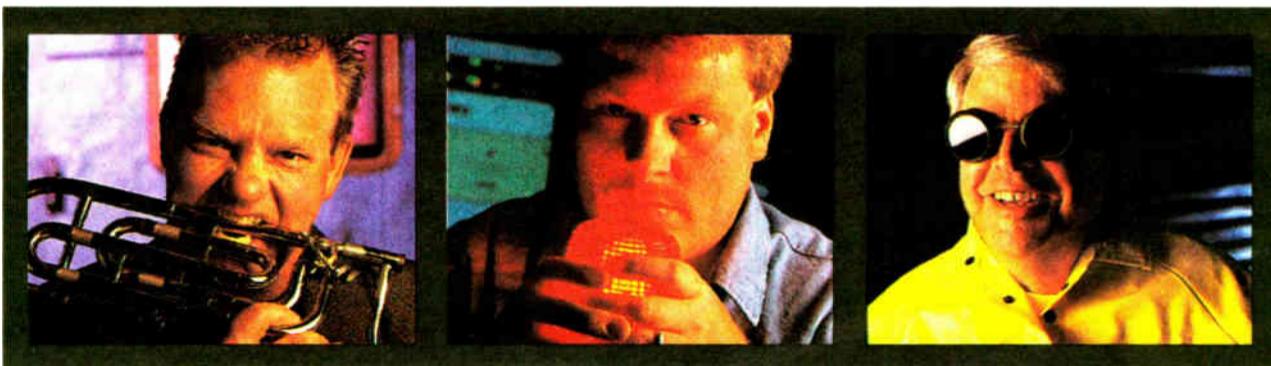
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World Radio History

# Pushing DAB Envelope in Canada

by James Careless

**MONTREAL** Normally a quiet country willing to go along with the standards of others, Canada has been relentless in championing L-band for both terrestrial and satellite Digital Audio Broadcasting (DAB) using the Eureka-147 system.

Still, what is most surprising is this research was not generated by a giant well-funded organization but a team of three staff engineers based at the publicly-owned Canadian Broadcasting Corp. (CBC) in Montréal: François Conway, Brian Sawyer and Michel Fortin.

Since the early 1990s, it has been their job, with the support of engineers from Industry Canada and the Communications Research Centre, to see if the L-band at 1500 MHz could provide 40 MHz of spectrum well suited to both terrestrial and satellite broadcasting.

"We were the experimenters," said Conway, who is supervising engineer of broadcast spectrum for CBC Engineering. "We were the ones doing the experimental work, setting up the facilities, doing the first test... finding the equipment and debugging the equipment."

It was a very ad hoc arrangement with the team not so much being formed, as just happening as they shared responsibilities among themselves, according to Sawyer, supervisor of standards and methods in CBC Engineering. "We just did everything that required doing," he said. "There was no name (for the project) that we referred to."

The first part of their job came in planning for the 1992 World Administrative Radio Conference, when Canada was developing its position for DAB spectrum allocation. On paper L-band looked like it could do the job, but the possibility also raised a number of questions.

To answer them, the CBC group staged what Conway referred to as "pure propagation tests" in Ottawa and Montréal. Using a minivan equipped with an L-band antenna, a Hewlett Packard 8591A spectrum analyzer and an IBM clone computer, the researchers monitored the propagation of a carrier wave transmitted on 1500 MHz.

Just gathering propagation data was not a simple task, given that the wavelength itself was only 20 centimeters and that eight readings were needed per wavelength to generate meaningful numbers.

"We gathered close to 53 million points," Conway said, "but still, in terms of propagation measurements required to establish propagation models and planning, it was relatively limited."

However, the data generated by the Ottawa/Montréal propagation trials in the summer of 1991, plus a subsequent Eureka-147 test broadcast in Toronto that measured signal reception and sound quality along a north-south urban/suburban line, convinced the Canadians that L-band could deliver propagation performance similar to the TV-UHF band, at a cost comparable to broadcasters comparable to conventional FM.

The endorsement of L-band by WARC—albeit with some reservations to recognize continuing U.S. in-band efforts—changed life for the CBC engineering team, somewhat.

"We were still alone with our L-band," Sawyer said, "but now we had a real allocation, so we said, 'We might as well try to use it and plan for it,' so in order to plan

for it, we had to do more measurements."

In the fall of 1992, those measurements took the form of a dual second-generation Eureka transmitter test. One unit was installed on the CN tower in Toronto: 2 kW ERP with the antenna height at 320 meters. The other site was 80 kilometers north at Barrie, Ontario, where the transmitter was tested at 97 and 230 meters above ground level, with respective ERPs of 6 and 17 kW.

This test measured the feasibility of establishing Single Frequency Networks (SFN) using multiple DAB transmitters, and, like the earlier Ottawa/Montréal trials, it made the grade. The Eureka system provided coverage in the L-band at a rate comparable in cost and performance to FM.

After a whirlwind trip to Mexico City, where a demonstration DAB station was established to coincide with the April 1993 meetings of the Inter-American Telecommunications Conference, the CBC group next conducted measurements up to 200 kilometers from a transmitter based in Trois Rivières, Québec. Afterward they turned their attention back to Montréal for the next big step: a three-transmitter coordinated network.

With a main third-generation Eureka transmitter based on Mount-Royal, the main AM/FM/TV transmitter site in Montréal, and two others located about 50 kilometers away, the L-band team began further tests in SFNs and coverage extenders with the two remote sites being fed off-air by the

Mount-Royal transmitter. They also set up a "permanent" experimental station in Toronto for further tests.

For the CBC team of Conway, Sawyer and Fortin, L-band has proven itself to be a medium worthy of study. "It more than exceeded our expectations," Conway said. "We were hoping that L-band would be a feasible band, that it would not be too expensive. As a result of our measurements now, we feel that it is more than feasible; in fact, there may be ways to design that it will be practically the same cost as VHF."

Equally satisfying for Fortin, senior engineer in broadcast spectrum at CBC Engineering, is the support the efforts of the team have won for L-band from other WARC members. "At one point we had a meeting of all these countries in Montréal," Fortin said, "and they were given a tour of the network here. Most of them could not believe what they heard."

Of course, the work is not over yet for the CBC, but as Canada approaches its goal of achieving DAB before 2000, it is safe to say they are now in "the home stretch."

Despite their small size, and limited resources, they have managed to have a significant impact in the evolution of DAB.

□ □ □

*James Careless, an audio producer, covers the industry in Canada for RW from Ottawa.*

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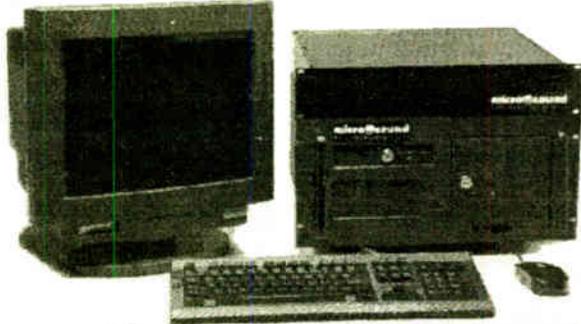
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by Jim Murphy

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yet can save unlimited time when trouble-shooting cable problems.

**A simple tester**

It would be hard to find a simpler circuit than that shown in Figure 1. A cable is tested by placing a small voltage (5V to 10V) on each of three conductors and monitoring the respective lights. Each lamp shows continuity when its line switch is depressed, and a short between lines will illuminate an adjacent lamp. Because the indicators are so important, a lamp test switch will identify any burned-out bulbs.

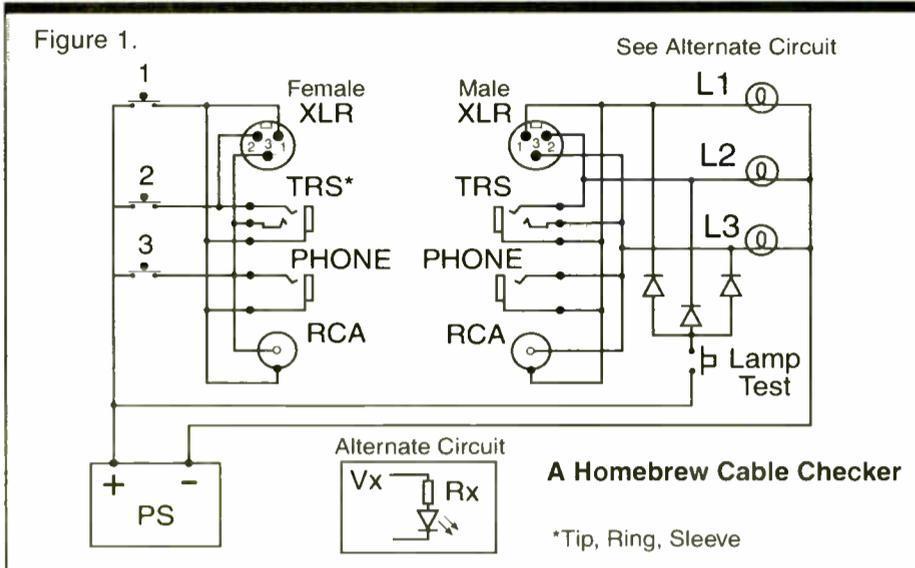
Using LEDs rather than bulbs will eliminate the lamp test circuitry, and will require less space. If you use diodes, be

Calculating the values is easy. See the insert box in Figure 1. All you need to know is the terminal voltage ( $V_x$ ) and the current rating of the LED. Most LEDs operate between 20 and 40 mA. Use Ohm's law to determine the resistance, allowing about 1.5 volts for the diode. If you remember from an earlier issue, the ohms/volt value is 50 for a 20 mA string. Calculate the series resistor by multiplying the terminal voltage by 50, then subtract about 75 ohms.

**Voltage**

Assume the voltage source to be 12 volts. If you wish to limit the diode to 20 mA, the value of the series resistance would be:  $R_x = V_x - 1.5 / I$ . Substituting,  $R_x = (12 - 1.5) / .02 = 525$ . If

you use a 470 ohm resistor, the wattage continued on page 29 ▶



## Radio Stations Aid Listeners During Flood

by Naomi R. Inman

**SANTA BARBARA** In the early morning hours of January 10, radio-news teams for two California county, primary EBS stations awoke to find themselves in unfamiliar territory: guiding their communities through what the weather service calls a 20-year flood.

In Santa Barbara and Ventura counties, heavy rains dropped up to an inch of water per hour. By 6 a.m. flood warnings were in effect and reports came in of flooded homes and cars just blocks from radio station KTMS in Santa Barbara.

"(The recent flooding) shows how radio is the one that people turn to when they need to know what the hell is going on," said Peter Bie, news anchor and reporter at primary EBS station KTMS-AM in Ventura. KTMS was part of a three-station group (including KLITE-FM and KHPY-FM) to simulcast 10 continuous hours of commercial-free flood coverage and several days of follow-up coverage, in Santa Barbara county.

**The flood**

"The biggest disasters happen when there are no rating periods," said Rich Gualano, news director at KVEN (AM) in Ventura, in discussing the culmination of his station's 16-hour performance during the flood. KVEN is the primary EBS station for Ventura County.

Without hearing the official word, anchor

Peter Bie knew something was up during his commute to KTMS at 4:30 a.m. on January 10 for the routine 6 a.m. news coverage. "By five-ish I thought we'd better get on the air and start talking about it," Bie said. At the direction of the weather service, KTS broadcast the EBS signal at 6:05 a.m.

"Our whole effort from that point on was to tell people not to wait—to get out now. People were still trying to carry on the normal routine," Bie said.

Santa Barbara's last serious flood occurred in the 1960s. That, according to Bie, does not leave most of the public with a long-time memory on what to do, including radio people. In the local radio community, stations said that January 10 was the first time they had run an actual EBS signal.

Although Bie boasts a general sense of satisfaction with KTMS news coverage during the flood, he shared one significant frustration. "I was a bit disappointed, in those early hours, about the general confusion of who knows what, what is their phone number and how can we talk to them," he said.

He said emergency planners also admitted the need to work out a better game plan. Emergency services were not always clear on who in the media to call.

Throughout the day, KTMS kept the public informed for 10 straight hours. Their coverage included live reports, and up-to-the-minute information from the county flood patrol, police, fire, the Red Cross, FEMA and the weather service.

"In one day, many of our crew—and our listeners—became experts in new terminology. Everyone learned what 'doplar radar' means," Bie said.

**Doing it right**

South of Santa Barbara, local stations and Ventura county officials pointed to KVEN (AM) as the one to turn to during the disaster. By 6 a.m., KVEN had broadcast the EBS signal and had four reporters stationed in problem areas throughout the community.

"We got on the scene of every major problem before it happened," News Director Rich Gualano said. "We knew where problems were likely to occur because of past history and from scanner traffic."

KVEN had a problem with its emergency generator that failed at 9 a.m. and left the station dark for a half-hour. Throughout the day KVEN's coverage was three-fold: live reports from the scene of problems, official information from government agencies, and information from private individuals and other agencies.

During disaster coverage, one of the most important strategies is to sort out rumor from fact. Gualano warned. "It's important to have a filter for the information you get, and we don't report anything unless we are seeing it ourselves, or it comes from a government agency."

Overall, Gualano feels his station was admirably prepared. He points to room for improvement, however, in having enough staff to sort through information before it goes over the air.

"With any event, no matter how much you prepare," Gualano said, "you do a good job and in some things you do a bad job. It's a pretty messy business. The way we cover disasters, our listeners are listening to us gather the news, not just report the news."

In both cases, KTMS-Santa Barbara and KVEN-Ventura reported an overwhelming response from their surrounding communities. In the form of letters, phone calls and day-to-day social contacts, they heard what the ratings could never tell them. Not a single life was lost in Santa Barbara County, the hardest hit by the flood.

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## ROOTS OF RADIO

# Bergen, McCarthy Banter a Natural for Radio

by Read G. Burgan

**LAKE LINDEN, Mich.** If you look up "ventriloquism" in Volume 22 of the 1972 Encyclopaedia Britannica, you'll find the following: "Ventriloquism—the art of 'throwing' the voice; i.e.: speaking in such a manner that the sound seems to come from a distant source other than the speaker.... A figure or dummy is sometimes used by the ventriloquist to assist in the deception. The ventriloquist animates the dummy by moving its mouth while his own lips remain still, thereby completing the illusion that the voice is the dummy's, not his...."

Instructive, but pretty dull stuff. The short article goes on to discuss ventriloquism's ancient roots. What it fails to mention is the greatest ventriloquist of the twentieth century: Edgar Bergen.

Before you close the book, look very closely at the parenthesis at the end of the article. That's right, at the three letters: "E.J.B." What do they mean? They're the initials of the article's author. In this case they stand for... Ah, you guessed: "Edgar John Bergen."

## In the beginning

Edgar Bergen was born on Feb. 16, 1903 of Swedish parents. His original family name was actually Berggren. His early boyhood was spent on a farm near Decatur, Mich., his adolescent years in the Chicago area. He discovered his facility for ventriloquism quite by accident at the age of 11. One day as he called out to a friend walking down the street, he noticed the boy directed his answer elsewhere.

Bergen soon discovered that he had a talent for vocal misdirection. Before long he was entertaining classmates and frustrating his parents and other adults with his newfound skill.

A 25-cent book on ventriloquism helped hone his skills. Harry Lester, a famous ventriloquist reluctantly agreed to give the eager Edgar three months of ventriloquism lessons. Bergen also learned sleight of hand skills and magic routines.

A serious ventriloquist needs a dummy. Bergen had one specially carved of white pine material by a bartender named Theodore Mack at a cost of \$35. The face of his dummy was modeled after an Irish newsboy Bergen had seen on a nearby street. Bergen himself carved the body.

Before long, Bergen was a hit at school assemblies and parties. Even his school teachers recognized he possessed an extraordinary talent to entertain.

Bergen entered Northwestern University as a pre-med student. To pay expenses, he performed as a combination ventriloquist and magician at various private parties. Summers were spent earning even more money on the Chautauqua and Lyceum circuits.

## Paying some dues

He never finished college. From 1926 until 1936 he and his dummy, Charlie McCarthy, traveled over several continents playing the vaudeville circuits and perfecting his craft as an entertainer. His travels included Iceland, Sweden, England, Russia and South America where he even entertained at a leper colony.

It was a hard life. Long miles and low

pay. Eventually both his pay and his stature as an entertainer grew until he became a



Edgar Bergen with Charlie McCarthy

headliner. Bergen considered his first performance at the New York City's Palace Theatre in 1930 as his coming of age.

Six more years passed before the entire country would become his audience. In the fall of 1936 he played a private party in New York City where he came to the attention of Rudy Vallee. At that time Vallee had one of the most popular network variety programs in the country. Vallee asked Bergen to appear on his Dec. 16 broadcast on NBC. Bergen gratefully agreed.

But soon after both men had second thoughts. A ventriloquist on radio? Ridiculous. They each concluded that it was a bad idea. In the end, Rudy Vallee decided to risk it and persuaded Bergen to appear.

Bergen and McCarthy were an instant success. Vallee paid him \$150 for that initial appearance and invited him back repeatedly to the increasing delight of his audience.

In May of 1937, Bergen and McCarthy came into their own. Chase and Sanborn signed a contract with them for a weekly one-hour radio program on NBC. For years to come, the Charlie McCarthy and Edgar Bergen program ranked at or near the top of the ratings.

W.C.Fields was featured as Charlie McCarthy's foil during the first few months of the program. It was a marriage made in radio heaven. Their running radio feud evoked the nastiest barbs that radio censors would allow. The audience loved it. Here's a sample of their running dialogue:

## Early radio repartee

CM: Mr. Fields, is that your nose or a new kind of flamethrower?

WCF: Quiet you termites' flophouse!

CM: Why you bugle beak! Why don't you put helium up your nose and rent it out as a balloon?

WCF: Quiet you animated hitching post or I'll sic a beaver on you.

CM: No wonder Mr. Fields nose looks like a flame, he's an alcohol burner.

WCF: I'll saw his leg off and beat the sawdust out of his head with it!

CM: You won't say that when I grow up.

WCF: When you grow up I'll string telephone wires on you.

CM: I've never seen my father, Mr. Fields.

WCF: Go out and look in my woodshed.

Bergen played the straight man to Charlie McCarthy. Charlie was radio's original bad boy. Bergen kept his age at fourteen. He was cheeky, sneaky, mouthy, clever, outrageous and much more. Although he actually had many costumes, his most familiar included top hat, tails and a monocle.

## Radio's bad boy

He was also a womanizer. Over the years Charlie's leading ladies included Dorothy Lamour, Mae West and Marlyn Monroe. His Adam and Eve skit with Mae West elicited thousands of letters from offended listeners, caused the FCC to threaten to pull the licenses of stations carrying the program and incurred a 15-year network

ban against Mae West.

Charlie stood 38-inches high and weighed 40 pounds. Ultimately there were several Charlie McCarthy's, consisting of several heads and nearly half a dozen bodies. While the later creations provided Charlie with a variety of moods and appearances, none matched the original which Bergen insured for thousands of dollars and kept in its own private bedroom.

In the late '30s and early '40s, Bergen added two more dummies to his stable of characters. Mortimer Snerd joined the cast in 1939. He was an oaf—a farm fellow with buck teeth and pieces of straw sticking out of his hat. Mortimer and Charlie were dead opposites. Mortimer was as dumb as Charlie was smart. A psychiatrist said that the reason people liked Mortimer, was that he made them feel more secure than before they heard him because he was so stupid.

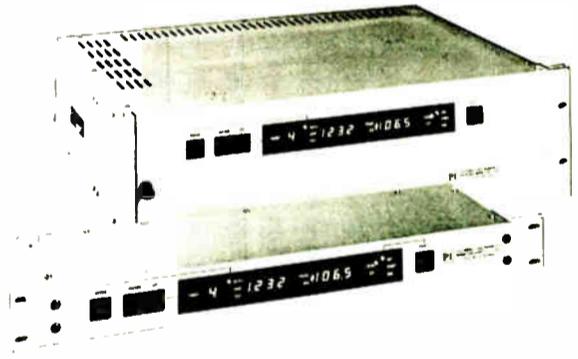
Effie Klinker, a man-crazy old maid was added in 1944. While Bergen experimented with other characters, these three were the survivors, and Charlie remained the most popular.

How did Bergen parlay a ventriloquist act into a successful radio series? Why did people embrace a dummy they couldn't even see? Sam Pierce was the producer for the Bergen-McCarthy radio series for many years. He concluded, "The reason

continued on page 19 ▶

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# Club DJs May Need Production Polish

by Alan Peterson

**HARRISBURG, Pa.** For CHR radio stations, hiring a club DJ to jock a dance show is often a shrewd idea. The jock knows how to mix seamlessly, is very in tune with what is hot, and has a built-in following from his or her club gigs. A hot club DJ can make your station sound exciting.

When you ask a club DJ to pull some production time, however, you may find out your shining diamond will need some additional polish.

## Serious work

It has been my experience that radio production done by some (not all) club-intensive jocks is in need of serious repair: levels are on the moon, mic technique is deadly, interpretation of the message is nonexistent and the spot is either drowning in unnecessary sampling or was power-mixed with a dozen beat-matched music cuts.

Should your console have EQ, your client's precious message will also have enormous amounts of bass boost. Levels to cart or hard drive go past the red and enter the infrared region. To summarize, not whateacall your station's best effort.

Why are these conditions mostly common to club DJs? Many club sound sys-

tems use huge limiters, so jocks depend on them for smooth segues each time regardless of settings. Jocks have to climb inside those \$80 cheeseball dynamic mics just to be heard in the clubs; they'll do the same thing to your RE-20 or Senny 421 strictly from habit.

Sampling and power-mixing is hip, but not always necessary (florists and luxury car dealers should avoid such approaches). The low end is over-EQ'd to simulate bazooka bass "so it doesn't sound wimpy," but it only slams the compressor in the production room and ends up muddy.

Sure, it sounds cool in the production room at 100 dB with the door open (so the bass waves have somewhere to go), but over the air, down the phone to the client or on a spec cassette, it just plain sounds bad.

## EQ'ing excitement

As engineers and/or production directors, we need to help translate a DJ's style and the excitement he or she cre-

ates into a marketable and airable product.

First step is to explain why none of that big fat bass makes it to the air: everything way down there hits a brick wall as

um, not one that is read. Finally, show him what's going on behind the words: obviously an Acura car commercial requires a different read than an alternative club night spot. A home security alarm company needs emotion; an auto speedway needs nitro-methane mixed with testosterone. Breaking away from club-floor vocal technique is a big step and he or she may not latch onto it right away. Nurture this approach and

have him or her work at it.

## Adjusting the levels

This leaves you time to help him or her with levels. The easiest way to understand it? Bypass the studio compressor/limiter. Plain and simple, if the mix sounds well-balanced without compression, it will still sound good with it. Hearing an uncompressed mix allows the ear to "microscope" the subtleties of it and make good decisions. Unless a very specific effect is aimed for (such as classic limiter breathing), fade down the laser blasts and reverb return levels, turn off the sampler for now, and don't allow the limiter to take control of the mix.

Finally (and be diplomatic with this one), music choices. Not every spot requires beat-to-beat mixes of several songs. First, it may sound too close to a station promo; program directors are fierce when it comes to differentiating commercials from station image. Second, it's mostly being done for the jock's ego: "Man, I sound as good on this sixty as I do in the club." Lastly, not all clients require this approach, and many a demo will be sent back for a re-cut with the note "change music" attached.

## Your protégé

Instruct your new protégé that part of interpreting the copy includes visualizing ("auralizing"?) what sort of music is appropriate for the message. Then guide him or her through the station library and teach him or her how to use the cross-reference directory.

By no means, however, curtail his or her creative edge. These guys may have had access to recording gear much more sophisticated than yours and can coax some phenomenal performance out of your production room. If you have MIDI, watch him take to it like a pigeon to popcorn. Allow him time to rehearse, practice and do mixes, and in turn he will probably redefine what your room is capable of doing.

