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 rest. Tchotchkes and giveaways  
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# Radio World®

The Newspaper for Radio Managers and Engineers

May 24, 2000

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## CCA Is Back From Bankruptcy

*New Owner Pumps Money, People Into Firm; Pledges to Honor Warranties, Repairs*

by Randy J. Stine

**FAIRBURN, Ga.** CCA has been reincarnated from bankruptcy. More than a year after filing for bankruptcy, CCA Electronics Inc. has a new owner.

It also has a new name — sort of. Commercial Communication Associates is the new owner. The sale was final March 24. The purchase price was not disclosed.

The new owners plan to use CCA as an acronym for their new company. Officials said a new CCA logo would be integrated into marketing material. Commercial Communication Associates purchased CCA Electronics from Summit National Bank, after the bank foreclosed on the transmitter maker in December of last year. That followed a Chapter 11 bankruptcy filing by CCA Electronics in

See CCA, page 5 ▶

## Delaware Hits the Road With New Traffic Station

by Randy J. Stine

**WILMINGTON, Del.** It is being hailed as a first of its kind — a state-owned, 500-watt AM station dedicated to traffic information.

Purchased by the Delaware Department of Transportation last year for \$280,000, WAMS(AM) in Wilmington, Del., has become a part of the state's Traveler Advisory Radio System, a division of DelDOT's Intelligent Traffic Management System.

The acquisition makes DelDOT the first state highway department in the country to have a radio station with power levels significantly higher than the typical travel systems, which serve a limited area. The station, with the new call letters WTMC, went on the air April 1.

Critics of the DelDOT project wonder if a state should be allowed to own a full-power radio station that could compete with commercial stations for listeners.

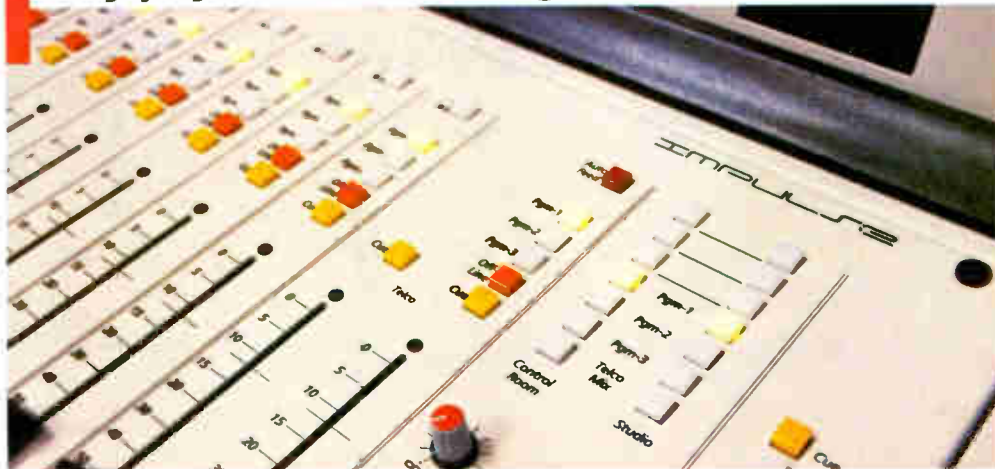
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# STUFF WINNERS

## In this issue!

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# NEWSWATCH

## Gentner Strong In First Q

**SALT LAKE CITY** Gentner Communications Corp. reported strong first-quarter profits and the company stock is now traded under a new listing on Nasdaq.

Gentner reported a net income of \$1.2 million, at 14 cents a share, on net sales of \$7.9 million for the first quarter of this year.

Gentner said the figures represent a 105-percent increase in net income and a 35-percent increase in net sales over the first quarter of 1999.

"With the introduction of Instant Access Conference Calling and an increased sales force, our Conferencing Services Division continues to perform at a robust pace," said Fran Flood, Gentner president and chief executive officer.

Costs associated with the division have been reduced due to lower long-distance rates and lower labor expenses.

Gentner's listing of common stock has moved from the Nasdaq Small Cap Market to the Nasdaq National Market and retains the symbol "GTNR."

Flood said the new listing generates added awareness and increased access to the financial community.

## EEO Forms Due June 2

**WASHINGTON** The FCC's new Equal Employment Opportunity rules have gone into effect.

All stations must file an Initial Election statement with the FCC. Stations with less than five full-time employees may file just the initial statement, but all others need to complete the entire form and indicate which of the two recruitment options they will choose. All forms are due to the FCC by June 2.

The FCC planned to mail a statement

form with an explanatory cover letter to all stations, but the forms are also available on the FCC's Web site at [www.fcc.gov/forms](http://www.fcc.gov/forms).