Lastly, be ready to watch him or her do his or her thing in the room, and get ready to learn some new techniques from what he may have brought from the clubs. None of us know all the tricks, so everybody gets better and the station gets richer.

□ □ □

Alan Peterson is production director for WNNK-FM, Harrisburg Pa., 17110, which employs several club and wedding DJs. All are capable, digital-literate production people.

**Many club sound systems use huge limiters, so jocks depend on them for smooth segues each time, regardless of setting.**

it passes through processing before being STL'd out the door. Better to strive for a balanced sound, one where all frequencies blend in a harmonious manner. Let him or her hear a sample of a similar spot produced by another jock at the station for reference and perhaps inspiration.

A primer in mic technique should be the first practical lesson in the studio. The first time someone stops "swallowing" the mic, he will be amazed at the amount of power and clarity that comes with a high-end unit (always say "no" if he asks if he can borrow it for the club... and he will ask too). Show him proximity effects: the airiness they achieve with moderate distance and the intimacy of close-miking with a low voice. Use your ear to find an EQ curve on the mic processor that is his or her signature.

Now that he can work a mic, give him a basic taste of how to interpret a piece of copy. Put extra spin on the emotional adjectives: new, crunchy, sexy, shiny and the like. Show how a lift in pitch towards the end of a phrase gives it a positive feel. Teach him to ignore commas in the copy; radio is a spoken medi-

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World Radio History

# Manufacture Your Own PC Boards

by Jim Somich

## BROADVIEW HEIGHTS, Ohio

There is nothing like a professionally laid out pc board to make your projects neat, reliable and easy to build.

Sure, there is always perf board, but wiring quickly turns into a meaningless glob with circuits of any complexity at all. And if you are designing a circuit that requires any degree of stability, this "haywiring" will reduce the performance of your finished project.

What we need is a quick and easy way to make professional pc boards. What if you could run off pc boards on your copier or

laser printer? It's almost that easy with the toner transfer system of creating pc boards. The system is simple and foolproof and much quicker and easier than photographic techniques. It is also faster and easier than laying out artwork directly on clad boards.

### Excellent etch resist

The common toner used in copiers or laser printers is comprised of about 50 percent pulverized plastic. This toner makes an excellent etch resist for the creation of printed circuit boards. The problem has been how to transfer the toner image directly to the circuit board.

To understand the process of transfer-

ring an image, we need to take a quick look inside a copier or laser printer. Without getting into the details of how these printers create the image, suffice it to say that the initial image is nothing more than carefully arranged toner dust particles. If you were to stop the process here and pull the paper out of the machine, you could blow on the image and it would fly away. To make it a permanent image, the toner image must be melted into the paper fiber.

Just before the paper emerges from the printer, it makes contact with a very hot "fuser" roller. The toner instantly melts into the fibers of the paper, making a

permanent image. These paper fibers act the same way as steel does when used to reinforce concrete.

Toner transfer paper, available from several sources including Digi-Key, has a special water-soluble coating on one side of a loose-weave, lightweight paper. The coating acts as a barrier to prevent the toner image from locking onto the fibers of the paper. Because this coating is impervious to heat, it's completely safe to run this paper through any laser printer or copier.

The key to this process involves a "double-fusing" technique. The first fusing is from the printer to the paper as already discussed. The toner transfer paper is now placed face down over the cleaned circuit board. The second fusing takes place as the back of the paper is subjected to high heat and a little pressure. The source of this heat can be a common household iron set to "cotton." The toner image remelts and bonds to the copper surface. The board is then placed into a tray of water, where after about a minute or two, the paper will slide off, leaving a perfectly transferred image.

### Imaging methods

Two imaging methods are normally used for creating the pc board layout representation.

• **Personal computer with a laser printer:**  
Option A-Design your layout on the computer screen

Option B-Using a scanner as an input device, capture the artwork from a magazine article.

There are many commercial and shareware programs available for pc board layout. I use a program called SmArtwork from Wintek. SmArtwork includes a simple auto-router, block editing functions and a library of pads, dips and sips.

### • Photocopiers

This method would be used if you only have a dot matrix printer for output or you are fabricating a board from a magazine construction article. If a magazine's artwork is not printed clearly, you can correct the deficiencies by making a good copy of the pattern on regular paper and then using a bottle of correction fluid and black pen to make necessary touchups. You can then reprint to the transfer paper.

After the transfer process is completed, it is wise to go over the image and re-touch with an etch resist pen where necessary. If part of the image did not adhere to the copper, either you did not use enough pressure during heat transfer or the board was not perfectly clean. You can clean the resist off the board with acetone and start over.

Place the finished board in a tray of Ferric Chloride etchant for about 15 minutes (less time if you heat the solution and agitate constantly).

I use a high-speed Dremel tool in a drill press stand to drill my finished board accurately. Carbide-tipped drills in pc sizes are available from several sources, including Digi-Key. The pc drills have a 1/8-inch shank so they can be used in almost any hand tool or drill.

The toner transfer system allows me to construct circuits of moderate to high complexity with a professional finish. I have even used the system to make double-sided boards and component overlays.

Once you have made your own pc boards, you will never go back to perf board or other haywire techniques.

□ □ □

Jim Somich is a radio broadcast engineering consultant and president of MicroCon Systems Ltd., a manufacturer of broadcast equipment. He can be reached at 216-546-0967.



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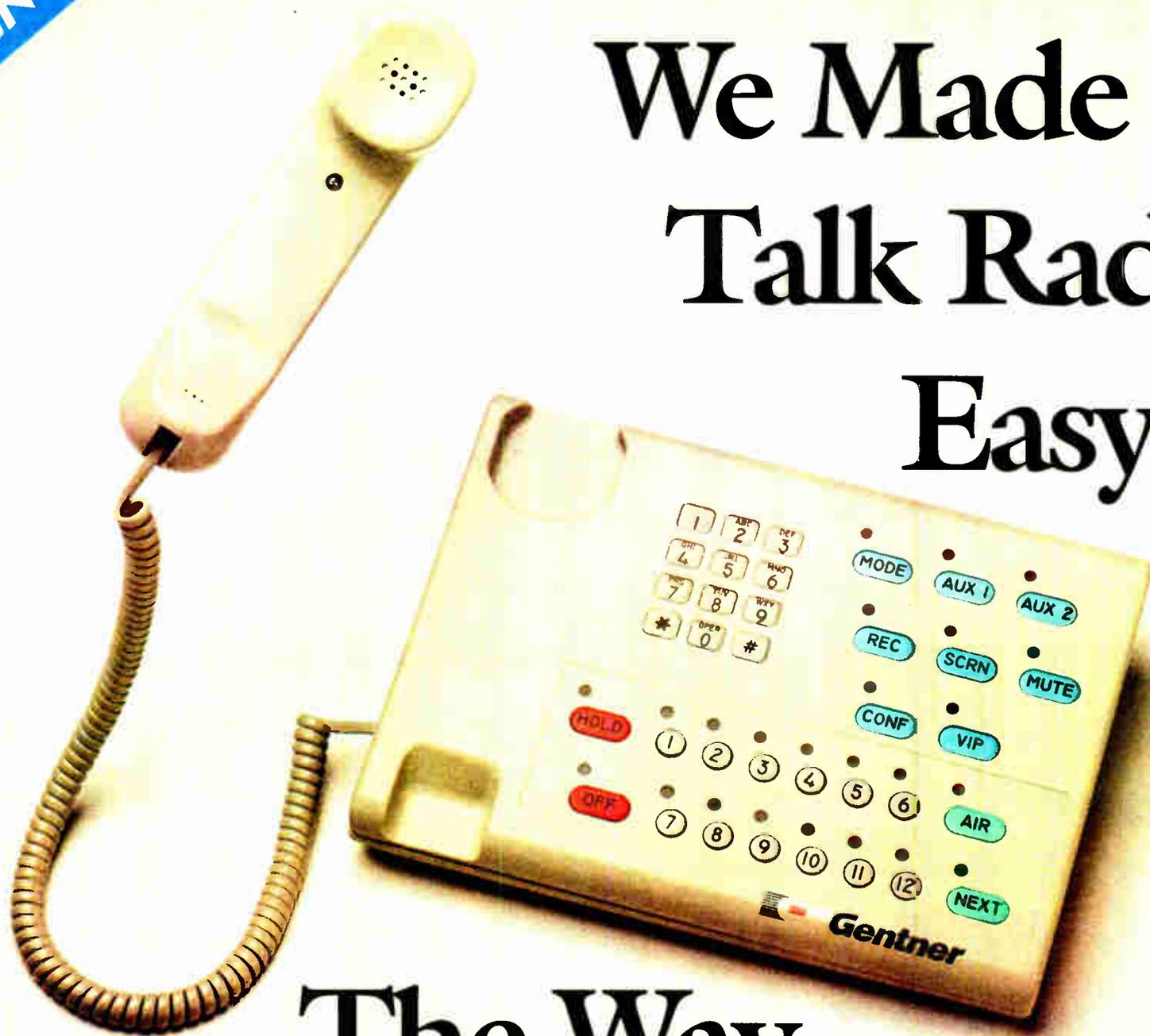
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## COLE'S LAW

# Updates on Expanded Band, Towers

by Harry Cole

**WASHINGTON** As we careen into 1995, the FCC has given us all a number of things to think about. In this column we'll take a look at a new proposed revision in the way the Commission regulates towers.

But first, a clarification of an item we covered a month or two ago. In response to our column about the AM expanded band proceeding, the switchboard at the Cole's Law "Smash or Trash" Reader Hot-Line lit up like a Christmas tree. Of the four calls we got, two thought the column was a smash, and two thought it was trash.

At least one of the two who disagreed with our somewhat skeptical view of the expanded band matter happened to be one of 79 licensees anointed by the FCC to venture forth into the expanded band. He wanted us to know that he and others in his position are excited about the possibilities and very upbeat about moving up the band ASAP.

## Expanded band radios

He (and one other caller) also wanted us to be sure to let everybody know that, contrary to a suggestion in our column, expanded band receivers are in fact readi-

ly available in the marketplace, and have been for some time. As evidence, he pointed to a listener who had recently bought a new car, only to discover that the radio did not extend into the expanded band. After complaining to the car dealership, the listener was given a new radio.

(Of course, in addition to demonstrating that such radios are available, this anecdote also illustrates that there may still be some, er, practical impediments to getting them into consumers' hands right away.)

So much for the old business. On the new side, the FCC is proposing to require tower owners (as opposed to each indi-

vidual applicant proposing to use a tower) to register their towers with the Commission. The idea is that each tower would be given a unique registration number. That number could then be used to keep track of the tower's coordinates, height, lighting/marketing specifications, etc., in the FCC's records.

The tower owner—as opposed to the owner(s) of each of the antennas on the tower—would then be under a continuing obligation to notify the FCC of any changes in any of that information. And if an applicant proposes to use a particular tower, it would only have to reference the tower's registration number.

The motivation for this proposal comes in large measure from the fact that, under the Commission's existing regulatory approach, when a tower with multiple tenants is modified, each of the tenants generally ends up having to report the modifications (if not request authority to make them).

## Tower regs

That means a hefty amount of unnecessary duplicated effort on the Commission's part. So what the agency is trying to do is to separate out the mere structural aspects of towers, which will be the same for all users of any particular tower, from the RF-based licensing considerations which will vary from user to user.

This proposal seems to be reasonably good news for broadcasters. While it may create some additional administrative chores for those of you who own your own towers, it should make life easier when it comes to preparing applications. Theoretically, instead of having to fill in a bunch of information about your proposed tower site, all you would have to do would be to list the tower's registration number.

It may also make life easier in dealing with the FAA. It appears from what the FCC has said so far about its proposal that the FCC views the FAA as being interested only in purely structural aspects of towers; i.e., how tall they are, how close they are to airports, etc. This may be significant because it suggests that the FAA may no longer be interested (at least as far as the FCC is concerned) in electromagnetic interference ("EMI").

As some of you FM operators may recall, several years ago it was exceedingly difficult to get many upgrade applications approved because the FAA objected to the possibility that the upgraded operation might cause EMI to navigation systems. More recently, the FAA has revised its computer programs so that it seems to be seeing fewer potential EMI problems.

The one somewhat negative aspect of the FCC's proposal is that all tenants of a tower would still be responsible, albeit on a "secondary basis," for compliance with applicable tower rules. That means that broadcast licensees who are merely renting space on a tower could still be responsible for checking tower lights, assuring compliance with marking requirements, and the like.

It also means that, if a tower is way out of compliance, the Commission could conceivably fine the tower owner as well as all the tenants—meaning something of a windfall for the government in the way of fines.

On the whole, the FCC's tower registration proposal seems to be a rational and, ideally, useful approach to the problem confronting the FCC.

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*Harry Cole is a partner in the Washington-based law firm of Bechtel & Cole, Chartered. He can be reached at 202-833-4190.*



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# Bergen-McCarthy Team

► continued from page 13

Edgar was loved so, is because people believed the dummies. They really did believe the dummies, because on radio you didn't see them. Even the audience in the studio believed them."

## Credibility factor

Just how believable were Bergen's dummies? Sam Pierce recalled an almost unbelievable example: "I was doing a series of spots with Edgar Bergen and the dummies at CBS one afternoon. All the cast were there. Edgar had completed two or three spots that we put on tape, and asked, 'Do you need me any more, Sam?' I seriously said, 'No, I don't think so, Edgar. I've got a couple of little things I'm going to do with Charlie and one I've got to do with Mort. So I don't need you. You can go.'

"He picked up, walked out of the studio, and out to his car in the parking lot. And I swear he knew exactly what he was doing; he just sat down in his car and waited for me. Pretty soon I said, 'Mort, let's do the Mort stuff....' And all of a sudden I realized what I had done. I had sent the voice of Mortimer and the voice of Charlie right out into the parking lot. I believed in them so much!"

With Bergen's abilities to create such believable characters, you'd assume that he was a consummate ventriloquist. Sam Pierce remembers, "He wasn't that good a ventriloquist as far as moving his lips. Oh sure, he was better than the average. But half the jokes in the show were Charlie's saying, 'Your lips are moving, Bergen.' And then we'd do a whole routine on his lips being moving. We made something of it."

On the radio programs, Charlie McCarthy's witty responses were razor sharp. His seeming adlibs came so fast and furious that listeners readily concluded that Edgar Bergen was the master of the quick comeback.

"Not so," says Sam Pierce. "Edger Bergen was a very quiet man who would have loved to have had the command of the adlib, but who really didn't. You see the writers had never written anything funny for Edgar; he was the straight man. Even though Edgar got big laughs because of being a foil with Charlie and Mort, he was lost with out something having been written that he could remember. He had a great memory. With the dummies he was bright and brilliant. He could really wow them. But alone, without them, he was lost. It was an odd thing to see."

## Lost without the dummies

Pierce recalled a vivid example of this: "One year we were back in Chicago. Edgar had been appearing in person in a nightclub. We had done the radio show there. We had some spare time, so we decided to take the train instead of flying. We went back to the club car on the train. There were five or six young girls who were just wild because they recognized him. He began talking to them, trying to quip and make them laugh. But he got lost. He was struggling and the girls were looking a little disappointed.

"Finally he said, 'Look Sam, hang on a minute and I'll be back. Buy the girls a drink.' He was back in about five minutes and had brought Charlie and Mort back with him in the suitcases. He pulled them out and sat Charlie down on his knee. Then he started adlibbing with Charlie. In two minutes he had the place

in hysterics. He had the place falling down with laughter, because he had Charlie sitting on his lap. Then he pulled Mortimer out, started talking with Mortimer, and the same thing happened. It was a graphic example to me, that here was a man who depended on this combination, the wizardry of these dummies."

During the '30s and '40s, Bergen and Charlie starred in several movies, including: *You Can't Cheat An Honest Man* (1939); *Charlie McCarthy: Detective* (1939); *Look Who's Laughing* (1941); and *Fun And Fancy Free* (Walt Disney 1947). None of these films were particularly memorable, but they did serve to enhance the illusion of Charlie McCarthy being a real person. In the movies, it was easy to create scenes in which Charlie alone was featured with Bergen nowhere to be seen.

## Master of innuendo

By the mid 1940s, Bergen was paid \$10,000 a week for his radio show, earned \$150,000 per motion picture and received yet another \$100,000 a year on royalties from Charlie McCarthy dolls and toys.

Over the years Edgar and Charlie received numerous accolades. In 1938 the Motion Picture Academy awarded Bergen a special wooden "Oscar" for the comedy creation of 1938. The most unusual award was when Northwestern

University gave Charlie an honorary degree: *The Master of Innuendo and Snappy Comeback*. The citation read: "Prince of parasites, violent in company, churlish in behavior, acid in conversation, wooden faced in all relationships, and thus in many respects a typical product of higher education in America."

Bergen's radio program ran from 1937 until 1956. When it ended, he continued to play nightclubs and theaters, but gradually faded into near obscurity as ventriloquism faded in popularity.

In the summer of 1978, Edgar Bergen called a press conference to announce his retirement. For one last time he began a three week engagement in Las Vegas. His friends and family, who knew his health was fragile and that his failing memory often left him in confusion, attended the opening night with trepidation.

As Bergen and McCarthy flawlessly worked their way through the old routines, the years seemingly melted away. When the program ended, Bergen and McCarthy quietly listened to an audio montage of assorted clips from their old radio shows. The audience applauded with a standing ovation.

Bergen and McCarthy repeated the act for two more nights. On the morning of the fourth day in Las Vegas—10 days after announcing his retirement—Bergen and McCarthy never awoke. Today, Charlie McCarthy resides in the Smithsonian Institution.

During the Golden Years of radio, Edgar

Bergen proved himself the ultimate ventriloquist by throwing his voice across an entire nation through the medium of radio. In his death, he shows an even greater ventriloquistic prowess. Each year more and more compact discs and cassettes are being issued bringing his unusual talent to a new generation—proving that Edgar Bergen is truly the world's greatest ventriloquist: throwing his voice forward into time and back from the Great Beyond!

□ □ □

*Author's Note: The quotations from Sam Pierce are from a one-hour recorded interview made by the author at the Voice Of America studios on March 24, 1975.*

*Read Borgan is a free-lance writer and a former public radio station manager. He can be reached at 906-296-0652.*

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# WORKBENCH

## Re'an Organizes Patch Bay on Computer

by John Bisset

**FALLS CHURCH, Va.** If you have ever visited a network or large studio where patch bays rule the equipment racks, you may have been awed by the neat designator strips that identify each jack.

You may have experimented with your own patch bay designator labels using your word processor. Unless you have a lot of time, it's not easy to print out designator strips like the "professionals" use.

★ ★ ★

Another avenue for patch bay IDs is Re'an PatchLabel software. The \$100 software package greatly simplifies the preparation of patch bays. The software was developed as an efficient alternative to labeling patch bays with two or three lines of text in a quarter-inch wide strip. The PatchLabel runs on Windows, requires at least an IBM 386 with hard disk drive (at least 600K available), VGA or SVGA color monitor, a mouse and inkjet or laser printer operating in the landscape mode.

With this software package, Patch bays can be customized quite easily. The program takes into account the number of sockets and their diameter, to insure properly proportioned labels. Changing the patch bay layout, or for that matter, the designations strips, is as simple as clicking the mouse. The program has the layouts for over 15 types and brands of patch bays, further simplifying the process.

Re'an has built and wired professional audio and video patch bays, jacks, and cords for the professional audio and video industries. The company also manufactures knobs for many of your favorite pieces of gear.

This software packages their expertise in an inexpensive yet useful way, putting an end to smudges and hand-inked patch bays that no one can read. For more information, circle **Reader Service 163**.

★ ★ ★

Speaking of computers, in a recent publication from Dolby Labs, their presence on the Internet was announced. The most extensive presence is the Dolby Audio/Video Forum on America Online. Downloadable files of most of the major Dolby publications are provided, including technical papers. One of the most popular areas of the forum is the "Ask Dolby" message board, for questions addressed to Dolby's technical staff. You can access the forum by using the key word "DOLBY."

Bob Hawkins, a contract engineer in Indiana, recently encountered a problem with the plate current meter on his Harris FM-10H3 at WIFE-FM in Connorsville, Ind. Specifically, static would cause the plate current meter to wander.

Anti-static spray helped the situation for readings near zero, but was not a cure. Mid-level meter indications were unpredictable. In his travels to other stations, Bob noticed that the Modutec meter used in the CCA FM 20,000DS transmitter

was physically the same size—including the mounting studs—and it never acted strange.

After checking that the movement for the two meters was the same, Bob ordered one. The new meter cured the problem. The replacement meter cost a little over \$100, and made final tuning and adjustment a breeze. Jason at CCA can fill your order. Call him at 404-964-3530.

★ ★ ★

If you plan to exchange other meters, keep in mind that the measuring components must match. Some meters may have the same physical size, but a different full scale movement. The meter sensitivity is usually printed in small lettering somewhere on the meter scale faces in place.

Although not always a static problem, errant transmitter meters can run you in circles. During a maintenance session, it's a good idea to check the values of the meter multiplier resistors (make sure the transmitter is off and properly discharged!). Usually, sudden drops or improvements in efficiency—where no other symptoms are noted—can be traced to these resistors changing value.

Remote season will be upon us before you know it. If you haven't taken advantage of college interns to assist your remote setup, now is a good time to contact your local college or tech school. In exchange for college credit, the interns will perform on-the-job skills through a learn-as-you-do program that you and the college instructor can develop.

The legwork required to set up a program is worth bundles in duties that can be assigned to someone other than

you. Your management should appreciate your initiative and resourcefulness.

★ ★ ★

Like it or not, the better weather is coming, and with that weather comes the influx of remotes. In a past Workbench, we outlined a scheme of labeling mic cables to simplify choosing the correct length. Belden wrote and suggested using different colors to represent different lengths. Another good idea.

But how about getting rid of the cables altogether? Well, almost. Topham Audio in Orlando is selling a neat new device that turns any mic into a wireless mic. Manufactured by Lectrosonics, the wireless cube comes in three models. There are VHF narrow band and UHF narrow band versions for ENG use, and a UHF wideband model with high definition audio quality and full-function metering.

Each plug-in cube is about the size of a wall-wart power pack. The cube has an XLR female jack on one end, and is powered by a 9 Volt alkaline battery.

You simply plug in your favorite mic, and it becomes "wireless." Topham Audio publishes a production sound catalog that is full of useful products and accessories. For a copy, circle **Reader Service 99**.

□ □ □

*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.*



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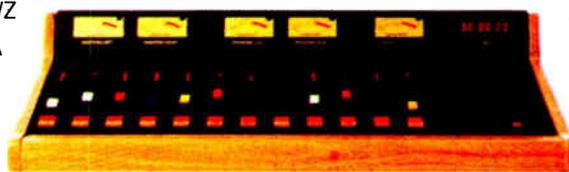
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# How to get surround sound without buying the theater...

*Chase Technologies brings you an amazing new surround sound decoder that turns your stereo into a multi-channel home theater.*

By Charles Anton

As much as I love renting videos, it's just not the same as seeing a movie in a theater. I remember the first time I saw *Jurassic Park*. I nearly jumped out of my seat when the dinosaurs roared. One of the reasons movies seem so real is because surround sound makes it seem like you're actually there when events are happening. Now there's an incredible new device that lets you use a stereo receiver to get that same surround sound in your home.

It takes more than four speakers to get surround sound; there needs to be a way of separating the signals. The new Chase Technologies HTS-1 decoder does just that, and in a revolutionary way that rivals the best Dolby Pro-Logic and THX systems.

**Wins over critics.** Gary Reber, editor and publisher of the most authoritative magazine on home theater systems, *Wide-screen Review*, stated, "...passive matrix decoders such as the new Chase HTS-1 work great as Dolby Surround™ extractors, and sound exceptionally natural when used for soundtracks and music."

**Passive circuit.** In 1972, legendary audio pioneer David Hafler invented a passive circuit to extract the "L minus R" difference

signals in stereo soundtracks. Because the circuit was patented, it was only available on expensive Hafler products. Now that the patent has expired, Chase can make this amazing decoding system available at a fraction of the cost of other systems!

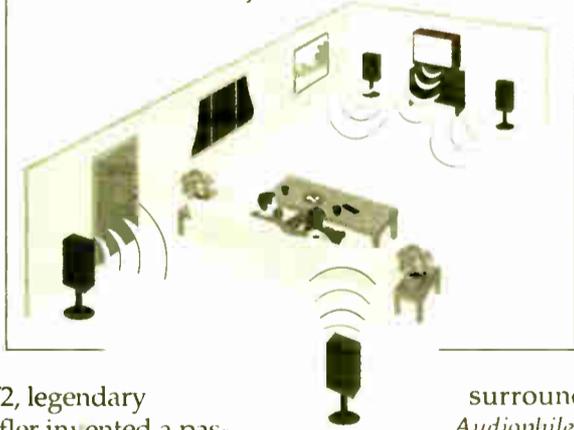
**Breakthrough.** The HTS-1 is able to decode the Dolby Surround™ signal in a videotape or Laserdisc because the spatial and depth cues have been matrixed into the "L minus R" portion of the two-channel stereo soundtrack. By decoding passively, the HTS-1 avoids costly and noisy signal processing. Plus you don't need any additional amps! Just connect the HTS-1 to your existing stereo system, add two speakers for the rear, and you'll experience the magic of home theater at a fraction of the cost.

**Concert sound.** The HTS-1 also decodes the ambience found in all music recordings. This sense of space, or "concert hall acoustics," is present in all CDs and cassettes, especially live recordings. John Sunier, the leading authority on

surround sound and producer of *Audiophile Audition*, a nationally syndicated radio program for audio

Surround sound has become the rage of the 90's because it adds depth and realism to stereo sound, giving you the home theater experience. It makes you feel like you're actually at a concert or theater. To "fill a room" with surround sound, you need more than two channels. The HTS-1 provides four channels of sound from any two-channel stereo source.

**Free center channel.** By connecting your VCR or Laserdisc player to your TV, you get sound from your TV speaker; this acts as the fifth or "center channel." Adjusting your TV's volume gives you as much or as little "center channel" localization as you desire, without extra speakers or amps. There are also no extra costs with the "fifth" channel. When used with the HTS-1, you'll have a true state-of-the-art five-channel system.



**Passive.** Chase Technologies' passive home theater system eliminates signal processing, yielding better clarity and detail. The effects sound amazingly real.

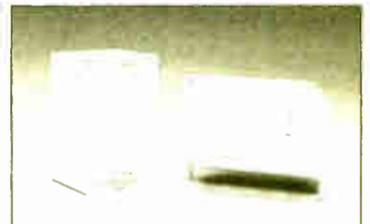


**Active.** All Dolby Pro-Logic decoders (even the built-in units) are active, meaning they decode and amplify the signal electronically. Noisy and expensive signal processing actually degrades the home theater experience. It's like putting a blanket over your speakers.



enthusiasts, says, "...the new Chase HTS-1, when used to decode the hidden ambience in all musical recordings, definitely outperforms all the Dolby and THX processors (which could cost you up to \$3,000)... I am impressed!"

**Easy installation.** Hooking up the HTS-1 is easy. Simply connect the speaker outputs of your receiver or amp to the HTS-1, then connect speaker wire to the front and rear speakers. The rear channel speakers don't have to be big. In fact, we recommend the Chase ELF-1 in either black or white finish to match your decor. They can be mounted with enclosed color-matched mounting brackets or can be flush mounted on the wall. They are also water and weatherproof; they can be used indoors or out.



**Risk-free home trial.** Let's face it—the best way to evaluate surround sound is in your home, not in a showroom. That's why we're offering this risk-free home trial. We're so sure you'll be delighted with the quality of these products and the surround sound experience that we are giving you 30 days to try them for yourself. If they're not everything we say, return them for a complete "No Questions Asked" refund.

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# Running Radio

Top 10 List of  
Interview  
Questions,  
See p. 24

Your Resource for Business, Programming & Sales

## Time Machine Travels with '60s Sound

by Alan Haber

**DALLAS** The sound is awfully familiar, and, well, comfortable, like a pair of old slippers or a well-worn bathrobe. Of course, you cannot wear the sounds that barrel out of the mists of time, thanks to Ricky the K's Solid Gold Time Machine, but you can be transported back to a time when music was something altogether different than it is today.

Nostalgia? No. Oldies? No, again. Richard Kaufman, the aforementioned Ricky the K, who pilots the Solid Gold Time Machine, a program he is gearing up to distribute by satellite, does not use those words. He simply invokes feelings as he recreates the sounds of sixties radio that tug at the heartstrings of many baby boomers.

### Latent nostalgia

While on the air on Saturday nights with the first incarnation of the Solid Gold Time Machine at KOMA(AM) in Oklahoma City, Kaufman said he discovered that a lot of people care about sixties radio and really miss it. Ricky the K, in fact, missed it, too.

He loved radio as a kid, growing up in

## Engineering The Time Machine

Kaufman said the audio chain for his Solid Gold Time Machine program authentically recreates the sound of mid-sixties WABC(AM) New York, but with CD-quality audio. The dense, warm sound of the show is made possible because of what is in the audio chain: each channel has 31-band equalization with a unique EQ curve, plate reverb, and vacuum tube compression and limiting.

An RCA 77-DX ribbon microphone helps complete the audio picture. Kaufman said that, when developing the engineering scheme for the Solid Gold Time Machine, he put an equalizer in the microphone processing chain, and gave it a 2 dB boost at 9,000 cycles and a 4 dB boost at 12,500 cycles. This gave the RCA microphone, which already exhibits a warm bass response, some high end that the microphone itself does not inherently have. For compression, Kaufman is using a pair of capacitor-refitted Teletronix LA-2A compressor limiters, which were made between 1964 and 1969.

Livingston, N.J., where he was friends with the son of Nick Massi, bass guitarist and bass singer in the Four Seasons. He was surrounded by musical signposts as a



Ricky the K pilots the Solid Gold Time Machine.

kid—songwriter Irwin Levine, who wrote "This Diamond Ring" for Gary Lewis and the Playboys and "Tie A Yellow Ribbon Round the Old Oak Tree" for Tony Orlando and Dawn, lived in Livingston. Then there was Carole King, who lived about a mile and a half from Kaufman on a street in West Orange, N.J. called Pleasant Valley Way, where she wrote (with Gerry Goffin) a song for the Monkees called "Pleasant Valley Sunday."

Kaufman loved, and continues to love, music—just about any hit record released between the years 1955 and 1971. And do not forget his favorite radio stations—New York's WMGM, WINS, and, of course, WABC and WMCA. "Probably my earliest influence was listening to Ted Brown and the Redhead doing morning drive on WMGM," he said. What really "made it for me," he added, "was Dan Ingram," the legendary WABC (now WCBS-FM in New York City) disc jockey.

Ingram had the qualities that Kaufman counts as "critically important... For me to like a disc jockey, he has to be uptempo, happy, and be able to do humor. And he has got to be able to do the humor... quickly, and keep the elements moving."

Kaufman's other big influence, in addition to hearing Rick Shaw on WQAM in Miami during Christmas trips there with his grandparents, was the man whom he says taught him radio, Barney Pip on WCFL in Chicago.

### Well-traveled road

Kaufman's radio career is not unlike that of many disc jockeys who have toiled on the airwaves. He worked at a small station in Indiana, and at WFOM in Marietta, Ga. He also worked at WNUE in Fort Walton Beach, Fla., an experience he remembers fondly because, among other plusses, the station was running reverb on the air and PAMS jingles (as were several of the other stations at which he worked).

The process of redefining Kaufman's Solid Gold Time Machine as a satellite-distributed program began when he left KOMA in 1992. He said he used KOMA

"as a laboratory for two and a half years, figuring out how to recreate sixties radio, whether you could actually do it and do it without a board engineer, do it as well as WABC did, and I figured out that you can."

Around 1983, Kaufman said he and his partner began the process of "obtaining the rights" to the PAMS copyrights, trademark and tracks. For Kaufman, the PAMS jingles he had come to love helped to define the sounds of sixties radio epitomized by the Solid Gold

Time Machine. Since then, Kaufman's company, PAMS Productions, has been producing recreations of the original PAMS jingles, sung by many of the people who sang the original incarnations, for oldies, big band and pop stations around the world.

These stations include WCBS-FM in New York City; WHAS(AM) in Louisville, Ky.; KOMA in Oklahoma City; CHUM in Toronto; Viking Radio in London; and Downtown Radio in Belfast, Ireland.

Kaufman is currently working with marketers to shop the Solid Gold Time Machine, which is designed to air four hours, five nights a week, to stations looking for a unique show targeted to listeners who love great music and the sound of sixties radio. A digital Ku-band satellite uplink has been installed at the PAMS Radio Network studios in Dallas by NSN Network Services that also will be offering receiver packages to stations that need them. Stations that pick up the show can expect to pay "a small monthly fee," according to NSN.

continued on page 32 ►



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## PROMO POWER

# Top 10 Questions for Promotion Hires

by Mark Lapidus

**WASHINGTON** When he told me he was "too busy" for an assignment, I knew I had hired the wrong person for the assistant promotion director position. He should have known better; he had held the job for several years at another radio station.

He was lacking an important key to success in radio promotion: constant adjustment of priorities. Could this person be taught? Possibly. However, had I conducted the job interview by posing the proper questions, I would have discovered this flaw and

addressed it prior to hiring him.

Although this article is written for those who do the hiring of promotion people, I urge those on the job to consider these elements against their own performance. Here's a top ten list of questions for potential promotion hires.

- What is the most successful promotion you have been involved with and what made it so terrific? The answer should reveal exactly what the person interviewed thinks was important about the promotion.

I recently had a candidate tell me the most exciting promotion she was involved with was an Aerosmith concert.

She thought it was great because she met a member of the group and the show was sold out. How did the station benefit? She replied that it sounded great when the DJs talked about the show.

### Get the point?

As I questioned her further, she revealed that the station had no signage at the concert, gave away no tickets on air, had no presence on stage, and conducted no interviews with the band. She was not even certain if the station had carried commercials for the concert.

Obviously she had not learned that if a

promotion does nothing to generate ratings or revenue, it does not count for much.

### Radio lingo

- Can you explain cume and time spent listening? OK... if you are hiring a promotion assistant to hang up banners and drive the van, this question may not be vital. However, you have hit a large pothole if a promotion director candidate does not know what the terms mean. Even an assistant promotion candidate should have at least heard the terms and be interested as to how they affect ratings and revenue.

- Pretend our budget is unlimited. How would you suggest we increase listening to the station? Probe for two basic concepts: promotion outside the station using TV, billboards, print, direct mail; and

continued on page 30 ▶

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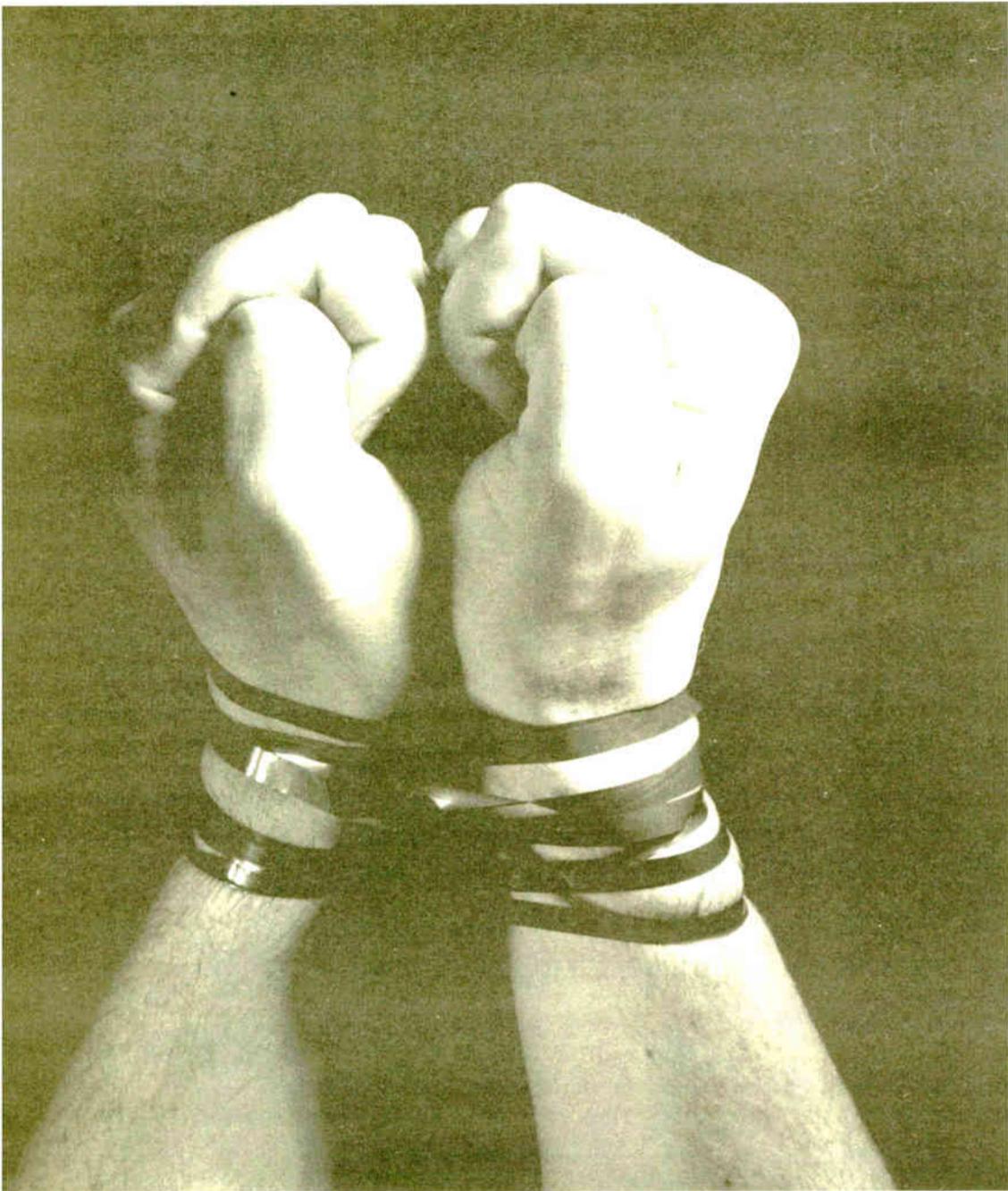
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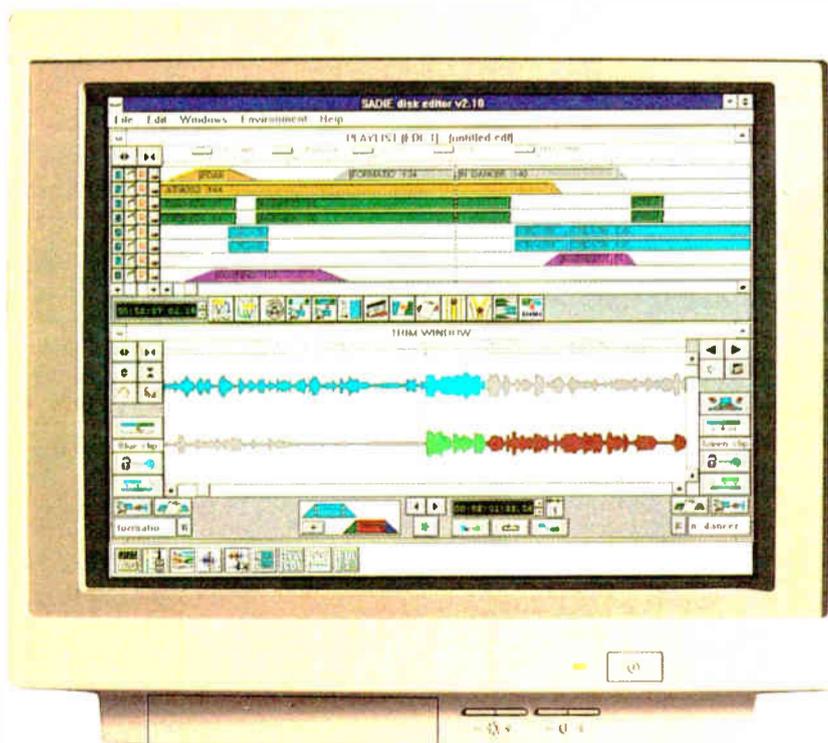
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World Radio History

# Custom Build Your Own Cable Checker

► continued from page 12

would need to be  $P = I^2 \times R_x$ , so  $.022 \times 525 = .21$  watts. Because the LEDs are used intermittently, a quarter watt unit will suffice.

Any box or housing will work fine. The one I built has a wooden frame and a masonite front panel. I used XLRs, two and three-circuit phone plugs, a bantam, longframe, and phono, all in parallel. My layout has a line of connectors down one side, the switches and lamps in the middle, and an identical layout—with the exception of the XLR genders—down the other side.

Can't get into it this time, but we can learn some capacitor operation by looking at our multivibrator circuit. If you placed an oscilloscope on the base of one of the transistors, which of the waveforms of Figure 3 would you expect to see?

If you selected C you are absolutely right, and you are dismissed. Otherwise, read on.

Generally, there are two stages of any oscillator or multivibrator. I call them the startup stage and the running stage. At startup, for our circuit, both transistors are provided forward bias by R1 and

up interval is always shorter than the running interval; the first capacitor is uncharged, and has only to begin charging from zero instead of -9 later in the cycle.

So the charging and discharging continues, lighting first one LED then the other. The cycle is determined by the time constants of C2-R1, and C1-R2. You can make this RC anything you want. With the values shown, our circuit alternates about each 500 milliseconds.

By installing Q1 in a male XLR connector, it can be plugged into one end of a suspected cable, and the rest of the circuit, in a minibox, into the other.

Be aware that lengthy cables will not check reliably in this circuit, since the multivibrator has a tendency to quit if too much resistance is inserted in the base and collector leads.

Otherwise, if the LEDs alternate, the cable is good. If only LED 2 is on, one or more of the cable conductors is open. If LED 1 is on constantly, one or more conductors are shorted together.

A 2-inch x 2-inch x 3-inch minibox provides ample room for the two LEDs, the test switch, an XLR connector and the 9V battery. After mounting the transistor in the XLR cable connector, the hole can be plugged with RTV or a grommet.

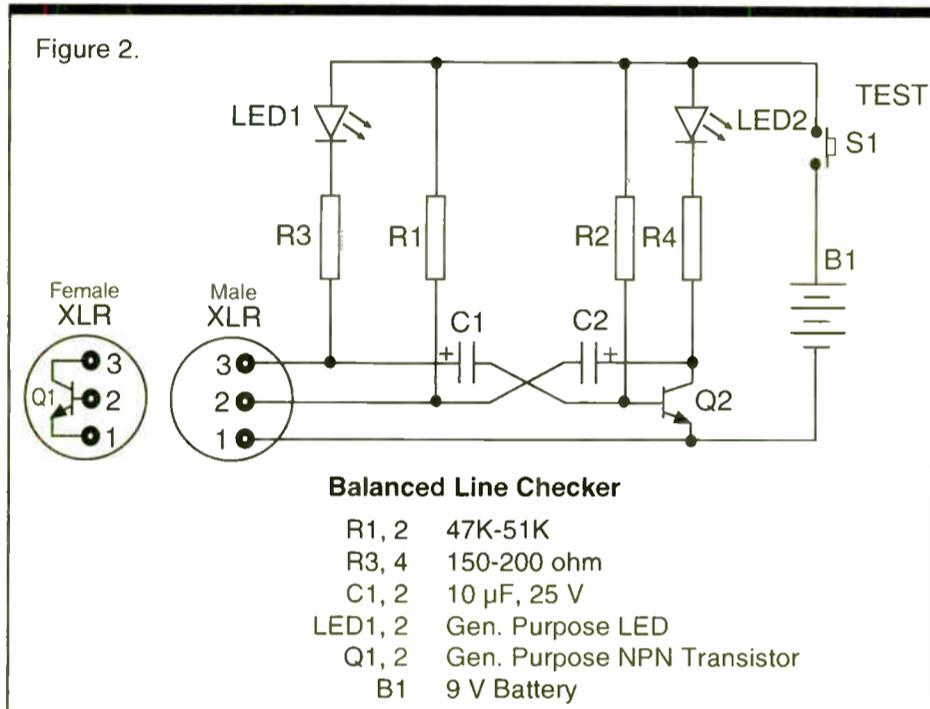
Toss this one in your toolbox and take a second to check each microphone cable as you lay it out for use. You'll be paid back tenfold for your time.

□□□

*Jim Murphy is director of engineering for the West Virginia Radio Corporation. He can be reached in care of RW.*

### Attached testing

This, as I stated earlier, makes it easier to check a cable whose ends are far apart.



Although I use a power supply, a few flashlight cells would make the unit handier and portable.

One of the drawbacks of this checker is that you need both ends of the cable at the tester. With loose cables, this is no problem, but in the case of bundled or hidden cables, the checker in Figure 2, albeit limited, might be more useful.

### Capacitors

Multivibrators have been around almost as long as I have, and there are many variations on them, the simplest of which is shown in the schematic. This circuit has some intriguing features for being as simple as it is, and demonstrates a capacitor scenario which our young readers and those just learning electronic theory might find fascinating.

Capacitors are one of the more impressive creatures in our electronic forest.

R2. Both begin conducting, but one always works a little faster, runs just a tad quicker, and beats the other to full conduction.

Suppose Q2 wins the race. C2's positive end, connected to the Q2 connector, is brought near ground, and this near-zero voltage is placed onto Q1's base, momentarily removing the bias from that transistor and turning it off. (Remember, an uncharged capacitor is equivalent to a short.)

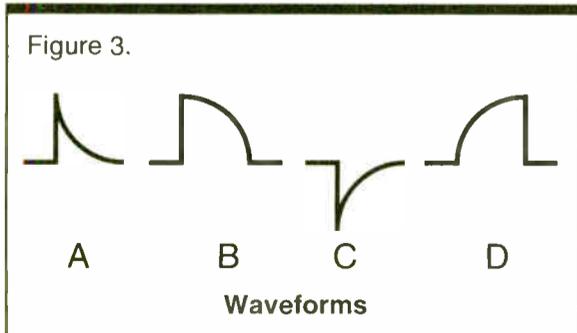
### How it works

Q2 is now conducting, LED2 is "on," and LED1 is "off." What is happening in the circuit at this time? Glad you asked. Well, C2 is charging (backwards) via R1 toward the supply. This means that soon the base potential at Q1 will be enough to break into conduction, and Q1 will turn on. When this happens, things get interesting. Keep in mind that when Q2 is conducting, C1 is also charging through R3, and takes on a charge of positive toward the supply.

Now, back to Q1. When Q1 gets enough base current, it turns on, and its collector voltage drops to near zero. This little move has the effect of essentially grounding the positively-charged end of C1. Relatively speaking, the other

plate of C1 becomes about -9V with respect to common. This turns off Q2 with a vengeance.

After this, things get a bit repetitive with C2 now charging backwards while C1 comes up through the negative region, crosses the zero line, and begins charging positively. This is why the start-



and arguments are always at the ready when discussing what would happen if you could disassemble one and reassemble it without any leakage. Would its charge remain? If so, where does the charge reside? And what about distorted orbits, and how does this work in a vacuum type, hmmm?

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# STATION SERVICES

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## NHL Recap Show

**DALLAS** Former New York Islander defenseman, Dennis Potvin, will host a weekly NHL recap show titled "Slap Shot" on Prime Sports Radio. "Slap Shot" currently runs three times each Monday at 7:13 a.m., 9:13 a.m., and 5:13 p.m.

Potvin, who is the color analyst for the Sunshine Network's broadcast of the Florida Panthers' games, will bring his unique perspective on the ins and outs of the NHL. Potvin's five-time selection to the NHL's All-Star Game and his vital role in four Stanley Cup Championship teams make "Slap Shot" both entertaining and informative.