## \$2,000 Contest Fine for KJR

**WASHINGTON** The FCC has fined KJR-FM, Seattle, \$2,000 for violating commission rules governing how contest rules need to be disclosed to the public.

Last fall the station ran a contest called the "\$10,000 Music Challenge," in which a listener had to name 10 songs to win. Listener Debra Barto won the contest on Nov. 4.

But the contest rules stipulated listeners were only eligible to play once every 10 days.

After she won the \$10,000, the station disqualified Barto because she had played, and won \$95 for being the ninth caller, within the previous 10 days.

Barto complained to the FCC.

In the investigation, the station said the complete rules were on its Web site and at the station — not enough, according to the FCC.

In levying the fine, the commission said radio stations need to disclose complete contest rules on the air, not necessarily each time the contest is mentioned, but the rules need to be aired "in a reasonable number of announcements."

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## AUDITRONICS 4.0 NuStar

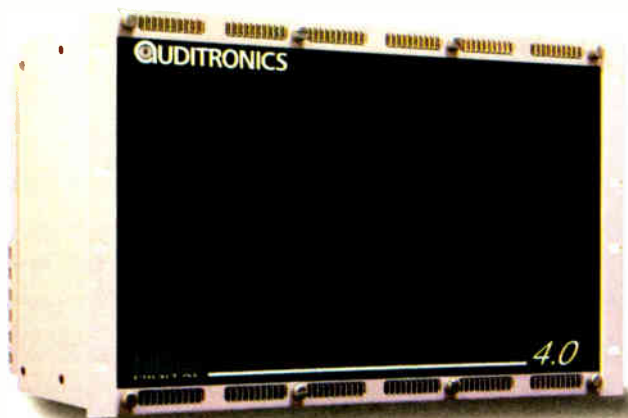
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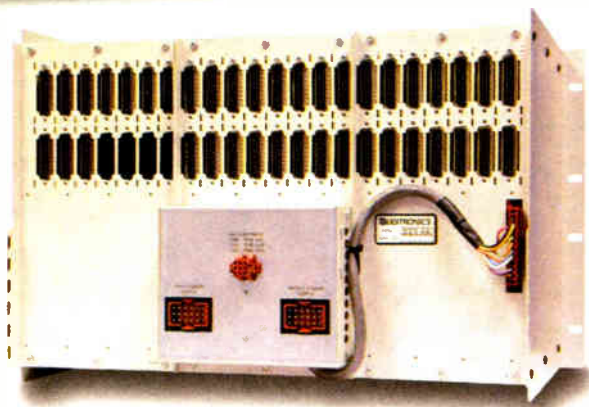
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**AUDITRONICS**





# Web Site Design for the Ear, Eye

by Mark Baechtel

**LAS VEGAS** Cyberspace is rife with empty-calorie eye candy; how can one be sure that the company's Web site is contributing to the health of the bottom line?

That was the question driving a session that offered a Web primer at NAB2000.

"If you listen, I think you'll find three to five ideas you'll be able to turn into tens of thousands of dollars of revenue over the next year," said moderator Don Baarns, president of Baarns Consulting.

## Keeping focus

Do not be distracted by the legions of stories of sudden dot-com wealth, said Baarns. He said broadcast Web site designers should look at their site as a long-term investment, a way of adding *oomph* to

what they're already doing well.

Although many of the references on the panel were to TV programming models, the lessons can be applied to radio as well, as Web managers begin to think of themselves as providers of video as well as audio content.

"TV shows are beginning to be affected by Web sites linked to them," Baarns said. "And in the future, the Web is going to be an additional source of star power. You need to start thinking, 'How do I take my talent and extend their reach by using the Web?'"

"And as you think of adding talent to your team, 'Web-savyness' is going to be an important consideration. Have they done their homework? Do they already have a Web site? How can they help me online?"

Baarns said the battle for intellectual property rights on the Web has already

been lost and it's time for broadcasters to face this and move on.

"Your property *will* be stolen on the Web. You no longer have 100-percent control of intellectual property. If you're smart, you can turn this to your advantage."

## Audio is as important as, if not more important than, video, in Web site design.

— Tom Marcoux

To buttress this point, he referred to the WB Network, the executives of which recently decided to support the burgeoning fan sites dedicated to its programming by making its proprietary content available to them, thereby winning buzz, goodwill and loyal eyeballs.

## Think visual

Educator and digital filmmaker Tom Marcoux of the West Coast Business Academy urged broadcast Web developers not to leave sound behind in favor of visuals when building their site.

"Audio is as important as, if not *more* important than, video, in Web site design," he said. "It's the fastest way to get to an emotion."

Marcoux said broadcasters need to think through the content on the Web site

as carefully as they would with any program they broadcast, and not to make too many demands on their viewers' computer systems.