"Slap Shot" is available to affiliates on a cash basis.

For information, contact Christal Aycock at 214-401-0069; or circle **Reader Service 170**.

## Formats Available from Identity Programming

**WARWICK, R.I.** The long-awaited "A.C. Jazz" and "A Touch of Class" formats are now available from Identity Programming. The A.C. Jazz format includes adult contemporary vocals mixed with popular instrumentalists like Kenny G., Bob James, and David Sanborn.

A Touch of Class is an updated version of the old Big Band format, featuring

new artists like Natalie Cole, Harry Connick Jr., and George Benson.

For information and a demo, call Steve Bianchi at 401-461-6767; or circle **Reader Service 215**.

## Daily Technology Update

**CONCORD, Calif.** "Focus on Technology" is a daily two-minute feature covering technology issues of most interest to your listeners: computers, sports, consumer products, business, entertainment, medicine, new products and innovations, medicine, terminology and more.

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For information or a demo, call John Bondon at 800-383-5408; or circle **Reader Service 96**.

## The Next Music Format?

**BINGHAM FARMS, Mich.** With modern rock programming becoming the next CHR, it is hardly surprising that people are beginning to look for the next music format. The Rialto Group, Ltd. is offering The Torch to fill this need.

A byproduct of the Rialto Group's research and experience in working in the modern rock field, The Torch is designed

to fill an unexplored niche in radio markets: a hip, well-positioned, high-end Adult Contemporary "escape button" for CHR/AOR listeners dissatisfied with the current options.

The Torch draws listeners from a variety of formats, including AC, AOR, NAC, modern rock, CHR, jazz and oldies.

Targeted at the 25-49 audience, skewed female, with the median listener an upscale 37-year-old woman, The Torch is positioned as a hip, urbane option for listeners seeking a break from hard rock and CHR.

The Torch can be as hip as modern rock, but without the harder, unfamiliar sounds typical of other stations. As cool

as a jazz station, just without the obscure instrumentals. As accessible as an AC, but without over-playing the Mariah Careys, Michael Boltons and Neil Diamonds.

With The Torch, it is the song, as opposed to the artist, that defines the format. It includes a wide spectrum of music, with artists ranging from Frank Sinatra, Louis Armstrong, Roxy Music and Marvin Gaye to Patsy Cline, Sarah McLaughlin, Harry Connick Jr. and Joe Jackson.

For information, contact Lex Kuhne in Michigan at 810-644-8480; fax: 810-540-2661; or circle **Reader Service 156**.

## Ten Questions for Promotion Hires

► continued from page 24

promotion on your own air, using contests, hiring unusual talent or staging unique programming. ➤

- Have you ever purchased (or traded) media to promote either radio or some other product? Those who say "yes" will talk about successes and failures. These stories will permit further insight into their thinking. Those who say "no" should not be judged too harshly. It may be that previous companies had no budget for outside promotion.

- If a budget did not exist, paint a scenario of unlimited money and find out how he or she would spend it on media.

### Also ask...

- Here are several questions about our radio station:

- What is our target demo? For assistant director candidates who have never been in radio, cut them some slack. Let them guess within a few years. However, someone with any radio background should know your exact targets for age and gender.

- What do you think are the most important events and activities for our listeners in this city? Give him or her a "B" if he names your major annual promotions. Move him or her up to an "A" if he is able to name yours and add a few that you don't own, but should. Give him or her an "A+" if he also is able to steal or obtain a major event that you should be doing.

- Can you name a few of our DJs? This will determine his or her previous level of interest in your station.

- Do you have relationships with anybody in the market that will be helpful in this new position? This could be the question that breaks the tie between two good candidates. If answers are fairly equal on other questions, you'll want the person with the most contacts on your side. He or she may even throw a few names at you of people you know. This will help you go beyond a supplied list of references. The kind of contacts they think are important says a lot about their priorities.

- Who are our two main competitors? What do they do better than we do? Again, this indicates market awareness and personal focus.

### Ask for self-assessment

- Do you consider yourself a creative person? Those who do should give examples of their creativity. Those who do not should explain how they function in what many people consider a "creative" position.

- How do you handle multiple priorities? Someone who does this well will tell you about systems: compilation of lists, calendars, files and computer programs. Now is your chance to find out what he or she does when tossed an assignment that pushes his or her agenda over the edge. Does he readjust or "just say no"?

- What do you want to be doing in two or three years? Long-term goals will drive them in this job. It will help you determine whether or not they are selecting the right stepping stone to continued happiness.

- Finally, don't ignore the obvious. Tardiness, bad resumes and an inability to converse fluidly speak volumes. Those who follow up with thank-you letters, phone calls and support materials deserve a second look. And a note to candidates: don't wait for openings to be posted to express an interest in a position. You never know when you'll be in the right place at the right time... and perhaps you'll be just the one they're looking for!

□□□

Mark Lapidus is director of marketing for Liberty Broadcasting. Liberty owns stations in Washington, Baltimore, Richmond, Va., Long Island and Albany, N.Y., as well as Hartford, Conn., and Providence, R.I. It recently launched the Wolfman Jack Show on a national network.

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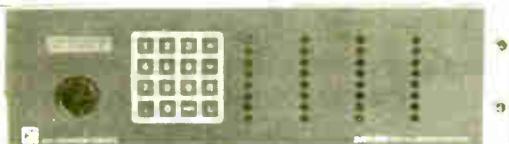
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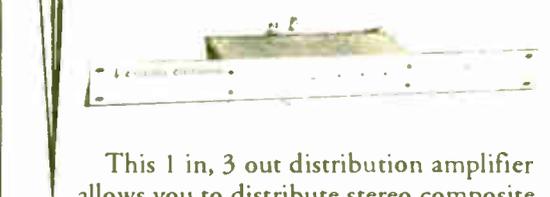
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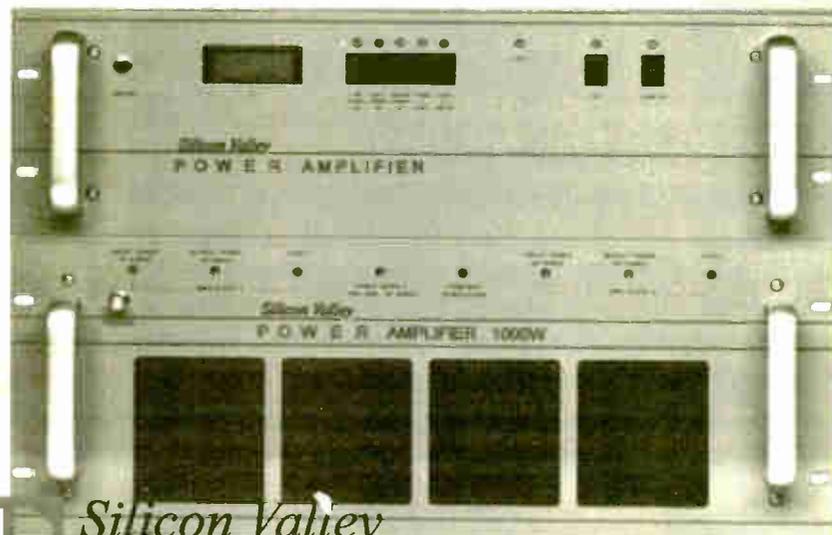
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## MANAGER'S NOTEBOOK

# Defining Workload Prevents Burnout

by Sue Jones

**BURKE, Va.** Do you know when it is time to hire another sales representative, additional support staff, or contract for additional engineering services? How many accounts do you expect a sales representative to handle comfortably and provide good service? How much overtime, after hours time, can your engineer handle before fatigue takes a toll? Are you fully aware of all the activities your traffic director, air staff, promotions director and business manager are handling this week?

Knowing these management statistics for your station and their impact are vital for running at optimum level. In duopolies or LMAs, the temptation to assign the work of two or more stations to one person may be an overwhelming burden to the staff member. Having a clear understanding of workloads and work capacity has many benefits.

## Expanding and downsizing

Obviously they are important for decisions to hire new staff or to downsize. If a sales representative can comfortably handle 30 accounts, at what point do you hire another representative? When your

sales rep reaches 35 accounts? 40 accounts? or 45 accounts?

For engineering you should have established acceptable levels of response for various types of technical problems (i.e., off-the-air versus repair of a tape cartridge machine). If you are adding another station in the same area, will you expect your engineering staff to handle both stations?

If so, will the existing staff have adequate time to respond to immediate technical problems and handle the routine and preventative maintenance? If you have established the response times for various types of problems and you notice a decline in the response times, you need to investigate the reasons. In this situation, it could be that the staffing level is inadequate to cover all the tasks in the expected timeframe.

## Performance evaluation

Could your business manager handle two separate budgets and the monthly accounting with both payrolls? It may be more cost effective to have one business manager and install an automated accounting system to maintain the records and automate the accounting function.

Defined work capacity provides the

framework for evaluating performance. If sales representatives are expected to handle 30 accounts successfully and one of your representatives cannot handle

more than 20, you have a yardstick for objectively evaluating that person's performance against expectations.

However, if all of your representatives carry a widely varying number of accounts and there is no defined expectation, there is no standard for measuring performance. Evaluations will be reduced

continued on next page ►

# Time Travels: '60s Sound

► continued from page 23

The Solid Gold Time Machine, which will originate from the brand-new PAMS Satellite Radio Network Communications Complex in Dallas, will air on GSTAR 1, transponder 8, in the ComStream ISO/MPEG compressed CD quality digital format. The show will be peppered with several hundred of the re-sung PAMS jingles, played on 12 cartridge machines installed at the PAMS studio.

Kaufman feels there will be three groups of people who will listen to his show—those who think music began when the Beatles happened in 1964 and hate anything from 1955-1963, those who think music ended when the Beatles came, love the years 1955-1963 and hate 1964-1971, and those who like the entire 1955-1971 period. Kaufman is, predictably, an inhabitant of the last group.

Ricky the K's fave sounds run the gamut from the Beatles and the Dave Clark 5 to doo wop, the Cameo-Parkway sound from Philadelphia, Phil Spector's Wall of Sound, and even such hits as "Israelites" by Desmond Dekker and the Aces (Count bubble gum music in there somewhere, too—White Plains "Love Grows (Where My Rosemary Goes)" is a particular favorite.

Kaufman will play only hit songs from a library of between 2,600 and 2,700 records from the years 1955-1971. "No song will get played on this show more than once every 30 shows," he said, "to keep things fresh." In addition, only the "correct" versions of songs will be played. "This has been a problem for many oldies stations who get their oldies music library from CDS—a lot of times they have the wrong version (of a song), and what I have done is, if the right version is on CD, I have taken (it) from the CD...If there's no right version on CD, then I'm taking it from the original 45 or from the album, but I'm always using the original, hit version."

Ricky the K is looking forward to bringing his Solid Gold Time Machine to the satellite airwaves. And, if you hear 1967's "Open Letter to My Teenage Son" by Victor Lundberg, or 1963's "Dominique" by the Singing Nun, rest assured the modern day flag waver of sixties radio is playing these songs because they were hits. "I am going to play every hit between 1955 and 1971," said Kaufman, "and I figure if I hate it, somebody's got to like it."

□□□

For information on Ricky the K's Solid Gold Time Machine, call Richard Kaufman, PAMS Radio Network, at 214-271-7625, or Bill Sepmeier, NSN Network Services, at 303-949-7774.

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► continued from previous page  
to a subjective rather than objective decision. There could be legal ramifications to this problem.

**High-performance staff**

Under-worked or over-worked staff create additional problems. Defining a comfortable and fair work load balance works for the employees and owners/ managers. Staff members should have enough time to complete their work in an organized manner rather than just responding to the most pressing problems. They can focus their attention on the work at hand instead of the distraction of undone and increasing/decreasing amounts of work. The bottom line is, the jobs get done with quality work.

**Considerations:**

Expecting staff to increase its workload without some compensating factor will create additional problems. The first problem will be the staff's attitude. How well you introduce the reasons to increase the work may divert or intensify a problem. Simply advising the staff they will be doing additional work because another station has been acquired will inspire no one.

The staff will view this situation in terms of fairness. They will be expected to perform one-and-a-half or double the workload in the same amount of time for the same compensation.

Consider some of these approaches to cover the workload without doubling the expenses.

- Offer additional compensation. It may not be doubling an employee's salary, but even half of the salary you would pay for another staff person is less than the full price of a new employee. Compensation may be in several forms: 1) salary increase, 2) trade items (membership in the health spa, furniture, cars, travel, or scrip), or 3) additional time off (a staff member's choice of two paid three-day weekends).

**Freelance help**

- Contract with another company to provide some of the work during peak loads, such as contract engineers or temp agencies, to assist the business manager for the end-of-the-month billing and payroll processing.

- Automate manual processing where possible. Get an automated accounting system for your business manager. Install word processing equipment with laser printers for the sales secretary to generate more proposals in the same amount of time instead of using an electric typewriter. Simulcast using the same format for more than one station, eliminating the need for your programming and air staff to juggle two formats at the same time.

If separate formats are required, consider PC-based commercial storage systems to eliminate labor-intensive dubbing of spots for both stations.

- Hire part-time staff. Your existing staff may be able to add to their existing work load with automated assistance. However, you may find that hiring a junior part-time person to handle the routine jobs will allow your full-time senior staff member to concentrate on the crucial areas requiring station and industry experience. An added benefit to this arrangement is the lower cost for a junior part-time person, quality work is delivered, and you are training and evaluating a

potential full-time staff member at the lowest financial and personnel risk to you.

There are several risks of not knowing the work capacity for each position at the station. 1) Determining when to hire additional staff is best-guess or hindered.

**It could be that the staffing level is inadequate to cover all the tasks.**

- 2) Performance evaluations are more subjective rather than objective. 3) Staff performance, work volume could be reduced. 4) Staff morale could decline, impacting performance.

One problem often feeds another. Low staff morale, due to increased workload, may be the incentive for your staff to find employment at your competition. Your increased staff turnover rate will require recruiting, hiring, and training activities from you and your managers at a time that is hectic for all.

**Problem indicators**

Overworked staff can mean fatigue and burnout. The quality of the work will decline. One indicator of this type of problem is staff reporting for work late and leaving early. Another clues include staff taking increasing amounts of time off, lack of enthusiasm for new activities/ideas, or unmet deadlines/deliverables.

This is only a partial list of risks. Risks

can be minimized by establishing workload capacity for each position and continually monitoring performance against those expectations. Lower risk also means taking the appropriate actions to compensate for increased or decreased work loads. If you cannot list each position at your station and the standard performance expectations, get started on defining each of them today so that you do not have to crisis-manage them in the future.

Save your crisis management skills for those issues that you cannot control or predict.

□□□

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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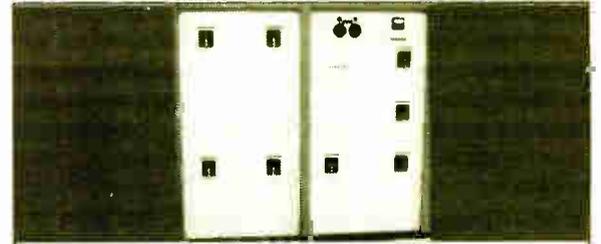
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# Bennett's Career Reflects Changes in Radio

by Alan Haber

**SAN FRANCISCO** 1969: Richard Milhous Nixon became the 37th President of the United States. Astronaut Neil Armstrong was the first man to walk on the moon. And Woodstock, the infamous four-day music festival, transformed the sleepy little town of Bethel, N.Y., into the site of perhaps the most cosmic counter-culture happening this country has ever seen.

And, Alex Bennett, consciousness raiser and talk show host, arrived at WMCA New York, where he covered the rumor of Paul McCartney's death in all its paranoid glory. He also covered Woodstock.

According to Bennett, WMCA would have been the only station at Woodstock "with a telephone line, and probably could have made a fortune. But, you know, they wouldn't listen to me. So I had to go to the Woodstock festival on a Saturday, during the day, and then I had to get back to the city that night to do my show. I just stayed for the beginning part of the festival."

## A keen observer

Throughout his years on the air, talk show host Bennett has been a keen observer of the history surrounding him as our nation's political and societal timeline has grown. His radio career has been, and continues to be, a major cultural happening. The man, who counts two Jacks (Parr and Benny) among his heroes, and wore the crown of America's number one counter-culture broadcaster while at WMCA, began his career by traveling the small market station circuit, and spending two years behind the mic at the Armed Forces Radio and Television Service in Hollywood.

In 1964, while at "good music" KGMS(AM) in Sacramento, Calif., Bennett responded to a blind-box advertisement in a radio industry publication calling for an announcer sporting a "British style and accent." Transforming himself (Bennett was born and raised in San Francisco), he sent in a tape, and even created a fake biography for himself.

Beginning in 1965, he would work for more than two years for radio legend Gordon McLendon at KILT(AM) in Houston, with the on-air moniker "James Bond."

When he heard that McLendon wanted to start a talk show on the station at night, Bennett said he wanted the slot. Viewing the emergence of the Drake format as "the end of personality radio," Bennett wondered how he could continue to be a personality on the air. The answer: talk radio.

## Love to hate

Switched from mornings to a nighttime talk show at KILT, Bennett became known as "The Man You Love to Hate" as the ratings soared. (Bennett said McLendon had wanted a "completely confrontational in-your-face talk show.") Alex Bennett, talk show host, was on his way, although, at this point in his career, he said he "had no real politics going for me... You wanted (me) to be conservative, I'd be conservative. If you wanted me to be a liberal, I'd be a liberal. I had no morality either way."

The Vietnam war was going on at this time, and Bennett had talked about it on the air, although he said he "didn't even know about it... it was just a matter of being argumentative." Soon, he became

informed, and what he called the start of his "radicalization" began.

This "radicalization" was completed, he noted, "when I wound up in Chicago working for WIND and, like the first week I was there, the Chicago (Democratic) convention came to town, and I got tear-gassed and beaten. That completely radicalized me."

Prior to WIND, where he landed in 1968, Bennett spent six months of 1967 at all-talk WLOL in Minneapolis-St. Paul, which he left after a disagreement with management. Bennett remembered thinking he knew that, if he was ever going "to do talk again, it's got to be on a rock station, because they are the only people who would understand this."

## Underground friends

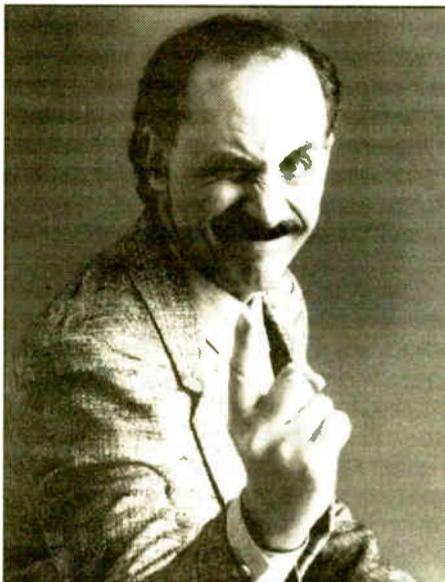
After WIND, Bennett descended on the Big Apple, landing at WMCA. At the time, the station spent half its broadcast day playing music, and the other half talking. Bennett settled into the overnight slot, four days a week (he also took over Barry Gray's Saturday mid-day slot from 11 to one o'clock). And then, Bennett started an alternative music show on Saturday evenings, taking over legendary disc jockey Murray the K's slot.

It was at WMCA that Alex Bennett, famous talk show host, became known as a friend to the counter-culture, having rock musicians and political radicals as guests on his show.

Interestingly, Bennett said that the counter-culture moniker was not thought out. In fact, he noted, "I do things by a certain amount of instinct. ... Instinct told me that, basically, the left had never gotten a free forum in this country. In other words, if you brought on somebody like Abbie Hoffman, you had to go out and get Congressman so-and-so to counteract him. And I often said, 'Well, if you had Congressman so-and-so on, would you ask Abbie Hoffman to come on?' And of

course, the answer would be no."

The first guest on Bennett's WMCA show was social and political activist Paul Krassner. Subsequent guests included "almost every major rock personality of the time," said Bennett, and people like Abbie Hoffman and Jerry Rubin. Bennett said his guests spoke frankly about their beliefs.



Talk Show Host Alex Bennett

Bennett was eventually fired from WMCA, because, it was said, the station was going to be broadcasting New York Yankee baseball games, and his show would have to be preempted. "Some people," Bennett remembered, "blamed it on the fact that I had certain radicals on, and certain sponsors did not want to advertise on a program that had those kind of views." Bennett said about 1,000 people showed up in front of the station to protest his firing, which was covered in the New York newspapers, and as far afield as the entertainment industry trade publication, *Variety*, with no less than four articles on one page.

After some soul-searching, Bennett put

the WMCA firing behind him, landing in front of the microphone in 1971 at New York's WPLJ-FM (the station had recently changed call letters from WABC-FM). Starting out doing a morning talk show, he soon gravitated to overnights, where he toiled for four years.

## Off to Frisco

After briefly returning to WMCA, and racking up 11 years on New York radio, Bennett came home to San Francisco, where he's been ever since, but not before meeting up with the still-in-hiding Abbie Hoffman. Bennett, who had not seen Hoffman in five years, categorized his life at the time as being "pretty well in the toilet." He told his wife that he had to do something to change things. "I saw Abbie," he remembered, "and here's a guy who's on the lam from the law and living fine, you know. He's got everything going against him, and he's doing okay. I said, look, if he can do it, I can do it."

Bennett heard about a morning opening at KMEL in San Francisco, where he went to work in 1980. He offered to fly himself there on his own dime and work a week for scale to show he could do the job. "The first day, they did not like me," he said. "The second day, they tolerated me. The third day, they kind of heard something they liked, and, by Friday, they were offering me the job."

At KMEL, Bennett featured comedians on his music show during which he played about eight records an hour. The former Counter Culture King was now called The King of Comedy (he even hosted the PBS television program "Comedy Tonight" for six years).

## Live 105

Bennett left KMEL for KQAK, The Quake, a new station that was powering up. At The Quake, comedians were once again an integral part of his show.

continued on page 38 ▶

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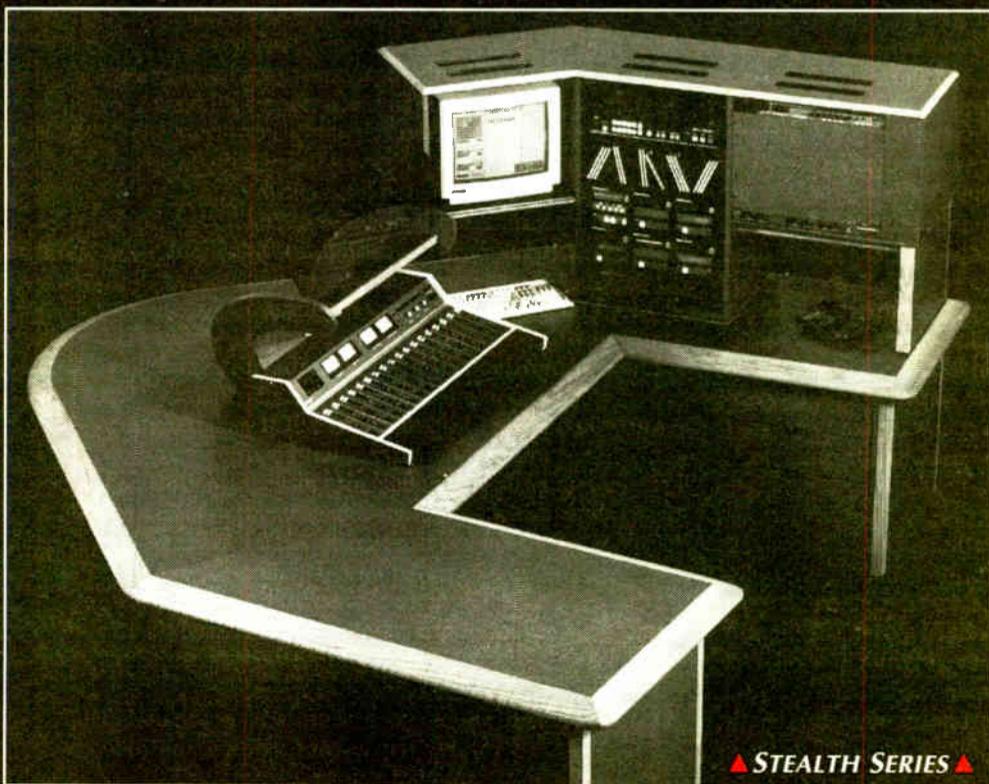
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# Radio for Kids Expands to Network

by Bob Rusk

**SEATTLE** A mix of music ranging from selections by Kermit the Frog to "Weird Al" Yankovic, plus a little country, some classic rock, and lots of current hits might seem like a bizarre format.