"Television is the close-up medium," he said. "You have to remember that the video image your site's visitor is looking at is probably the size of a postage stamp. You have to configure things to run well on the lowest-quality systems out there."

Partners Gary Ream and Janice Norton

of the H.O.T. Network echoed this bit of advice in their presentation on the uses that can be made of Dynamic HTML (DHTML) and JavaScript in Web site design.

"One of the biggest mistakes Web site designers make is that they try to impress their management rather than thinking of their end-users. Lots of people out there are using low-end equipment and low-bandwidth connections to the Net," Norton said.

"You need to be thinking of ways you can make the loading of your page faster."

Panelists at the session included Greg Faciane of Digital Media Design, Lynn Macias of Silicon Valley PR and Michael Terpin, CEO of InternetWire.

© NAB2000

## Scala Name Changes To Reflect Kathrein Deal

by Randy J. Stine

**MEDFORD, Ore.** Antenna manufacturer Scala is a familiar name to many in broadcasting. Now Scala Electronic Corp. has a new name — Kathrein Inc., Scala Division.

The antenna and filter manufacturing companies announced the name change in January, and exhibited under that banner at the NAB2000 convention.

The Scala division produces antennas for FM, TV and stations using the Eureka-147 DAB system.

The two companies are not new to each other. The Kathrein Group and Scala developed a business relationship in 1985, when Scala began distributing Kathrein cellular antenna products.

customers would see no change in service because of the switch. The companies' network of distributors will remain intact.

"(Distributors) handle mostly the low-power market for us. The vast majority of larger products are direct sales," Muenzel said.



The broadcast antenna business makes up about 10 percent of Scala's business, Muenzel said. The majority of the division's sales come from antennas for wireless communications networks, including cellular, Personal Communications Systems, Personal

## Muenzel said the new division would be better positioned to compete worldwide.

Manfred Muenzel, president, Scala Division, said Scala agreed to be acquired by the Kathrein Group in 1988. The purchase agreement covered 10 years, culminating with the sale closing in 1998. No purchase price was announced.

"Kathrein is a much larger company than Scala, so from a technology and R&D point of view they had a lot more horsepower," Muenzel said. "We are living in a world of mega-mergers, so our markets have changed. We deal with fewer but larger customers and it helps to have a global presence."

Muenzel said the new division would be better positioned to compete worldwide. "(Scala Division) sells mostly in North and South America, whereas Kathrein is dominant in the rest of the world."

Scala Division officials said their

Communications Networks and satellite terminals for commercial and residential applications.

Bruno Zucconi founded Scala Electronic Corp. in 1954. It originally produced audio amplifiers.

The Scala Division currently has 130 employees at its Medford, Ore., facility.

Scala's sister company, Kathrein-Werke KG, was founded in 1919 and is headquartered in Rosenheim, Germany. It also produces antennas for broadcast and wireless communications.

The Kathrein Group includes more than 50 companies in Europe, Asia, Africa and North America with more than 3,000 employees. It claims to be the world's largest manufacturer of antennas. Muenzel said that assertion is based on sales, revenues and the number of antennas in use worldwide.

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# Two Dozen Really Cool Things

This issue is dedicated to new products shown at the recent NAB2000 show.

And in these pages, we proudly present the winners of our 2000 "Cool Stuff" Award.

These exceptional products are featured in boxes throughout the issue, identified by the "Cool Stuff" logo.



What does this prestigious recognition mean? Here is part of my cover letter, sent to each winner along with his or her trophy:

"Congratulations! You are the winner of a 2000 'Cool Stuff' Award from

Radio World, the newspaper for radio managers and engineers.

"Only 24 winners were chosen for 'Cool Stuff' Awards at the NAB2000 convention in Las Vegas, from among more than 250 radio and audio exhibitors, and many hundreds, if not thousands, of new products.

"The 'Cool Stuff' is a significant accomplishment. It means your product was selected by our panel of eight veteran broadcast engineers, three industry journalists and a production/voiceover expert as notable for its design, features, cost efficiency and performance in serving radio users.

"It also means your product caused our judges to stop in the aisles and say, 'Oh, cool!'

"You may use the 'Cool Stuff' logo in your advertising and marketing through NAB2001. Thank you for your service to the radio industry, and again, congratulations."

★ ★ ★

I meant it, too. These are remarkable products, chosen by a remarkable panel.

Our dozen judges are anonymous, to prevent undue pressure from any supplier. This year's group was the most experienced of any in my time at RW.

They have a combined background of

250 years in radio and electronics. The judges include commercial and public radio engineers, directors of engineering, major-market chiefs, station and contract engineers.

The panel also included people with working knowledge of radio news, voiceovers, audio production, even live sound, TV and film. Most are SBE members with various levels of certification. A couple are published authors; several are in demand as speakers and panelists at industry conventions.