But for KKDZ(AM) at 1250 kHz, it is a winning combination. KKDZ—better known as KidStar—is radio just for kids.

## Going national

KidStar went on the air here in May 1993, and will soon beam its programming

to stations in the Top 10 markets in the country as well.

Major national sponsors such as Nestle and Nike are part of the expansion, having already signed to advertise on the KidStar Interactive Network.

"From the beginning, we developed KidStar to be a national network," said Jodell Seagrave, general manager and co-founder of KidStar. Seagrave isn't ready to announce who the KidStar affiliates will be, but she did say, "some of the network will turn on in April."

KidStar, currently broadcasting from 6:00 a.m. to midnight, also programs

news, sports, features, and contests of interest to kids.

"It's a full-service format for kids," added Seagrave, a 15-year veteran of local and national radio sales and management. "We also showcase a lot of audio that comes in from kids on the PhoneZone. That's one of the things that keeps them tuned in. At any time, there are about 90 ways for kids to get their

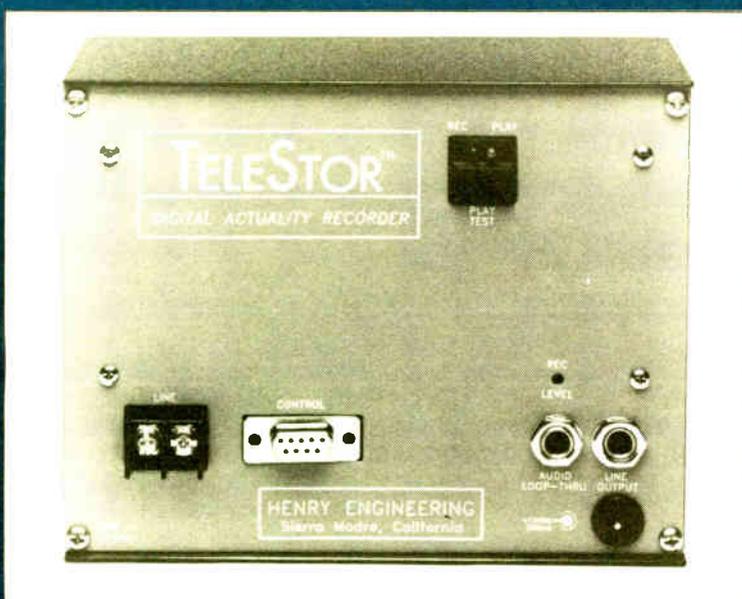
chores is "hot;" boring chores you have to do all the time is "not."

Other choices on the PhoneZone include "I'll Never Do That Again" safety stories; "One-to-One" tutoring; and the music request line. With several phone numbers covering the Seattle metro area, it is a free call for kids to reach the PhoneZone.

KidStar has an estimated weekly cum



KidStar staff member Amy Shively consults with the experts during "test pilot" session.



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voices on the radio. That is really important to six-to-11-year olds."

There have already been more than one million calls to the PhoneZone, which is sponsored by a diverse group of regional and national companies such as McDonald's, Seattle-based Microsoft, and the upscale Nordstrom department stores.

## Kids interactive radio

Nordstrom sponsors the "What's Hot and Not" line, where kids call in and record what they think is cool. Among the latest results: Getting paid for doing

of 100,000 listeners between the ages of two and 11 in the Seattle market. In addition, 40,000 parents (mostly mothers) between 25-49 tune in each week. None of the programming, however, is specifically aimed at parents.

"The programming is completely kid-directed all the time," explained Seagrave. "We know that parents are part of the equation, but our goal is to engage the kids so listening is their choice—not a result of their parents' urging."

Programming is divided into four day-parts: Before school, during school, after

continued on next page ►

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► continued from previous page school, and bedtime.

"In the hours before school, you hear Jimmy our morning host," said Seagrave. "He has a character called the Weather Squirrel, who helps kids know what kind of day they will be facing. There are also between eight and 12 songs an hour.

**Contemporary hit radio**

The music tends to be contemporary. The kids call the PhoneZone and vote on what music we play. There is a very high awareness among kids about music.

"We play a lot of the same artists that you would hear on a CHR station, but songs are screened for quality control. Every word is gone over. We make sure we aren't playing something inappropriate for kids."

During school hours, programming is aimed at preschoolers. When school is not in session, KidStar has different programming wheels. All on-air personalities are adults, and KidStar has no kids on staff, but young listeners are able to get a feel for what it is like to work in radio.

When President Clinton hosted leaders of the 15-nation Asia-Pacific Economic Cooperation group in Seattle, for example, some preteen listeners accompanied the KidStar news director to the event and were able to ask questions. And the kids even received paychecks.

"We do pay for the work kids do when they are out reporting for us," said Tiffany Heston, KidStar client services director. "Kids who are interested in our news department can call our 'Scoop Smith' line and talk with our news director. We will create opportunities for kids who are interested in covering the news—if they are of the right age and are well spoken.

"Anytime kids show an interest in doing anything with the station, we try to open opportunities for them," Heston continued. "Most of the on-air activity with kids involves having them come in for interviews with on-air personalities to talk about things like their marble collections or Earth Day."

**24 hours a day**

With the network set to launch, KidStar is planning to expand its programming to 24 hours a day.

"You'd be surprised by how many kids are already listening from 10 p.m. to midnight," added Heston. Kids who can't sleep or are sick tune in during the late hours.

Children's Media, which owns just the Seattle flagship station, does not plan to own other stations in the KidStar Network.

"Seattle is the prototype market, in part, because many of our board members live here," said Seagrave, the general manager. "All of our investors during the developmental stages have been individual high-net-worth investors. Many of them are Microsoft executives.

"Another reason we started in Seattle is because we thought it was a good place to test everything. It is a top 25 market, but it's not like trying to start in New York, Los Angeles, or Chicago.

"We started about three years ago. We spent eighteen months doing nothing but research and development. One of the first things we noticed was that there was almost no data about kids and radio showing whether they would listen,

when they would listen, what they might listen to, and whether their parents would participate."

There was no data to convince advertisers, either. But KidStar's research has apparently paid off. Sponsors are buying advertising packages that cost from \$5,000 to more than \$1 million.

KidStar is not the first national network for preteens, however. Previously-launched networks for kids include Radio Aahs.

The KidStar Network expects initially to attract two million listeners. And Seagrave feels that number will increase significantly.

"We're already getting inquiries from broadcasters in other markets," she said. "I wish we were ready to expand beyond the top 10 markets."



Vanessa Gibbons, 12 (c), and Carter Yasutake, 10 (r), work with KidStar personality Annie Rae.

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# WTTM(AM) Focuses on Community

by Stacy Walbridge

**TRENTON, N.J.** Mix a marketing professor who organizes cockroach races and holds class in a mausoleum with a Trenton, N.J., radio station finding its niche in community involvement programming and you have the ingredients for an increasingly popular radio show.

Host and creator of WTTM(AM) "Consumer Connection," Blaine Greenfield, is combining his business knowledge with curiosity and energy to move beyond marketing by cheering on the everyday worker and small business owner. While the show provides an outlet

for Greenfield to test his marketing skills, WTTM is also realizing the benefits.

Located in the central part of New Jersey, WTTM operates in one of the most competitive markets on the East Coast. According to Station Manager Dan Shaw, Mercer County has more radio signals reaching it every day than any other county in the country. Not only is the station competing with signals out of New York and Philadelphia, but with stations located in Trenton and other towns throughout New Jersey and Bucks County, Pa.

"When you've got all this competition you've got to find some way to create a

niche for yourself. And our niche is focusing on the local community," says Shaw.

## The connection

Several years ago, upon finding itself without a unique personality, the station switched from a country western format to all news and talk. Increasing the coverage of local sporting events added to a steady gain in listeners when Greenfield first came to work for WTTM. "I've always wanted to have a radio show where I could interview local business owners and people who are involved with improving the community," said Greenfield.

Airing on Fridays from noon to 1:00 p.m.,

the "Consumer Connection" format is informal and casual. Normally, two guests are invited to appear for 30 minutes each. Before the show Greenfield takes 15 minutes chatting with each one to make them comfortable and to discuss what each would like to talk about. On the air Greenfield will keep the talk informal and make each guest sound like an expert. After their appearance each guest receives a certificate of appreciation as an honored guest and within two weeks Greenfield will mail them a tape of the show.

## Real benefits

The benefits "Consumer Connection" brings to the station have been both real and indirect. Due to the nature of an all news and talk format, WTTM is constantly digging for stories with local police departments, school districts and hospitals. Many station contacts have appeared on Greenfield's show helping to strengthen WTTM's ties to the community. "So much of the news or talk that goes on a radio station like ours is negative. This is one of the very shows where the whole hour is positive," says Shaw.

Many of the station's advertisers have also been invited to appear on the show. Those who accepted enjoyed the opportunity to be treated as an expert. Like Barry Gerber, owner of a local travel agency specializing in group travel, "The

continued on page 42 ▶

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## Bennett Sees Radio Change

▶ continued from page 35

Unfortunately, The Quake blew up around him, but ultimately, the general manager of KITS-FM San Francisco took over Bennett's KQAK contract, putting the man once again behind a microphone. The format changed to modern rock and became known as Live 105. Bennett spent the next three-and-a-half years peaking the ratings, during which time he was nominated as rock personality of the year in Billboard Magazine's annual poll.

In 1989, KITS and Bennett had a brief parting of the ways, but three months later, Bennett was back behind the mic at Live 105. "We all decided we needed each other again," said Bennett, "and that's where I've been ever since." Bennett's show is done in front of a live studio audience.

Bennett loves radio. If he has a reservation about the medium, though, he said it is that "it's not very adventurous any longer. There is nobody taking any chances. It has been almost completely taken over by consultants. Instinct—gut level instinct—is something that doesn't seem to be very much the order of the day. That, I think, is the major problem with broadcasting."

But the Alex Bennett of the '90s is different from his 1960s and 1970s incarnations. For one thing, his program on Live 105 in San Francisco is basically an entertainment show. "I've learned that no matter what message you have to put across, if you are not entertaining people, they are not going to listen. If there is any message, I will state (it) right out there in front."

The show is not political in nature, he noted. "The main job of the show is to entertain and to have fun," he said.

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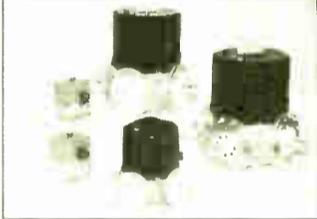
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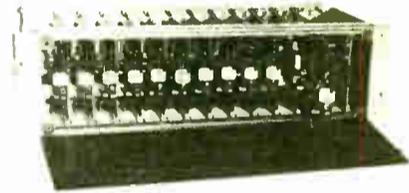
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Control Panel also available upon request.  
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**The CircuitWerkes AC-12 Telephone Autocoupler Bay**



Get up to 12 couplers in a neat, compact chassis

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- Individually card selectable buss or auxilliary audio I/O.
- LED indicators for ring, clipping, power & online.
- Ring counter answers on user settable ring number.
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- A special, non-bussed, balanced audio card for IFB feeds, etc., is available.

The AC-12 rack-mounted coupler bay is the best way to eliminate a wall or cabinet full of yesterday's couplers. Our unique dual audio busses eliminate the tedious and messy wiring associated with networks and other mass feeds. Each card can also individually either send or receive telco audio. Best of all, a fully loaded AC-12 lists for under \$185 per coupler.

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Voltage Ratings to 100 kV  
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WireReady® products let you use your station's own computer(s) to:

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**Call today.**

SEE US AT NAB BOOTH #2108

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# Products & Services Showcase

For more information on the products shown below, circle the appropriate Reader Service No.(s) on the enclosed Subscription/Reader Service card or contact the advertiser directly.

## How Good Can a Mixer This Size Be Anyway?



Actual Size

Try great specs to start with. Then add reliability that's backed by a THREE YEAR Warranty! It's just one of the 37 *STICK-ON*™ products from RDL™. Find out how RDL *STICK-ON* innovations can make your job easier. Call us today at 800 281-2683 or 805 684-5415 for your free catalog of these great value tools!



**RDL** Radio Design Labs

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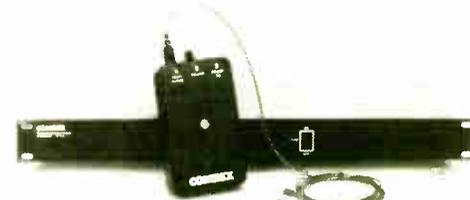
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READER SERVICE NO. 111

## WIRELESS IFB SYSTEM

Used by hundreds of TV stations for van-to-field cueing in ENG & SNG applications. Transmitter provides mix of program and instructions to rugged, pocket receivers.

- 100% duty cycle
- Wideband audio
- Excellent operating range



**COMREX**®

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READER SERVICE NO. 174



## Econco REBUILT POWER TUBES



Approximately One Half the Cost of New

3,000 Hour Unconditional Guarantee

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READER SERVICE NO. 19

AUDIO BROADCAST GROUP, INC. introduces the dramatically redesigned for 1994/95 Data Stream Series of our exclusive "Digital Ready" Studio Furniture. Created specifically for the efficient housing and operation of today's digital hard drive storage/studio automation systems and workstations. Our designers have combined the ultimate in functional work space and eye pleasing appearance.



AUDIO BROADCAST GROUP, INC. Supplying broadcast equipment and studio systems with integrity to the broadcasting community for over 33 years.

AUDIO BROADCAST GROUP, INC. Your single source supplier of AM/FM studio packages, AM/FM transmitter installations, as well as all major lines of on air and production studio equipment.

For additional information on how we can serve you, please call today

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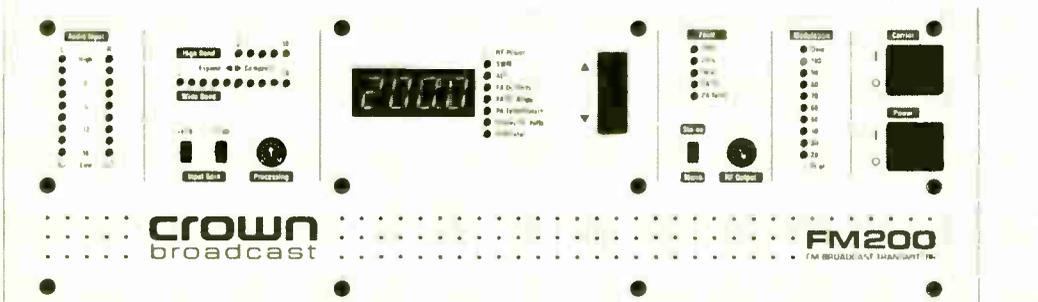
For over 33 years



**AUDIO BROADCAST GROUP**

READER SERVICE NO. 88

## Never Go Off the Air Again.



When the power fails, your signal won't. Crown's FM200 transmitter, with optional automatic back-up power, will keep your station on the air. Available in 30, 100 and 200 watt models.

Each FM200 includes:

- FM Exciter
- Audio Processor
- Stereo Generator
- RF Amplifier

All of which operates from your AC or DC power source.

**Crown broadcast**  
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Broadcast Sales 219-294-8050

READER SERVICE NO. 20

## Attention Advertisers!

Reach 22,000+ broadcast professionals! RADIO WORLD's Product Showcase provides a perfect medium for test marketing your products and services. It's an efficient, effective and affordable advertising option. For more information, including rates and deadlines, fax your sales representative at

**1-703-998-2966**

or call

**1-800-336-3045**

# MARKETPLACE

Recently Introduced Products for the Radio Broadcast Professional

## EBS Kits

Wind River Broadcast Center Laboratory offers EBS short-tone kits, which allow a station's engineer to modify the EBS receiver/decoder to meet the FCC's requirement of eight-second alert tones.

Each kit comes with detailed and illustrated instructions and certification that the kit, when installed properly in a working EBS unit, puts a station in compliance with 73.941 as modified by the 1994 Report and Order, FO dockets 91-301 and 91-171.

For information, contact the company in Colorado at 800-669-3993, or circle **Reader Service 46**.



## SCPC Audio Receiver

The SCPC XE-1000 audio receiver from Universal Electronics Inc. is a microprocessor-controlled unit that allows the reception of all SCPC channels on any satellite.

Full readout of transponder, frequency, bandwidth, de-emphasis, companding, channel name and memory channel in use are displayed on an easy-to-read LCD. The SCPC XE-1000 has 50-channel

nonvolatile memories that can be recalled by touching a single button to select any SCPC channel placed in memory, along with the parameters used for the channel.

A new audio section produces low-distortion, broadcast-quality sound to two 600 ohm line outputs, plus 4 ohm speaker output and front-panel headphone monitoring jack.

For information, contact Thomas P. Harrington in Ohio at 614-866-4605; fax: 614-866-1201; or circle **Reader Service 80**.

## Editing and Production Desks

Winsted Corp.'s line of Digital Desks for multimedia editing and production are ergonomically designed to curve around the user, providing a comfortable, efficient work space.

Winsted offers five models with two desktop heights of 27.5 and 29 inches and adjustable monitor shelves. All units are designed to integrate easily with all multimedia systems. Models range from a 48-inch-wide workstation to a 94-inch workspace desk.

All models feature riser shelves, a wire management system and black granite laminate work surfaces.

For information, contact the company in Minnesota at 612-944-9050; fax: 612-944-1546; or circle **Reader Service 81**.



## Interfaces

Fluke Corp. offers optional interfaces for its CombiScope series of oscilloscopes that extend the functionality of these instruments.

The 60 MHz PM 3335 is available with an optional bidirectional RS-232-C interface for hard-copy output and remote control. Also available for the PM 3335 is a combined RS-232-C and GPIB/IEEE.488 interface, which offers convenience for use of the scope in automated test system environments.

Another option is the full RS-232-C interface in combination with Fluke's AnyWave 2.0 software package and a serial communication cable. AnyWave extends an instrument's capability for creating specific test setups and for the management and processing of measurement data and results.

For information, contact the company in Washington state at 800-443-5853; fax: 206-356-5116; or circle **Reader Service 149**.

**For More Marketplace Items  
From Radio World  
See Page 44.**

# S Prepare yourself for Success

at NAB '95 ...

- Check out all the latest equipment
- Find new ideas to cut costs, boost sales
- Compare notes with other broadcasters, production & post-production pros
- Explore your multimedia options
- Learn about your digital future
- Uncover new marketing opportunities

## Welcome International Delegates

NAB '95 offers a special welcome for the more than 15,000 international executives expected to attend. The U.S. Department of Commerce is working through some 250 U.S. Embassies and Consulates to help organize delegations for NAB '95.

Contact the commercial officer at your nearest U.S. Embassy for details. International delegates are provided with a special international business center that offers translation services, import/export counseling and other help designed to maximize the value of NAB '95.



## Registration Is Easy...

Call (+1) 301 694-5243 or fax to (+1) 301 694-5124. To learn more about the program or exhibits, call NAB: (+1) 202 775-4971 or fax to (+1) 202 429-5343, or contact your nearest U.S. Embassy, or call NAB's Fax-On-Demand at (+1) 301 216-1847 from the touch-tone handset of your fax machine and follow voice instructions. If you are interested in exhibiting, call Eric Udler at (+1) 202 429-5336 or fax him at (+1) 202 429-5343.

# NAB95

**APRIL 9-13, 1995  
LAS VEGAS  
CONVENTION  
CENTER  
LAS VEGAS, NV**

# Locals Get On-Air Time

► continued from page 38

half hour went by so quick. I like what the show is about and I really enjoyed talking with Blaine."

The guests come from a wide range of specialties and do not necessarily have anything in common. Following Barry Gerber was a local dentist who developed a unique method for treating gum disease. The most common thread linking the guests is their lack of exposure to the broadcast side of radio. Most advertisers feel flattered when treated as an expert.

Now in his third year with the show, Greenfield is expanding the program to include a Consumer Connection Award where individuals throughout the tri-

county area are recognized for their outstanding service. Announced at the beginning of each show, recipients need only demonstrate a commitment to the work they perform. Past recipients have included a police officer that goes out of her way to settle family disputes, a mailman who makes sure packages and letters he delivers are kept out of the rain, and a nursing home volunteer who knows all the patients by their first name.

### Unsung heroes

According to Greenfield, these people are like the unsung hero, who would never be noticed by the television or radio stations in New York or Philadelphia. Greenfield's goal is to

champion and encourage these people. "Too often we criticize poor service, but we don't take the time to recognize memorable service," said Greenfield. "It is our intention at WTTM to change that. We

Greenfield attributes much of what he does to Murray Raphael, who wrote "The Great Brain Robbery," one of his favorite books for developing ideas. In his marketing classes, on his show and in person

you frequently hear him say that no idea is brilliantly new or original—you steal, beg, borrow, adapt, and modify them from other places.

But when asked how his radio show, college teaching, and marketing all tied together, he simply said, "A service is the rent we pay for living on earth. If I



Blaine Greenfield of WTTM(AM) honors local heroes.

want to recognize those individuals who do make a difference for consumers."

can help as many people as possible—that is what I'm trying to do."

# Products & Services Showcase

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### IN CASE OF EMERGENCY

We can help get you back on the air with our STL Loaner Program. We have STL's available that will be set to your frequency prior to shipping. We also provide over-the-phone technical assistance.



2198 Hubbard Lane, Grants Pass, OR 97527

**(503) 471-2262**

READER SERVICE NO. 94

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A good pattern. The shape you need. Talk to your consultant.

And contact us.

## Shively Labs

A Division of Howell Laboratories, Inc.  
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READER SERVICE NO. 83

## Composite Audio DA and Switcher!



The CDS-200 Composite DA/Switcher

### APPLICATIONS

- Switching Between Composite STL's
- Main/Alternate Processing Switching
- Feed Two Transmitters and an RDBS Encoder
- Feed one SCA Generator to Two Transmitters
- Distribute Composite with the Ease of Audio

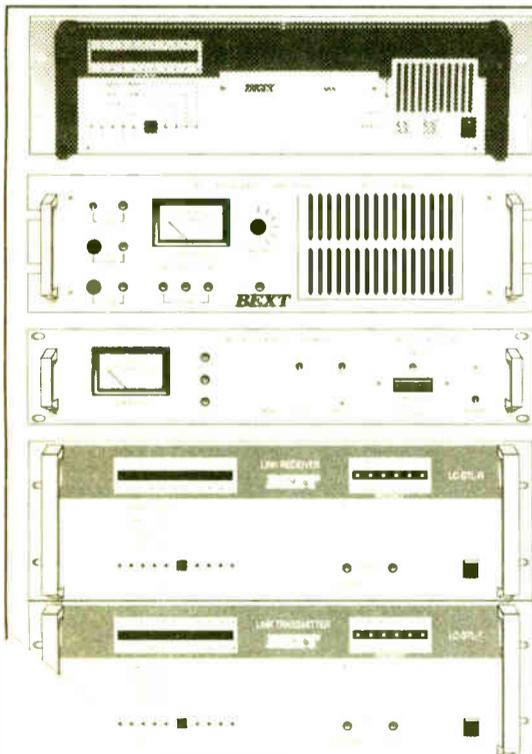
### FEATURES

- 2 Input Switcher
- 3 Isolated Outputs
- Individual Level Control for Each Output
- Front Panel and Remote Control with Full Status
- Power Fail Memory with Bypass Mode
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Tel: (914) 737-5032 Fax: (914) 736-6916

READER SERVICE NO. 8



# BEXT

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READER SERVICE NO. 126

## Attention Advertisers

Reach 22,000+ broadcast equipment buying prospects at AM, FM and AM/FM radio stations, networks and groups, recording studios, engineering and consulting firms every month.

Products & Services Showcase appears in every issue of Radio World. To advertise your product or service, contact Simone Mullins at

### RADIO WORLD

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# CCS Introduces the

# CDQPrima™ Series



CDQPrima Model 120 shown

## Five of the best codecs in the world

After you've built over eight thousand codecs, what do you do for an encore?

Introducing the CDQPrima Series, our third generation family of five codecs built with one goal in mind—to give you the most advanced communications tool in the world.

With ISDN rapidly becoming available everywhere, line charges dropping and new standards emerging, you need a full bandwidth codec that can grow with you and not leave you stranded. And growing is what CDQPrima does best.

We've eliminated obsolescence from CDQPrima. Every CDQPrima model can be upgraded directly over the ISDN line, so changing chips when standards come and go is a thing of the past. And our modular construction makes hardware upgrades a snap.

CDQPrima gives you full 20 kHz bi-directional stereo, plus ancillary data and SMPTE time code. World standard MUSICAM® and G.722 audio, with connectivity to over ten thousand codecs worldwide. And built-in ISDN terminal adapters with internal bonding to take you all the

way to astounding 384 kbps audio quality.

CDQPrima lets you program each unit for automatic functions and instant networking with no external hardware. And with five models to choose from, there's a CDQPrima to fit your budget.

We've got lots more to tell you about the new CDQPrima. Call us, or your authorized CCS dealer for details, and be ready for tomorrow with the best codec in the world today.

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World Radio History

# MARKETPLACE

## Recently Introduced Products for the Radio Broadcast Professional

### On-air Console

The R-60 on-air console from Audioarts Engineering features a standard six source line selector, module extenders, gold contact switches, Penny & Giles faders, Sifam meters, 16-bit digital audio and a Simple Phone module.

R-60 modules can be removed or replaced while the console is on-air, saving downtime or tedious removal of parts from single-face plate designs.

The gold contact switches prevent tarnishing for high reliability. All switches are multicolor for easy identification and

back-lit by LEDs to eliminate bulb burnout.

R-60s are available in eight-, 12- and 18-input module sizes, with all models having two additional input and/or accessory blank positions.

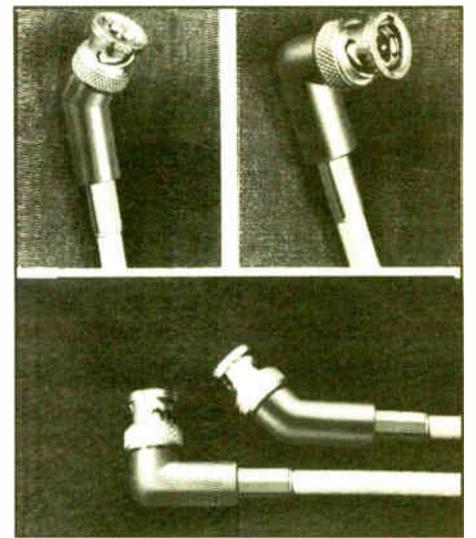
For information, contact Rick Strage in New York at 315-452-5000; fax: 315-452-0160; or circle **Reader Service 134**.

### Traffic-Automation Interface Software

Power-Link software service specializes in providing full-featured interfaces and recon-

ciliation for traffic systems to automation systems. Features include schedule editing, easy file manipulation, error capturing and correction, sequence creation, audit trail, archiving of logs, on-site training, and telecommunications for centralized traffic, spot and music reconciliation. Power-Link is designed to decrease the time the user spends on these daily tasks, while improving the readiness of the shedule file from traffic, and to document all action taken.

For information, contact Richard H. Rowland in Oregon at 503-857-9293; fax: 503-857-9294; or circle **Reader Service 65**.



### Angled Connectors

Trompeter Electronic Inc.'s 45- and 90-degree angle BNCs are designed for routing in tight packaging environments. These BNC connectors solve the problem of damage, change in electrical characteristic and undesirable signal degradation caused by bending of cabling in cramped applications.

These connectors feature fully enclosed heat-treated beryllium copper outer conductor springs to prevent distortion and mechanical damage, improve EMI/RFI suppression and reduce signal loss.

For information, contact the company in California at 818-707-2020; fax: 818-706-1040; or circle **Reader Service 78**.

### Series Mode Surge Suppressors

Price Wheeler Corp.'s new line of patented series mode surge suppressors are designed specifically for networked environments and critical applications. Ground loops, formed when electronic equipment share common power and data lines, are not compromised. There is no joule or surge current limitation, eliminating thermal runaway, explosions and untimely failures. No metal-oxide varistors (MOVs) or other sacrificial components are utilized. Power line noise is filtered off signals outside the normal power wave amplitude and frequency range. Clamping is a constant 2 V above the peak regardless of power line voltage. Point-of-use, rack-mount, hard-wired and OEM configurations are available.

For information, contact David Schwartz in New Jersey at 800-528-0313; fax: 908-528-0333; or circle **Reader Service 72**.

### Battery Tester

The Astratec Fastcheck battery tester from Adcour Inc. quickly tests NiCd, nickel-metal hydride and lead acid batteries. This system requires no special training or knowledge to operate. A user inserts a calibration card, connects the battery and the test is performed automatically in less than 10 minutes.

Fastcheck comes with various contact plates and adapters for ease of battery handling. The calibration modules are available as fixed cards or as user-adjustable modules that are connected to the test module.

For information, contact the company in Massachusetts at 617-784-8123; fax: 617-784-5563; or circle **Reader Service 54**.

*Looking for the ultimate affordable digital STL solution?*



# Look No Further!

## Moseley

Moseley Associates Inc.  
111 Castilian Drive  
Santa Barbara, CA 93117  
Phone (805) 968-9621  
Fax (805) 685-9638

**W**HEN Moseley introduced the DSP 6000 in 1992 it was immediately acclaimed by the broadcast industry as THE digital STL solution. Here's why. The DSP 6000 virtually eliminates the problems associated with conventional analog transmission such as noise due to signal fades, birdies from intermod interference, and lack of spectrum for multiple audio feeds to LMA and Duopoly transmitter sites. Almost three years later, the DSP 6000 is the de-facto industry standard for sonic clarity and reliability with sales approaching 2,000 installations worldwide. But you probably already knew all of that stuff, right?

What you may not have known, is that the DSP 6000 also works in conjunction with your existing Moseley analog composite STLs! If you've invested in a Moseley PCL 505/C, 600, 606, 606/C or 6000, a few simple modifications convert your entire system to digital! And it won't cost a pot of gold (just under \$6,000). Call us for modification instructions, or better yet, ship us your STL and for a mere hundred bucks, we'll make the modifications and do the setup for you.

Isn't it time you stopped chasing rainbows and started enjoying the sonic clarity of digital? "Digitally clear. Clearly digital. Just the way we planned it." ▼

# RadioWorld

## Broadcast Equipment Exchange

"Broadcast Equipment Exchange" accepts no responsibility for the condition of the equipment listed or for the specifics of transactions made between buyers and sellers.

### ACOUSTICS

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### ANTENNAS/TOWERS/CABLES

#### Want To Sell

Rohn 45G 30' new tower, \$850; MarkGrid 10', 950 MHz, dish new never used, \$2000. D Lang, NW TalkRadio, 7404 SE Johnson Ck, Portland OR 97206. 800-313-5313.

10 bay ant ERI FMH-10AC circular polarized, tuned to 105.5, new, \$35,000; 100' 3" Heliac, new on reel, \$5/ft; 100' of new 3" cable wave CC300-50J on spool, \$15/ft; lg. pool for 3" wave guide, new, \$500. M Wodlinger, 813-262-1118.

FM 10 bay high power on 99.5, \$5500. F Hoffman, Corpus Christi TX. 512-851-1725.

4" coax hangers #12 (60), very good cond, \$100. B Lacy, 407-773-1962.

Cable Wave A 10R 50507 1 5/8 in coax, approx 6 275' rolls w/connectors, \$1100/roll. S Ross, Quinn Bldg, 733 N Green St, Brownsburg IN 46112. 317-852-9119.

Continental G5CPS-12, 12-bay, broadband centered at 105.5, operated at 107.5, \$17,000; Andrew HJ8 3" line, 440', \$4000; Miscellaneous parts from dismantled DA, variety of caps, coils, switches, BO. J Mulhern, KSCB, 1600 E 8th, Liberal KS 67901. 800-373-3891.

ERI 1105 medium power and dual cycloid, on 98.3 MHz, \$1850. Max, KCMJ, Box 551896, Dallas TX 75355. 800-891-006.

ERI 8-bay low pwr rototiller, 2 yo, BO; ERI high pwr isocoupler, 2 yo, 3" ETA connectors, BC; Cablewave 250', 300', 3" air coax cable, ea w/EIA flange connectors, 2 yo, removed to upgrade, BO. J Hackman, WATW, 2320 Ellis Ave, Ashland WI, 715-682-2727.

UTC 120 180' guided bdct tower w/side lights, beacon, electric eye, flasher, chokes, tower base & remote meter, you dismantle & ship, BO. J LoPresti, WGSB, 111 Avalon Dr, Warner Robins GA 31093-1137. 912-929-4904.

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### AUDIO PRODUCTION

#### Want To Sell

360 Systems DigiCart/1 model 1000, in gd cond, w new 44 MB cartridge drive, manual, keyboard adaptor cable, Digital Audio Disks, new (4), used (6), BO. S Runck, KFNW, 701-282-5910.

360 Systems 16x16 audio router expansion (only) unite \$350; Shure ST-3000 telephone interface/teleconference system w/mics, speaker, control unit and keypad, \$195. G Wachter, KFYI, 602-258-6161.

Allison Gain Brains (4), fair cond, \$50/ea; Dolby CAT22 (2) A type NR cards for Dolby 361 mainframe, \$100/ea; dbx K9-22 (2) type I NR cards for Dolby 361, \$100/ea. B Kennedy, EMC Prod. 300 York Ave, St Paul MN 55101. 612-771-1555.

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Woodland Hills, CA 91367

Circle (90) On Reader Service Card

Altec 1592A mixer w/1588, 1579, 15095 modules, \$150; 1599 B Mixers (2) w/1588/15095 Modules, \$90/ea; 351-C 50W pwr amp, \$90; Shure SE 20 Pro Phono Preamp, \$50; Russco 442B dist amp, \$75; Altec 1567 tube mixers, near mint to parts, sell or trade for tube gear, vintage mics. W Kremer, 301 SW 16th St, Ft Lauderdale FL 33315. 305-524-5652.

Langevin 119A Progar AM7A limiter, AM 5301 level line or hitecs-filters, CBS stereo adapt for Audimax II RZ or UTC HA106 transformers, HA 114 many Langevin parts & channel, strips for trade or sale. P Barlow, Studio Trax, 382 N Lemon Ave, Walnut CA, 909-594-1841.

Aphex Expressor, signal processor, mint/new cond, \$350; Symetrix 528 voice processor, exc cond, \$400/bo. R Crabtree, 313-848-6453.

BBE 422A sonic maximizer, \$100+shpg; Radio Shack 42-2115 3-input, 3-output matrix switch cntrl cntr for 3 audio decks (2), \$15/ea+shpg; Radio Shack 15-1956 4-input stereo audio & video selector switch, \$10+shpg. G Runn, N CA News, 5383 Willow Lake Ct, Byron CA 94514. 510-516-0299.

BOGEN Tech-craft TCE-2000 1/3 octave graphic EQ, w/high & low freq rolloff sliders, \$75; Altec 9018-A passive octave band filter (EQ), 8 10-position rotary cntrls, \$75; Delta Lab Electronics digital delays, model ADM 256, \$150, model ADM 1024, \$199; ADC Std Pro Patch Mark II patch bays, 2 x 24 array, normals out, lk new, \$150/ea; UREI 533 graphic EQ, 10 section octave band, 12 dB boost or cut, rack mount, \$250. R Sumner, CAVU Corp, 44632-112 Guilford Dr, Ashburn VA 22011. 703-450-2288.

dbx 118 compressor/expander, dbx 124 noise red unit, exc cond, both w/manuals, can be used together in series or individually, \$125/ea, \$250/both + shpg. D Fields, Legacy Prod, POB 194, Avoca AR 72711-0194. 501-451-8803.

Henry Engineering Mix Minus Plus, new, \$90; Henry Engineering LogiConvertor, new, \$90; Valley International HH2X2B Level Matching Interface, \$150. C Scherer, WMMS, 200 Skylight Office Tower, 1660 W 2nd St, Cleveland OH 44133. 216-781-9667.

Moseley TFL-1 Audio Limiter, \$150/BO; Barcus Berry audio processor, \$500/BO; Eventide FL-201 flangers (2), \$200/ea/BO; DBX 363X noise gate, \$150/BO; Orban 111B reverb units (2), \$150/ea/BO. T Ray, WTIC, 203-522-1080.

Micro Technology microsoudn digital audio workstn, 2 gig HD editor, 486 computer, AES/EBCU in out +4 bal in out, rack config, \$9500. P Boone, UNC Public TV, 306 Emerson Dr, Mebane NC 27302. 919-563-3995.

MXR digital time delay, chorus, flanger, \$100. P Lenz, WWSW, One Allegheny Sq, Pittsburgh PA 15212. 412-323-5300.

Fostex 3180 reverb unit, will swap for Urei "Cooper Time-Cube". E O'Brien, Imperial Sound, 383 N Studio St, Terre Haute IN 47803-9773. 812-877-2663.

Goldline digital RTA, \$300. dbx 140A type II NR, \$150; J Maples, WMYU, 8419 Kingston Pike, Knoxville TN 37919. 615-693-1020.

UREI 1122 solid state stereo transcription preamp, \$75. R Sumner, 44632 Guilford Dr, Ashburn VA 22011. 703-450-2288.

ADC 1/4" patchbays and cords, NEW, UNDER HALF PRICE, ADC TT patchbays, \$129 up, NEW cords, \$9.95. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

Good used studio tape 1/2" \$15, 1" \$30, 2" \$55. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

UREI LA4 mint pair, \$1095; Lexicon Alex, \$295; bulk eraser, \$49; Stewart direct boxes mono, \$50; 4 Ch, \$95; Cue command decoder, \$125; ABC Network decoder, \$125; NEW Tascam midizer MTS1000, \$750; Dyna stereo 120 rack mount amp, \$229; Sherwood FM tuner, new tubes, \$49; Infonics 7" reel copier 3 copies, \$125 ea; Crown & Furman elec crossovers, \$95. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

#### Want To Buy

Audio Precision System One audio analyzer. J Urbanczyk, 5520 W Trouhy Ave, Skokie IL 60077. 708-676-9177.

Collins audio equip, 12Z, 212Z, 116 F-1, also any Collins broadcast lit, catalogs or manuals. J Stitzinger, 23800 Via Irana, Valencia CA 91355. 805-259-2011.

dbx 120 X-DS. R Burton, 213-874-1000.

Marshall Electronics AR 300 delay unit; Burwen DNF 1100 stereo noise filter; UREI 565 ST Little Dipper filter set; Ampex SA10 amplifier. P McManus, Paul's Remote, 4011 Orchard Ave, San Diego CA 92107. 619-223-1730.

Ampex tube mixers, plug-in mic pre-amp modules for PRI0's. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

### AMPLIFIERS

#### Want To Sell

Belar RFA 1 FM RF amp, \$200; AudioMetrics DA, 8x2, \$200. J Maples, WMYU, 8419 Kingston Pike, Knoxville TN 37919. 615-693-1020.

Crown DC-300A pwr amp w/IC-150, \$400/BO; National RFA-4 AM RF amp w/alarm, \$100. P Lenz, WWSW, One Allegheny Sq, Pittsburgh PA 15212. 412-323-5300.

Dynaco ST70 tube amp, pre-amp and tuner; Classic Sherwood 3 way speaker system (2), BO. R Davis, Wango Records, 304-274-1419.

Hnat-Hindes SX-87 phone hybrid, early version, \$150. S Schweiger, WXLO, 250 Commercial St, Worcester MA 01608-1721. 508-752-1045.

LPB DAI-16, new. J Geio, J & H Programming, POB 1697, Marco Island, FL 33969. 813-642-6899.

Ward Beck dist amp, \$300/BO. T Ray, WTIC, 203-522-1080.

#### Want To Buy

McIntosh MI-200 rackmount tube amp. 212-343-0265.

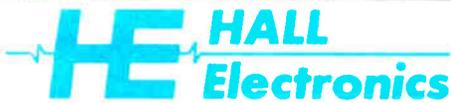
### WANTED:

Pultec EQ's; Fairchild, Teletronix, dbx, UREI, Sontec Limiters. Neumann, Telefunken, AKG and RCA mics. MacIntosh or Marantz Gear; Lang, Neve and API gear. Misc old tubes and guitars.

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FAX: (415) 252-7524

Record Cutting Equipment, Marantz CD recorder, records. 612-869-4963.



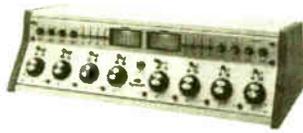
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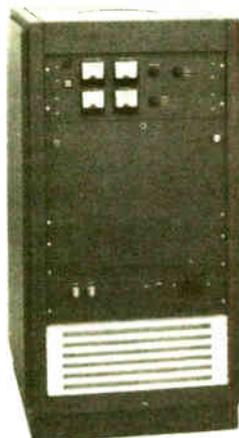
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Eventide BD-942 3 Second Stereo Delay -	REBUILT	\$ 1,095
ITC Delta Stereo RP Cart Machine -	REBUILT	\$ 1,395
ITC Delta Stereo Play Cart Machine -	REBUILT	\$ 795
ITC 'OMEGA' Stereo Cart Player -	REBUILT	\$ 395
Audiotronics 110A 18 Pot Stereo Console w/ Eq. -	REBUILT	\$ 1,695
Otari MX-5050 BQ-II 4 Track Reel -	REBUILT	\$ 1,595
Otari MX-5050 Mark III-2 1/2 Track Stereo Reel -	REBUILT	\$ 1,995
Orban 622B Stereo Parametric Equalizer -	REBUILT	\$ 295
Orban 111/B Dual Spring Reverb -	REBUILT	\$ 175
Valley People 400 Mic Processor -	REBUILT	\$ 349
Yamaha SPX 990 Effects Generator -	REBUILT	\$ 395
Broadcast Tools 6X1 Routing Switch -	REBUILT	\$ 249
Technics SL-P1200 CD Player - Production Model	REBUILT	\$ 495
Teac X1000R 1/4 Track St. 10.5" Reel w/Auto Reverse	REBUILT	\$ 595
JBL 7510A 24 Input Automatic Mic Mixer -	REBUILT	\$ 395
Potomac Instruments FIM-71 FM Field Strength Meter	REBUILT	\$ 3,995
Radio Systems T1-101 Telephone Hybrid -	REBUILT	\$ 329
Gentner SPH-3 Telephone Hybrid -	REBUILT	\$ 399
Denon CD Cart Shells (1000 Available!) - Good Cond.	EACH	\$ 2.95
CBS/Audiomax 4450A Stereo AGC -	REBUILT	\$ 195
Micro-Track PM5-MX 5 Pot Mono Rack Mount Mixer	REBUILT	\$ 295
McMartin EBS-2/TG-2 EBS EBS System -	REBUILT	\$ 349

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Circle (82) On Reader Service Card

World Radio History

## AUTOMATION EQUIPMENT

### Want To Sell

25 Hz tone generator, gd cond. J Gelo, J & H Programming, POB 1697, Marco Island, FL 33969. 813-642-6899.

**BE Control016** complete systems w/IGM Go-Carts (4), spare parts, \$1000. B Moede, WEMI, 1909 W Second St, Appleton WI 54914. 414-749-9456.

**Cetec Schafer** brain, 19 audio inputs, lockout/alarm, manual, override panel, power supply, BO. J Mulhern, KSCB, 1600 E 8th, Liberal KS 67901. 800-373-3891.

**Complete Systemation** automated sys (2), \$6000. M Wodlinger, 813-262-1118.

**Format Sentry FS 12-c** controller w/2 fade modules, precision clock, 286 computer w/2 floppies, mono screen, FS CD controller w/18 pack Pioneer upgrade (2), FS DS-1 storage unite w/8 hrs storage, \$8900. J King, KBIM, POB 2308, Roswell NM 88202. 505-623-9100.

**Cetec 7000** automation system. With (3) terminals, (9) ITC R-R, (5) Sono-Mag carousels, (2) 48 tray ITC Instacarts. System price \$5000. Call Tu-Mar Broadcasting, Houghton MI. 906-482-7700.

**Format Sentry FS-12C**, 1 48 tray IGM Instacart, 4 R-R ITC plybk machs, 1 Panasonic CD plyr, 1 Tandy 1,000 SL computer, 1 Tandy DMP printer, 1 Spotmaster rcd plybk cart mach w/25KH tone alert, 1 DRS uninterruptible pwr sply, 2 6' racks, & all related equip, all new, owe \$16,000, will sacrifice. A Terry, 703-647-8493.

**Harris 9000** automation syst, mono w/pwr sply w/new capacitors, Ti-Omni 800 model 840 printer, TEC model 70 X video screen w/keyboard, Micropolis disk storage model 1055-2, dual drive, plus 2-48 tray Instacart IGM, plus parts for both, needs some work, or used as spare parts, \$1000+shpg. Larry, WXL, Davenport IA, 319-326-2541.

**Smartcaster digital** automation syst, stereo, simult rcd/plybk, all accessories, nvr used, \$10,000/BO. T Ray, WTIC, 203-522-1080.

**SMC 350 RSB** 24 tray Carousels in exc cond installed in complete SMC rack unit. \$600/4 pieces. B Christie, Grande Radio Group, POB 907, La Grande OR 97850. 503-963-4121.

**SMC 350 RSB** carousels (4), gd cond, \$250/ea, \$800/all. P Patton, WWAM, POB 279, Jasper IN 37347-0279. 615-942-1700.

## CART MACHINES

### Want To Sell

**ITC 99B** completely refurb. R/P, stereo, new logic and audio cards, gd cond, \$1950. J Katonah, WFG, POB 777, Lake Katrine NY 12449. 914-336-6199.

**06A J03 UMC** plybk cart machine, \$75/BO; UMC rcd/plybk cart machine, \$150/BO. T Ray, WTIC, 203-522-1080.

**Audicord DLRS** stereo cart rcd, less than 3 yo, \$650; ITC SP Series triple deck plybk cart mach, \$500. ITC SP series single pak plybk cart mach, \$250; Abco cart rack carousel plus 350 Fidelipac carts, 3 yo, \$250. B Lacy, 407-773-1962.

**ITC ESL-IV** splice finder eraser, \$400. J Maples, WMYU, 8419 Kingston Pike, Knoxville TN 37919. 615-693-1020.

**AudioCord A Series** stereo cart plyrs (2), 1 ITC SP stereo cart plyr w/SWA card, 1 TapeCaster 700 stereo cart rcd, 1 Otari CTM10 stereo/mono cart plyr, 1k new, 1 ITC Delta I/IV stereo cart rcd, just rebuilt by ITC, BO. J Pierce, KMZQ, 702-595-5705.

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

**(804) 984-4255**

**HE HALL Electronics**

**Fidelipac 300** series carts, lg quantity, various lengths, most in xint cond, some new, \$3 or \$4/ea+shpg. M Sophos, WDFH, 21 Brookside LN, Dobbs Ferry NY 10522. 914-693-3963.

**ITC Delta** Stereo rcd/ply, 1k new, works great, \$1000/BO. C Scherer, WMMS, 200 Skylight Office Tower, 1660 W 2nd St, Cleveland OH 44133. 216-781-9667.

**Pacific Recorders** Tom Cat (12) PB, Tom Cat (4) R-P, Micromax (2) R-P, in use, well maintained, will inc good stock of spare parts, we want to sell them all. C Murray, KMG, 503-484-9400.

**RCA/BE RT120** Series stereo R/P, rebuilt; PB machine, manuals, spare parts, new carts, \$1300/all or BO. J Stromquist, WNCB, 2828 Piedmont Ave, Duluth MN 55811. 218-722-3017.

**Sono-mag** Corporation 350 Carousel (3) 24 tray, stereo, good condition, plus spare parts, all \$750+shpg. Larry, WXL, Davenport IA, 319-326-2541.

**Tomcat** and Micromax; Otari Mark II 8 trk w/DBX; Splicefinders, compressors and more. J Rivers, KTL, Dallas. 214-630-9400.

**UMC Beacart** 201-121-049 ply only deck, no top cvr, \$150/BO; BE 2100 ply only, missing top & bottom cvrs, \$150/BO. R Thompson, KLON-FM, 1288 N Bellflower, Long Beach CA 90815. 310-985-5566.

**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

**BE 3-deck** cart mach, motors must be rebuildable, \$100. D Rust, BE, 217-224-9600.

**Fidelipac ESD10** cart eraser/splice finder or similar. J Steele, WKBX, 111 N Grove, Kingsland GA 31548. 912-729-6000.

**UMC Bearcart**, cart machines, will pay \$50 non-working, up to \$125 working. Don, WMCR, 601 22nd Ave, Meridian MS 39307. 601-693-1450.

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

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### Want To Sell

**Otari 5050-SHD** 8 trk 1/2" newly rebuilt, heads have full, life left, \$1800. W Gunn 619-320-0728.

**Antique wire & tape** rcds, Ampex 400, vry early, Brush sound mirrors 403, 401, Webcor, Pentron electrocordr ekotape, sell or trade, SASE for list. W Kremer, 301 SW 16th St, Ft Lauderdale FL 33315. 305-524-5652.

**Cetec/Gauss 1250B** cassette tape quality control machine, working condition, \$300. B Kennedy, EMC Production, 300 York Ave, St Paul MN 55101. 612-771-1555.

**Fostex RB 8-trk 1/4"**, nvr used, \$1800. J Davis, 706-655-2145.

## REVOX PARTS/SERVICE

Cassette-CD-Open reel  
Rebuilt A77s, \$850.<sup>00</sup>  
Capstan resurfacing, ALL BRANDS.  
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30 Music Sq. W. #156  
Nashville, TN 37203 (615) 244-6892

**MCI JH110B** 2 trk, roll around metal cab, gd cond. J Gelo, J & H Programming, POB 1697, Marco Island, FL 33969. 813-642-6899.

**Ampex 440-B** (2) 1/4" 7.5 ips, full track, gd cond, \$700/ea; Ampex 351 1/4", 7.5 ips, full track rcd w/Novonics 361 electronics, working cond, \$500. B Kennedy, EMC Prod, 300 York Ave, St Paul MN 55101. 612-771-1555.

**Ampex 350** series plybk only deck, mono, 4-tube amp, works great, BO. S Smith, KBF, 360-734-8555.

**Panasonic port** DAT mach, low hrs, all accessories, incl fact svc manual, fresh bait, \$800. P Carson, Carson Conslts, Rt 32 Box 73, W Friendship MD 21794-0073. 202-288-6332.

**Ampex ATR 100** (2) 4 trk \$3500 ea, 2 trk 1/2" \$4000, (2) 2 trk 1/4" \$2500 ea. 212-343-0265.

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North Hollywood, CA 91607 fax 818-784-3763

**Technics 10A02 R-Rs** (2) + 1 for parts, Best Offer. J Pierce, KMZQ, 702-595-5705.

**Radio Systems RS-DAT** (3), RS-670's in good condition, no rack mounts, \$1500/ea OBO; RS-1000 with rack mount, \$1900/BO; Otari ARS-1000 PB machines in good condition, \$425 ea/OBO. C Barnowski, WLPE, 706-733-8201.

**Revox B-77** 1/4-trk 3 3/4x7 1/2 ips, \$450. G Grassie, RNTC Bdcng, POB 146, Dexter NM 88230-0146. 505-734-5565.

**Uher CR134** cassette, \$195; DAT decks with new heads \$550, Tascam ATR 60 8 track with stand, remote, \$3250; Otari 5050-8 no hrs on heads, \$1595; Ampex 440B-8, \$2450; Tascam 25-2, \$695; Ampex ATR700, \$695; Scully 16 track 2", \$3450; Tascam 52 top of line, \$950; M79-24 fully rebuilt, \$11,500; Tascam locator for 85-16, \$495; Fostex E22 1/2" timecode deck, \$1400; Fostex A80 8 track with 450 mixer, \$1350; Tascam 5, \$450; Nagra 10" reel adaptor, \$950. W Gunn, POB 2902, Palm Springs, CA 92263. 619-320-0728.

# 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

**Creative Midwest** farm boy seeks PM, prd in P3, desire FT; tape and resume. Dave, 612-693-6583.

**Energetic broadcaster** with 5 yrs public radio and TV experience ready to work where you are. Christopher, 402-551-4665.

**Home with the armadillos**, native Texan, recent broadcasting school graduate, seeks FT C & W on-air/productio position in TX. Buddy, 817-244-3724.

**Fish waiting** for bite, serious, energetic, witty AT, ready to move, any format, reel me in. Hilary, 612-623-3962.

**Help!** Country jock wants out of new/talk, 14 years experience, ready to work overtime, prefer Deep South or VA. Brian, 904-453-8849.

**Pure Talent!** Seeks bigger and better, willing to relocate, good attitude, great ethic, awesome pipes, 5 yrs exp. Kevin, 800-332-0983.

**Exp sportscaster**, looking for full-time position, have experience in College Basketball, Minor-League Football & various Baseball Games, attended & completed ESPN Sportscaster Workshop. R Lillard, 804-239-9758.

**8 years** major market experience, heavy engineering background, on-air, production, multi-track, copy, news, creative, funny, willing to relocate, radio or recording studio. Todd, 216-267-6834.

**Attention K-Mart** shoppers, blue light special, just graduated, wit, comedy, I make a mean crepe suzette, looking for prd/on-air position. Matt, 918-747-

**Equipment installer** looking for position, have experience with broadcast, audio, video, and telecommunications equipment. D Chapar, 203-698-0508.

**Experienced** middays, remotes, production, news, phones, and more, ready to relocate and work for your team. Angela, 405-573-0579.

**Experienced** creativity technician in promotions, prod and on-air, looking for FT employment in NE. Chad, 505-526-2561.

**Hardworking programmer** seeks to take your station to the next level, PD/management, exp. Roger, 615-235-6889.

**Recent grad**, creative, energetic, good worker, seeking first pro AT job, love writing and producing spots, will relocate. Tom, 612-866-9421.

**Graduate** seeks FT employment in any market, work hard at MD, PBP, AT, sales; tape & resume. Sean, 612-263-1728.

**I just graduated** from bdcng school, have terrific voice & am willing to travel & I'll get you the ratings! Micah, 405-588-3259.

**Marketing/Promotion Director** or Assistant, medium or large market desired, country or AOR format, budget minded & resourceful, sales experience, willing to relocate. Brian, 505-327-1771.

**Multi-talented**, colorful & diligent, seeks habitation at your station, see for yourself, will travel! Lynn, 405-628-3707.

**New man** on the rise, ambitious, dependable, recent grad seeks small/med market on-air, copywriting, sports, or prod position, any format, will relocate. Kenny 405-672-2756.

**Engineer** 20+ years experience, SE only. D Salter, 205-699-6425.

**Tight board** with smiling voice, good time personality looking for rock format. R Ray, 15 Crofoot Sandwich IL 60548.

**"Quiet man"**...but not quiet on the air, will travel, looking for christian or oldies format, seeking on-air & sales. Tim, 405-672-5763.

**On-air** personality seeks medium market, 5 year experience including programming and music direction. Drew, 717-530-1541.

**On-air announcer** with serious rock music background, talented production, versatile, intelligent & ready for work, will relocate. Chris, 405-741-8344.

**Operations manager**, traffic manager, news director, promotions, sales, you name it, looking for FT employment in NE. Natalie, 505-526-2561.

**Radio rookie** just out of school, eager & ready for an exciting career doing on-air, prod, or news, focusing on OK or KS. Gail, 405-758-1224.

**Trustworthy young grad** willing to relocate for job on-air, production, copy, news or sales. Steve, 405-672-9024.

**Young AT/exp** LA producer seeks FT AT & production, sales, ???, ready for next challenge, all formats and markets, will relocate. Ken, 213-661-6078.

**JANET** (502) 895-5888. Versatile, intelligent, great for start ups or existing stations, wants FT airshift, first PD gig, tired of false starts and unrated, small markets.

## TRAINING SERVICES

**FCC General Class License**. Cassette recorded lessons for home study. Our 30th year. Bob Johnson Tele-communications, 1201 Ninth, Manhattan Beach, CA 90266. (310) 379-4461.

## HELP WANTED

**News Director** for Central Illinois, AM/FM combo. Prior On-Air news experience a must. Send resume and references to WIZZ/WSTQ, c/o G.M., PO Box 377, Streator, Illinois 61364.

### CHIEF ENGINEER

Dominant 50KW New England FM seeks teamplayer Chief Engineer with strong knowledge of studio, transmitter maintenance and Novell network. Communication skills, positive attitude and desire to work with the best required. Minimum 5 years experience. Confidential replies to: Radio World, POB 1214 Falls Church, VA 22041 Attn: Box #95-3-8-01RW

**Benchmark Communications**, one of America's premier group owners is accepting applications for **RADIO STATION CHIEF ENGINEER** for present and future operations. A minimum of one year radio experience, and/or an A.A.S.E.E. or related field is required. S.B.E. certification, computer knowledge, and ham radio are pluses! Compensation is based on experience, education, and professional qualifications. You must include verifiable work, education, salary history and references. **No phone calls or faxes.** Equal opportunity employer. Deadline: April 15, 1995. Reply to: Jerry E. Brown, CPBE Director of Engineering Benchmark Communications 168 Business Park Drive, Suite 201 Virginia Beach, VA 23462

### CHIEF RADIO ENGINEER PART-TIME

Need person with 4 years experience in broadcast engineering or electronics degree to maintain technical operation/management of 100,000 watt university radio station. FCC license and SBE certificate required. \$13,201-\$15,841. Send resume to: **GSU Employment/Job #5306** One Market Place South, Ste. 340 Atlanta, GA 30303 By March 31, 1995 AA/EOE/ADA

### CHIEF ENGINEER

**50KW and 5KW full-time AM** seeks chief engineer. Experience with remote broadcast, studio & transmitter maintenance and directional AM required. Minimum 3 years experience. SBE certification is a plus. Based on knowledge and experience. Potential 40K salary. Send resume, references and salary requirements to: **Jesse Garcia, WXXQ/WFRL** 483 N. Mulford Rd. Rockford, IL 61107 EOE

## CHIEF ENGINEER RADIO STATION

North Jersey powerhouse **WMTR/WDHA** is looking for an experienced Chief Engineer. Successful candidate must be proficient in FCC rules and regulations, AM and FM transmitter operations and maintenance, AM directional antenna systems, automated satellite format delivery, remote broadcasts, studio maintenance and construction, telephone hybrid systems, and computers. Must be able to work in a fast-paced environment, for two highly active North Jersey radio stations, and be able to generate and maintain budgets. E.O.E.

Please forward resume to:  
Business manager  
**WMTR/WDHA Radio**  
55 Horsehill Road  
Cedar Knolls, NJ 07927  
or Fax 201-538-3060

## STAFF ENGINEER

Indianapolis FM-FM/AM three person engineering department seeks person with strong transmitter & studio knowledge. Good communication & people skills a must. Minimum 5 yrs broadcast engineering experience. FCC license, computer network, digital audio a plus. Send resume & salary requirements to: Dan Mettler **WFBO/WRZX/WNDE** 6161 Fall Creek Rd Indianapolis, IN 46220 E.O.E.

**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.

Call Simone for more information: 703-998-7600

**CASSETTES/R-R...WTS**

Studer A710 stereo cass deck, \$595. R Sumner, CAVU Corp, 44632-112 Guilford Dr, Ashburn VA 22011. 703-450-2288.

ITC Reel-to-Reel Specialists. Complete stock of spare parts. Motor rebuilding and heads for both reel-to-reel and cart machines.

**VIF INTERNATIONAL**  
PO Box 1555  
Mtn View CA  
94042 U.S.A.

Inside USA: 1-800-848-4428  
Outside USA: 1-408-739-9740  
FAX: 1-408-739-0809

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.

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

**Long Life MEC Tape Heads**

One year warranty  
Flat response of  
±1dB 35 Hz to 16 kHz

**SEQUOIA ELECTRONICS**  
(408) 363-1646  
FAX (408) 363-0957

Teac 3440 4-track recorder, \$700; Ampex 601 1/2-track recorder, \$100; Ampex 440B full-track recorder with roll-about cart, \$600. P Lenz, WWSW, One Allegheny Sq, Pittsburgh PA 15212. 412-323-5300.

Tascam TSR-8 8 trk, mint, less than 10 hrs, inc remote, \$1950/BO. R Crabtree, 313-848-6453.

**Want To Buy**

Any working R-R, or non working, players or recorders. Don, WMCR, 601 22nd Ave, Meridian MS 39307. 601-693-1450.

Nagra 4.2 rcdrs, 16mm Arriflex-S & Bolex equip, Sync sound motors for Arriflex & any 35mm Lecias for studio prod. Henry, 914-949-5920.

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

**CD PLAYERS**

**Want To Sell**

Cybox 50' keyboard and monitor extender for mono/CGA/EGA, \$85. G Wachter, KFYI, 602-258-6161.

Otari MS 5050-B (2), 2 trk, mint cond, \$1900 ea/BO. C Barniowski, WLPE, 706-733-8201.

Studer A727 (3), \$300/ea. J Maples, WMYU, 8419 Kingston Pike, Knoxville TN 37919. 615-693-1020.

**CONSOLES**

**Want To Sell**

Bdct Electronics BE4M50A 4 pot, mono, new, nvr on line, all manuals, \$625. G Grassie, RNTC Bdcng, POB 146, Dexter NM 88230-0146. 505-734-5565.

Broadcast Audio Series II consoles (2), good condition, spare parts & manuals, 1 BE 150A console, exc cond w/manual, BO. J Pierce, KMZQ, 702-595-5705.

Collins 2125-1, good condition, with manual, \$250. J Stitzinger, 23800 Via Irena, Valencia CA 91355. 805-259-2011.

Collins port 808A-1 console with dual turntable, mono, \$300+shipping. Larry, WXLN, Davenport IA, 319-326-2541.

Gates Stereo Yard, fair condition, prefer pick-up, \$200; Gates mono board, Octal-Base tube type, prefer pick-up, \$100. R Blair, Columbia School of Bdcng, 5808 Columbia Pike, Baileys Crossroads VA 22041. 703-820-2020.

LPB S-15A, 8 pot, 24 input, mono, exc cond, \$1300. J Wilsbach, WMSS, 214 Race St, Middletown PA 17057. 717-948-9136.

Shure 675 remote prod master, \$100/BO. P Lenz, WWSW, One Allegheny Sq, Pittsburgh PA 15212. 412-323-5300.

Shure M67 (2), \$100/ea. J Maples, WMYU, 8419 Kingston Pike, Knoxville TN 37919. 615-693-1020.

Wheatstone SP-5A 8-trk, used for 6 yrs, good condition, 2 mic-10 line inputs, \$8000. R Scott, WHFS, 8201 Corporate Dr, Landover MD 20785. 301-306-0991.

Mackie 1604, \$575; Soundcraft Spirit 24x24, \$3950; Ramsa 820 20x8x16 w/meter bridge, \$1950; Quantum 23x16x24 as used by LA Philharmonic, \$4950. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

**Want To Buy**

Ramko DC-38 need 4 ins input card, working or not. D Roberts, WDUZ, POB 310, Green Bay WI 54305. 414-468-4100.

Neve consoles: any condition or parts Also: UA, UREI, Teletronics, Fairchild, RCA, Pultec, API, any TUBE GEAR or COMPRESSORS Call 201-798-2745 or fax 201-963-4764

Western Electric 23-A any WE-23 Series console or associated equip. S Horner, KMRD, 2310 Ponderosa, Camarillo CA 93010. 619-535-1210.

Neve console, any type and parts. 212-343-0265.

**DISCO-PRO SOUND EQUIPMENT**

**Want To Sell**

Crown D-75 monitor amplifier, \$250. J Maples, WMYU, 8419 Kingston Pike, Knoxville TN 37919. 615-693-1020.

Quad 8 RV-10 spring reverb, good cond, \$50. B Kennedy, EMC Prod, 300 York Ave, St Paul MN 55101. 612-771-1555.

Yamaha 4115 PA speakers w/15" & horn, \$400/BO; Cerwin-Vega PD-3 speakers 15" 3-way, \$300/BO. P Lenz, WWSW, One Allegheny Sq, Pittsburgh PA 15212. 412-323-5300.

**EBS EQUIPMENT**

**Want To Sell**

**NEW REQUIRED EBS SHORT-TONE Decoder Mod. Kits**  
Easy - Low Cost - FCC legal!  
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**FLEX LEASE, Inc.**

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**Want To Sell**

Symetrix 421 AGC/leveler, mint, \$375/bo. R Crabtree, 313-848-6453.

EV RE20's, \$275-325; Sony ECM377 large dia. cond mic, \$495; RCA 44BX matched set of 3, \$3950; Shure new SM7, \$395; AKG new D112, \$295; Crown GLM200 lavalier like new, \$125. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

Shure SM-7 (2), exc cond, \$275/ea. B Kennedy, EMC Prod, 300 York Ave, St Paul MN 55101. 612-771-1555.

RCA 44BX will trade for condenser mic from 1920's or 30's. J Steele, WKBX, 111 N Grove, Kingsland GA 31548. 912-729-6000.

**Want To Buy**

RCA mics for collection or trade, on-air lights, recording lights. J Phillips, 414 Washington, Defiance OH 43512. 419-782-8591.

77-DX's, 44-BX's, WE KU-3A's On-Air lights, recording lights & audition lights. Top price paid. Fast response. Bill Bryant Management, 2601 Hillsboro Rd, G12, Nashville TN 37212. 615-269-6131, FAX: 615-292-3434.

RCA ribbons, AKG 451's, Neumann KM84's, EV 635A. W Gunn, POB 2902, Palm Springs CA 92263. 619-320-0728.

RCA 77DXs/44BXs ribbon, chrome/TV grey, gd cond, BO. R Kaufman, Pams Productions, POB 462247, Garland TX 75046. 214-271-7625, after 3PM CDT.

**MISCELLANEOUS**

**Want To Sell**

Abco 500-cart lazy susan (2), \$100. P Patton, WWAM, POB 279, Jasper IN 37347-0279. 615-942-1700.

Gentner Microtel telephone-tape interface, barely used, \$215. Bill, 617-266-4220.

Sony 48V phantom pwr sup, as new cond, \$50. B Kennedy, EMC Prod, 300 York Ave, St Paul MN 55101. 612-771-1555.

Modulation Sciences CLD-2500 composite line driver syst, \$1000. S Schweig-er, WXLO, 250 Commercial St, Worcester MA 01608-1721. 508-752-1045.

High voltage transformer, 208-220 volt input taps (3), 2900-3300 volts out at 600 MA, \$180+shpg; High voltage choke, 10 Henry, 10 KV, \$80+shpg; High voltage filter capacitors, 2 5mfd, 7500 volt, 1 20mfd, 2000 volt, 1 10mfd, 2000 volt, no PCBs, \$20/each. K Lamson, 510-447-7405.

**AUDIO TRANSFORMER MAGIC**



9K-600-6  
**audisar**  
P.O. Box 1561, Bellevue, WA 98009  
206-454-2040

Circle (17) On Reader Service Card

Gentner SPH-5A phone hybrid, \$400/BO; Titus MLW-1 auto audio switch, \$900. T Ray, WTIC, 203-522-1080.

Topaz 15 kVA true UPS w/batteries, 3 phase in, 1 and 3 phase output, \$1995. G Wachter, KFYI, 602-258-6161.

**Want To Buy**

Neil Terrell Tiger Tape sides 11 & 12; Book by Powell, "How To Rund Station, Everything You Wanted To Know." C Adams, WKUZ, POB 342, Wabash IN 46992. 219-563-4111.

Jazz record collections, 10" LP/12" LP be-bop, swing, dixie, highest prices paid. B Rose, Program Recordings, 228 East 10th, NANY 10003. 212-674-3060.

**PHONE: 703-998-7600 FAX: 703-998-2966**



Call Simone Mullins, Classified Ad Manager, to reserve space in the next issue. Use your credit card to pay, we now accept VISA and MASTERCARD.

**RadioWorld**

5827 Columbia Pike, 3rd Floor, Falls Church, VA 22041

Select from these categories for best ad positioning:

- |                            |                           |                          |
|----------------------------|---------------------------|--------------------------|
| Acoustics                  | Consoles                  | Software                 |
| Amplifiers                 | Disco-Pro Sound Equip.    | Stations                 |
| Antennas & Towers & Cables | Financial Services        | Stereo Generators        |
| Audio Production (Other)   | Leasing                   | Tapes, Carts & Reels     |
| Brokers                    | Limiters                  | Tax Deductable Equipment |
| Business Opportunities     | Microphones               | Test Equipment           |
| Cart Machines              | Miscellaneous             | Transmitter/Exciters     |
| Cassette & R-R Recorders   | Monitors                  | Tubes                    |
| CD Players                 | Receivers & Transceivers  | Turntables               |
| Computers                  | Remote & Microwave Equip. | Positions Wanted         |
|                            | Satellite Equipment       | Help Wanted              |

Classified Advertising Rates Effective January 1, 1994

	1x	3x	6x	12x
1-9 col inch (per inch)	\$60	58	54	49
10-19 col inch (per inch)	55	52	49	44
Distributor Directory	100	95	90	85
Professional Card	65	60	55	50
Classified Line Ad		\$1.50 per word		
Blind Box Ad		\$10 additional		

To compute ad costs: Multiply the number of ad inches (columns x inches) by the desired rate schedule for your per unit cost. Example: a 3" ad at the 1x rate is \$180, at the 3x rate \$174, at the 6x rate \$162, at the 12x rate \$147, etc.

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RADIO! The beat goes on!

**CROUSE-KIMZEY OF ANNAPOLIS**

tops in broadcast equipment

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ask for Kathleen

## MONITORS

## Want To Sell

Belar SCM-1 SCA modulation monitor, \$900. M Persons, WJYY, 40 Front St, Brainerd MN 56401. 218-829-1326.

McMartin TBM 1005D FM rebroadcast receiver, new, for rebroadcasting, simulcasting, translators or monitoring of RF, modulation, or injection. ALSO: (used) AM/FM modulation monitors, Buy or Sell, Repair & Calibrate McMartin, Belar. Call Goodrich Ent Inc., 11435 Manderson St., Omaha, NE 68164. 402-493-1886 fax 402-493-6821

Belar SCM-1. SCA monitor, \$150; Midland 23-148 voltage regulator, \$50. J Maples, WMYU, 8419 Kingston Pike, Knoxville TN 37919. 615-693-1020.

## Want To Buy

Potomac AM-19 at least 5 towers. G McClintock, WNQM, 1300 WWCW Ave, Nashville TN 37218. 615-255-1300.

## RECEIVERS &amp; TRANSCEIVERS

## Want To Sell

ICOM IC-V100 2-way radio syst, w/pwr sply, req ICOM programmer to set freqs, \$1200. S Schweiger, WXLO, 250 Commercial St, Worcester MA 01608-1721. 508-752-1045.

GE Superadio III, custom modified w/noise free SCA w/improved selectivity & sensitivity, \$95. Other modifications avail. Performance guaranteed. **800-944-0630**

Racal RA6790/GM tunes 500 kHz to 30 MHz, synth, AM, FM, CW, SSB, two LCDs, 5 filters, \$1450; ICOM IC-H2 VHF handy-talky, 2-chnl, more than 2.5 W output, w/drop-in desk chrgr, new NiCad batt pack & antenna, manual, commercial band, \$125/ea. R Sumner, CAVU Corp, 44632-112 Guilford Dr, Ashburn VA 22011. 703-450-2288.

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Reading Service / Ethnic / Data Professional / Table Will work to meet your receiver needs

DAYTON INDUSTRIAL CORP. (Manufacturer) 2237 Industrial Boulevard Sarasota, FL 34234 Tel: 813 351 44545 FAX: 6081

Scott 800-B in Chippendale console & spare chassis set, Collins 51-J-4, Communications rcvr, BO: Zenith 3000-1 recapped, vry nice, \$150/BO; sell or trade for tube bdct gear, vintage mics, SASE for list, W Kremer, 301 SW 16th St, Ft Lauderdale FL 33315. 305-524-5652.

Sony ICF 9660 AM-FM-TV sound rcvrs (2), \$25/ea+shpg. G Runn, N CA News, 5383 Willow Lake Ct, Byron CA 94514. 510-516-0299.

Yaesu FRG-7 communications receiver, AM/SSB/CW .53-30 Mhz, \$150+shpg. M Saady, 1st City Rec, 213-05 75 Ave, #2L, Bayside NY 11364.

## REMOTE &amp; MICROWAVE EQUIPMENT

## Want To Sell

Switched 56 CSU/DSU INC model 1056 rack mount, \$250. G Wachter, KFYI, 602-258-6161.

**RENT IT HERE!** Call Steve Kirsch for Details

COMREX 1, 2 & 3 Line Extenders Switched 56/ISDN Systems

TELOS Zephyr Digital Phone Hybrids

GENTNER FFT 3100 3-Line Extenders

SHURE FP-410 Automatic Mixers

REMOTE AUDIO PACKAGES

SILVER LAKE AUDIO • 516-623-6114 • FAX: 516-377-4423

Gentner VRC-1000 and VRC-2000, dial-up remote cntrls. M Persons, WJYY, 40 Front St, Brainerd MN 56401. 218-829-1326.

CCS Micro 56 56 kB digital codec sys w/codec box (2), and modem (2), V35 cables (2), \$3000. R Cowell, KNTR, POB 308, Ferndale WA 98245. 206-384-5117.

Marti STL8-950 STL xmtrs (2, non-cert), on 951.375 & 951.625 MHz, nds wk, cleaning, \$400/ea; Marti R200-950 STL receivers (2), on 951.375 & 951.625 MHz, nds wk, cleaning, \$400/ea; Marti SCG-8H subcarrier gen, on 67 kHz, nds cleaning, \$300. S Schweiger, WXLO, 250 Commercial St, Worcester MA 01608-1721. 508-752-1045.

Marti SCG-10 subcarrier gen, 39khz, \$200/BO; Marti SCG-10 subcarrier detector, 39khz, \$200/BO; Coastcom SSB subcarrier system, 67khz-102khz, \$350/BO; TFT remote control system, \$800/BO. T Ray, WTIC, 203-522-1080.

Moseley TPR-2 STL rcvr transfer panel, \$75. J Maples, WMYU, 8419 Kingston Pike, Knoxville TN 37919. 615-693-1020.

**WE RENT**

TELOS ZEPHYR

QEI QUICK-LINK Stereo RPU, NO License

COMREX 3-line extender

Frank Grundstein Audio/Video Consultants 610-642-0978

MCI PTS10/PRS10 Composite STL 945 5, BO. J Pierce, KMZQ, 702-595-5705.

VRC 1000 remote control unite, \$1500. J Maples, WMYU, 8419 Kingston Pike, Knoxville TN 37919. 615-693-1020.

Mosely TRC-15, taken out of svc in upgrade, manuals, \$700+shpg. R Peterson, KDMO-AM, 221 E 4th, POB 426, Carthage MO 64836. 417-358-6054.

Mosley PBR-15 remote cntrl, both ends, \$100. P Lenz, WWSW, One Allegheny Sq, Pittsburgh PA 15212. 412-323-5300.

Studer Automatic Hybrid, 2 line telephone interface with manual, \$595. R Sumner, 44632 Guildford Dr, Ashburn VA 22011. 703-450-2288.

Symetrix 108 Broadcast phone system, 8 lines, 3 Hybrids, \$1000/BO. T Rusk or J Harvill, KSSN-KMVK, 501-227-9696.

## SATELLITE EQUIPMENT

## Want To Sell

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Satellite Systems pays cash for Westwood One Radio Networks satellite receivers!

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Satellite Systems repairs all major brands of satellite equipment, including the Fairchild Dort 384 and Scientific Atlanta. Our turn-around time averages under 24-hours. Plus, we provide pre- and post-service support along with a 90-day warranty.

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Channel master Ku-band feed horns, without LNB, new, \$5/ea + shipping. G Finney, WPWB, 912-788-2124.

Comstream ABR 200 to to Super Radio's Adult Hit fm, \$1500. B Hearst, WCCR, 725 Wood St, Clarion PA 16214. 814-226-4500.

Modulation Assoc Audio 1 SCPC rcvr w/downconverter, fixed tuned to xponder 2, 64.5 mHz (2 units), \$3500/BO. R Thompson, KLON-FM, 1288 N Bellflower, Long Beach CA 90815. 310-985-5566.

SA 9000 10' dish with extender panels and Avcom 2 receiver and motor drive and LNA for \$300. You haul. D Hurd, Nova Earth Stns, E1111 Everett, Spokane WA 99207. 509-483-2473.

Full inventory of commercial, high-stability +/-100 kHz or PLL +/-15 kHz LNB's, C-Band, Ku-Band. A must for digital or SCPC reception. Low competitive prices. SCPC commercial frequency agile receiver. Other hard-to-find commercial broadcast satellite products. Call for prices. Universal Electronics, Inc. 614-866-4605, FAX: 614-866-1201.

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## Want To Sell

PC SOFTWARE for Broadcasters. Traffic, Billing, & Accounting. Powerful, inexpensive. Works with automated, satellite or live operations. INTERFACES with popular DIGITAL AUTOMATION SYSTEMS. Try it for 60 days, no obligation.

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Naples, Florida (813) 643-3689

ViewLogic ProSeries 5.5 schematic capture software for Windows, \$350; with ProSpice circuit simulator, \$450. G Wachter, KFYI, 602-258-6161.

**U.S. RADIO STATION DATABASE:** stand-alone program containing 11,825+ stations. Many searches, prints mailing labels. MAC/IBM (specify disk size). Visa/MC \$129.95/yr. (+quarterly updates):

**1-800-626-2360 ext. 300**  
**BBH Software, Inc.**

Circle (86) On Reader Service Card

## STATIONS

## Want To Sell

10k AM, non dir, C-QUAM stereo, N Central AZ. 602-774-0864.

Building, property, transmitter in Tarkio MO, \$50,000. 816-542-0404.

FL 5 kW AM, day with night power, positive cash flow, NFL/college games, new tower/ground systems, \$290,000 w/land. Mark, 205-236-6484.

Last chance for full-time 1 kw AM in Central VA, excellent equipment, owner ret, license expires in '95, will lease or sell & finance, real estate, \$50,000/Best Offer-corp or assets. G Jones, 804-376-5354.

Orangeburg SC area (3 16) covers) WORF-FM, C3, 25,000 watts, new equipment, off air, owner ret, studio can be at Orangeburg or at transmitter site, STL included, no LMAs or leases considered, last full year approximately \$30,000 gross \$125,000 cash, assume \$30,000 equipment lease, rent site 20 years, buyout \$1500. C Jones, 803-492-7613.

1000 watt AM located in Southern New England; includes all studio and transmitter equipment; 400K or Best Offer. Serious buyers call 1-800-845-0338.

MANCHESTER NH 5kw-U WKBR, \$290k. Additional 46-acre site option. Bob 617-449-5618.

## Want To Buy

AM & FM F/T combo, CP ok, 718-4328.

Couple willing to buy mail to med mkt FM in South/Southeast, reasonable. Otis, CCS Prod, POB 34321, Houston TX 77034. 713-944-1502.

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• Field Work  
• Expert Testimony

9049 Shady Grove Court  
Gaithersburg, MD 20877  
Phone: (301) 921-0115  
Fax: (301) 590-9757

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Planning remotes from the U.K.? we provide a comprehensive service • we organize venues for your shows • we provide temporary equipment • live links via ISDN/Switched 56 • experienced radio engineers • we help you line-up guests

Contact London (44) 81 442 8900  
Good Morning from Great Britain  
Wired for Sound Ltd., London N15

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COMREX and GENTNER  
1, 2 & 3-Line Extender Systems  
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MARTI VHF/UHF RPU Systems  
ISDN & Switched-56 Systems  
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6105-E Ariington Blvd,  
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Call Simone at **1-800-336-3045** today!

**STATIONS...WTB**

Former owners would like to buy AM, FM, combo or CP in small market. Robert, 210-680-5778.

Purchase, Lease to purchase, O&O - your dark, nearly dark, troubled or redundant AM, (FT,DT) FM, LPTV in Western U.S. Reply to Radio World, POB 1214, Falls Church VA 22041. Attn Box #: 95-01-25-01RW.

**TAPES/CARTS/REELS & CD's**

**A&D**  
**Cart Rebuilding**  
 Do Bad Carts Have Your Temperature Rising?  
 Let A&D clean, load & pack your carts. They'll be serviced within 10 working days! *Guaranteed!*  
 3706 Vold Ct. 715-835-7347  
 Eau Claire WI 54601 Fax: 715-835-1151

**Want To Sell**

**Ampex Grand Master 456/3M 226.** 1/4" R-R tape for sale, some cut, some not, metal & plastic 10 1/2" reels, exc rcdng cond. \$10 metal, \$7.50 plastic. Glen, 205-672-7200.

**Ampex 456** one carton of 10 on hubs, new, \$100 + shpg. M Saady, 1st City Rec, 213-05 75 Ave, #2L, Bayside NY 11364.

**AudioPak** blue and black label, 3 1/2, 5 1/2 and 10 1/2 min, make offer on any quantity. C Barniowski, WLPE, 706-733-8201.

LP's, big band, MOR, Rock and Roll, contemporary, 1000s avail: 45's (1000+); complete Big Band, MOR, contemporary/oldies mix, recorded on Ampex 456 on metal 10 1/2" reels; J Gelo, J & H Programming, POB 1697, Marco Island, FL 33969. 813-642-6899.

**RCA & Tapecaster** cart players, \$75-\$150; Ampro cart recorder, like new, \$300; Spotmaster cart winder/timer, including 4 hubs of new cart tape, \$150. P Lenz, WWSW, One Allegheny Sq, Pittsburgh PA 15212. 412-323-5300.

**Records** 78 rpm, jazz, big band, 1916-40, excellent condition, make offer D Fields, Legacy Productions, POB 194, Avoca AR 72711-0194. 501-451-8803.

Scotch prod facility deleting classic rock library & logged classical music on 7" & 10.5" reels. Best Offer: 7" & 10.5" reels, \$35+shpg. D Pulwers, 703-751-9346.

**Pams Jingles** ref tapes, 1951-1976. Best Offer: R Kaufman, Pams Productions, POB 462247, Garland TX 75046. 214-271-7625.

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### Audio Cartridge Rebuilding Division

Rebuilding/reloading, like new, all brands, any length up to & including 3.5 minutes, \$1.95 ea. FOB out plant, 48 hrs delivery. (New rate effective 9/1/93)

**New NAB Marathon cartridges prices on request.**

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 Manufacturers of Audio Devices,  
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**1-508-248-3157 or 1-508-853-0988**

Circle (63) On Reader Service Card

**Scotchcart II's**, 380 between :20 & 9:30, excellent condition, \$1.25 ea; 96 slot wire Carousel, \$75. Stu, First Take Recording, 16128 Orchard Grove Rd, Gaithersburg MD 20878. 301-963-7758

**Want To Buy**

Broadcast group seeks FM comm station to lease/purchase in IN, IL, OH or MI. Vera, POB 428267, Evergreen Park IL 60642. Mr Stevens, 312-445-9200.

**Records** 1949-69 45 rpm LPs, R&R, R&B, Doo-wop, EZL, prefer promo material on vinyl, will consider polystyrene. D Fields, Legacy Prod, POB 194, Avoca AR 72711-0194. 501-451-8803.

**Fidelipac/Audiopak Mastercart II** gold or AA-4 light blue in 2:30 through 4:00 lengths, must be in vgc, call after 3PM CST. 214-271-7625.

**TAX DEDUCTIBLE**

**Want To Sell**

Community/public station needs studio equipment, tape recorders, mics, signal processors, consoles, software, computers, will ship, provide gift letter, tax documents. M Cohen, KGLP, 200 College Rd, Gallup NM 87301. 505-863-7625.

Non-profit religious school needs satellite equip to receive programming. Garrett, 915-533-4700.

Wanted, donation of used radio station/audio equipment for elementary school radio training programming, audio boards, microphones, nothing too old. R Jeranek, Washington Elem, Washington Ave, Union NJ, 908-851-6460.

**TEST EQUIPMENT**

**Want To Sell**

**Fluke 8520A** precision 5 1/2 digit digital multimeter, 2 and 4 wire measurements, math capabilities, IEEE 488 interface, \$485; Hewlett Packard 5006 digital signature analyzer w/probe & pods, \$195; Tektronix Polaroid C-30A scope camera, \$95. G Wachter, KFYI, 602-258-6161.

**Fluke 8120A** digital VOM, \$75; Tektronix 529 video waveform monit, \$100; Telegroup TLD-54 25MB/auto trigger, dual trace scope, \$200. P Lenz, WWSW, One Allegheny Sq, Pittsburgh PA 15212. 412-323-5300.

**Tektronix 400** MHz 4 trace 7834 storage oscilloscope frame, \$400; 7A13 differential comparator, \$200; 7A24 400 MHz dual trace amps (2), \$200/ea; 7B92A Dual time base, \$250; all for \$895. G Wachter, KFYI, 602-258-6161.

**Hewlett Packard 332A** distortion analyzer with AM detector, \$595; 333A DA, \$695; 334A DA with AM detector, \$795. R Sumner, 44632 Guilford Dr, Ashburn VA 22011. 703-450-2288.

**Potomac AM-19** ant monit, 2-tower single pattern \$1000/BO; Potomac AM-19 remote meter panel, \$50/BO. T Ray, WVIC, 203-522-1080.

**Tektronix 475A** solid state port dual trace 250 MHz oscilloscope, like new, with manual & probe, \$1050. R Sumner, CAVU Corp, 44632-112 Guilford Dr, Ashburn VA 22011. 703-450-2288.

**Tektronix C-4** oscilloscope/spectrum analyzer camera, \$90. M Persons, WJYJ, 40 Front St, Brainerd MN 56401. 218-829-1326.

**WANT ACCURATE AM BANDWIDTH MEASUREMENTS THIS YEAR?**

The Shielded Loop Antenna

- SUPERIOR NOISE REJECTION
- CALIBRATED
- 20-40 DB NULL @ 90 deg

AM-FM FILTERS & LOOPS

**CHRIS SCOTT & ASSOCIATES**  
 BOWLING GREEN, KY  
 FAX: 502-781-1232  
 PH: 502-781-5301

**Want To Buy**

Wattmeter to measure 50-120 watts on AM band. J Robinson, KOMW, Box 151, Omak WA 98841. 509-826-0100.

**TRANSMITTERS**

**Want To Sell**

**Harris FM 1K** with MS-15 exciter, \$6800; Technical Material 25 kW 50 ohm, RF load, \$950. D Harry, POB 128, Los Gatos CA 95031. 916-624-3431.

**Collins 20V-3**, excellent condition, compl with spare parts, \$3500. J Sitzinger, 23800 Via Irana, Valencia CA 91355. 805-259-2011.

**Harris 3.5kW** FM xmtr, 7 yo, excellent condition, \$15,000. M Wodlinger, 813-262-1118.

**BE FX-30** FM solid state exciter, \$2995. Max, KCMJ, Box 551896, Dallas TX 75355. 800-891-006.

**Continental 802A** FM exciter; Harris/Gates FM-2.5H3 transmitter; Orban 8100A FM Optimod with 022 card; ERI LP-2 bay rototiller antenna; Belar FMM2 and FMS2 monitors. All in good to like new condition. Chris 816-628-5959.

**THE Purple Processor™**  
 Finally! A loud, clear and DYNAMIC FM processor without the grunge! We can prove it!  
 Call 1.800.732.7665 for a DEMO.

**1972 CCA 10 kW**, gd cond, \$10,000. M McNeil, Guardian Comm, 800 Compton Rd, Cincinnati OH 45231. 513-931-8080.

**Harris SX 5-A**, 1989, solid state 5k transmitter, excellent condition, tuned to 1410 khz. \$23,000/BO. G Richardson, WJLD-AM, 1449 Spaulding Ishkooda Rd, Birmingham AL 35211. 205-942-1776.

**Continental 317-C2**, 50,000 W AM, good condition, \$15,000 FOB Jacksonville; Gates FM-20 H3, 20,000 W FM, fair condition, \$10,000 FOB Jacksonville. P Christensen, Prism Broadcast, 3101 University S, Jacksonville FL 32216. 904-783-3711.

Used equipment for sale: Belar SCM-1, Belar RFA-1, Belar FMS-1, Belar FMM-1, Moseley MRC 1600 syst, TFT EBS receiver/generator, Genlner patch panel, and Harris racks. Call Transcom Corp 800-441-8454 or 215-884-0888.

**Want To Buy**

**QEI 675** FM exciters; QEI 675T150 amplifiers; QEI 675T300 amplifiers; QEI 675T500 amplifiers. Call Bob Brown 609-232-1625.

**McMartin AM/FM** xmtr, any model, exciter or stereo modules. Goodrich Ent., 11435 Manderson, Omaha NE 68164. 402-493-1886.

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**Want To Sell**

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 Approximately 1/2 the Cost of New

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10 kW FM 1968 RCA BTF 10D	
20 kW FM 1976 Harris FM20H/K	

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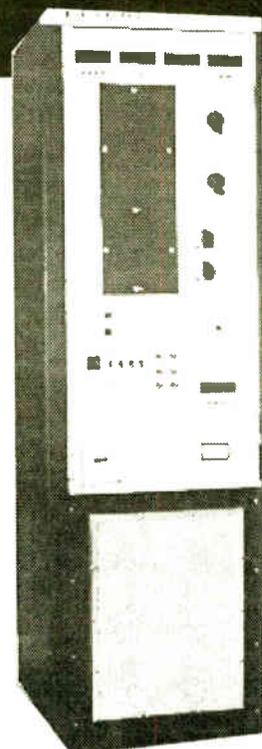
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**Energy-Onix**

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752 Warren Street, Hudson NY 12534

Circle (21) On Reader Service Card

TUBES..WTS

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Partial List: 6623, 23791, TH150, 6425F, 5604, 6696, 6697, 5681, 5682, 5671, 7804, 3CX10,000H3, 3CX20,000H3, 4CX5000A, 4CX35,000C

Worn out power tubes purchased

**Vacuum Tube Industries, Inc.**

1-800-528-5014  
508-584-4500 X75

Vacuum capacitors glass, variable & fixed, most sizes and voltages. L Entz, KGEI, 1406 Radio Rd, Redwood City CA 94065. 415-591-7374.

**Svetlana**  
ELECTRON DEVICES

**Quality Power Tubes**

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3CX15,000A3	4CX400A
3CX10,000H3	4CX350AC
3CX10,000A7	4CX350A/8321
3CX3000F7/8162	4CX250R/7580W
3CX3000A7	4CX250BT
3CX2500H3	4CX250BC/8957
3CX2500F3/8251	4CX250B/7203
3CX2500A3/8161	4X150A/7034
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4CX10,000D/8171	5CX1500A
4CX5000A/8170	YC130/9019
4CX3500A	8560AS
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4CX1600B	833A
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Western Electric 357A or 357B. 350A. 331A. 349A. P Patton. WWAM. POB 279. Jasper IN 37347-0279. 615-942-1700.

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CALL TODAY  
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FOR A FREE INFORMATION PACKET

TURNTABLES

Want To Sell

**Russco FMSB** preamps (4), \$25/ea; Technics SP-15 TT/Russco tonearm, \$175. J Maples. WMYU. 8419 Kingston Pike, Knoxville TN 37919. 615-693-1020.

**Technics SP-25** turntables (2), \$150/each; Audio-Technica ATP-12T tone arms (2), \$150/each; Stanton 680SL cartridges (2), \$30/each; ATI P-100 phono pre-amps (2), \$200/each; ATI P-1000 phono pre-amp, \$275. S Schweiger, WXLO, 250 Commercial St, Worcester MA 01608-1721. 508-752-1045.

**Technics SP-25** turntables (5), 3 with covered base, AudioTechnica tone arms, Audiometrics pre-amps, Best Offer. J Pierce, KMZQ, 702-595-5705.

**Technics SP-10 MK-II** turntables (2), no bases, tonearms or pre-amps, have power supplies, \$350/ea/Best Offer. T Ray, WTIC, 203-522-1080.

**Technics SP-15** with Micro-trak tonearm, \$200/BO, P Lenz, WWSW, One Allegheny Sq, Pittsburgh PA 15212. 412-323-5300.

**Technics SL-1800** (2), direct drive, working, \$50/ea. B Kennedy, EMC Prod, 300 York Ave, St Paul MN 55101. 612-771-1555.

*The advertising deadline for the April 5 issue of Radio World is March 10, 1994*

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This listing is provided for the convenience of our readers. Radio World assumes no liability for inaccuracy.

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ACTION-GRAM

EQUIPMENT LISTINGS

Radio World's Broadcast Equipment Exchange provides a FREE listing service for radio stations and recording studios only. All other end users will be charged. Simply send your listings to us, following the example below. Please indicate in which category you would like your listing to appear. Mail your listings to the address below. Thank you.

Please print and include all information:

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I would like to receive or continue receiving Radio World FREE each month.  
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Signature \_\_\_\_\_ Date \_\_\_\_\_

Please Circle only one entry for each category:

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C. Educational FM station	H. Consultant/ind engineer
E. Network/group owner	I. Mfg distributor or dealer
	J. Other _____

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A. Ownership	G. Sales manager
B. General management	E. News operations
C. Engineering	F. Other (specify) _____
D. Programming/production	

WTS  WTB  Category: \_\_\_\_\_

Make: \_\_\_\_\_ Model: \_\_\_\_\_

Brief Description: \_\_\_\_\_

Price: \_\_\_\_\_

\*Closing for listings is every other Friday for the next month's issue. All listings are run for 2 issues unless pressed for space or otherwise notified by listee.

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**Broadcast Equipment Exchange**

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**Radio World**

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City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_  
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Please circle only one entry for each category:

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E. Network/group owner	I. Mfg distributor or dealer
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005	027	049	071	093	115	137	159	181	203
006	028	050	072	094	116	138	160	182	204
007	029	051	073	095	117	139	161	183	205
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Affordable.  
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*The Sound Of Perfection*

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The AirMaster 90 has a TWO YEAR WARRANTY . . . after all, it has the highest possible reliability in the industry.

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*We DID.*

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before it's installed. Completed consoles are burned in prior to final test. Meticulous care is the key here, so you can expect the ultimate in reliability.

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**A SUCCESSFUL STATION BEGINS WITH R-60.**



**AUDIOARTS ENGINEERING**

7305 Performance Drive, Syracuse, New York 13212 (tel 315-452-5000 / fax 315-452-0160)