All judges walked the floor and visited booths. Their selections reflect that.

The winners include transmitters, field recorders, on-air and audio processors, test and monitoring gear, tower accessories, consoles, a CD collection, a microphone, a codec.

The judges saw the trends in IP control, in USB ports, in RF technology. Their choices in my view were wise ones.

Did I agree with every choice? Nope. I liked some products that didn't win and said so. But this was a tough group, people who really know their stuff. The weight of their expertise is apparent.

I will pit these judges and this winning list against any in the industry. Guys, I'm proud of you. You know who you are; please accept my thanks for helping to make the "Cool Stuff" Awards the best and most respected in radio.

★ ★ ★

Minneapolis-area readers will want to visit an exhibit on the 1939 New York World's Fair at the Pavek Museum of Broadcasting. But go this week; it ends June 3.

I love reading about the World's Fair. My parents attended as children, separately — my mother was five, my dad was 11 — and I like to speculate that they were there on the same day, years before they

were to meet.

This was the show of the Trylon and Perisphere, the "World of Tomorrow" and the public display by RCA of its television system.

But it was also the height of radio's golden era, when hotels promoted rooms "each equipped with a cabinet radio," and visitors to the NBC tour at Rockefeller Center went home talking not about TV shows but about the many radio studios they had seen.

The exhibit contains nearly 1,000 pieces of memorabilia from the fair, lent to the museum by Don Jamros, a Twin Cities collector.

Highlights include an RCA Victor table radio, a uniformed "tour guide," View-Master, souvenir matchbooks, pennants and World's Fair salt and pepper shakers in the shape of the Trylon and Perisphere.

The Pavek was kind enough to send me a copy of a videotape showing many

## From the Editor



**Paul J. McLane**

of the items, including wonderful photos of New York City itself in 1939.

The museum draws almost 10,000 people each year. Go even if you miss this exhibit. It is just west of downtown Minneapolis, open Tuesdays through Saturdays. The admission price is \$5, and \$3 for kids and seniors.

Visit [www.museumofbroadcasting.org](http://www.museumofbroadcasting.org) or call (952) 926-8198.



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# New Owners Pump Cash Into CCA

► CCA, continued from page 1  
October 1998.

"We are very excited about our prospects of turning this company around," said Scott Benton, president of the new CCA. "This new investment group has cash on hand to get (CCA's) development program and production systems back on track."

Benton, 37, said Alvar St. Alban, owner of Levin Research in Great Britain, heads up the new ownership group.

Levin Research is a radio and TV station design and installation company.

The investment group has \$1.4 million cash on hand to start the company, Benton said.

Benton said the week after taking over operations, CCA took orders for \$900,000. Most of the business came from overseas, including several large orders from African nations for FM high-power jamming transmitters and 50 kW AM transmitters.

"A promising start, but we still have a lot of work to do to rebuild this company's reputation," Benton said.

Benton was operations manager for CCA Electronics from 1985 to 1997. He described his last few years with CCA as "chaotic."

Ron Baker, CCA Electronics' former owner, is no longer with the company. Baker bought the company when it was bankrupt in 1982. His attorney, Frank Scroggins, declined comment.

## Benton with Turner

"I finally threw up my hands and walked out," Benton said. He recently worked as a logistics manager for Turner Broadcasting Corp. in Atlanta, installing editing and production facilities.

Benton said he and a friend originally approached Summit National in January with thoughts of buying CCA Electronics' leftover inventory and parts.

Then Benton contacted St. Alban. "He convinced me he was serious about buying (CCA) and had the financial

resources to do it. From that point on, we felt there was still a business that could be salvaged," Benton said.

Benton has added 11 employees since taking over. All had previously worked for CCA Electronics. The new company has 15 employees at its 25,000-square-foot manufacturing facility in Fairburn.

## The ones who got away

"These are great engineers, production people and customer service reps that had gotten away before. The old CCA went through so many employees. My goal is to alleviate the ups and downs of the business cycle, enabling us to hang onto good employees," Benton said.

warranties for CCA Electronics transmitters, Benton said. "We will also continue servicing and selling parts for all CCA, Sintronic and CSI transmitters."

Benton has high expectations for his new company. His projections are for gross sales of \$5 million to \$10 million next year and more than \$10 million in 2002.

"We have a plan that will let us do that. And we also plan to branch off into other product lines that would complement the radio industry," Benton said.

When CCA Electronics filed for Chapter 11 bankruptcy Oct. 26, 1998, in Georgia, company officials estimated company assets to be worth just over \$1.1



Scott Benton

**We are very excited about our prospects of turning this company around.**

— Scott Benton

CCA continues to sell the FM-G line of two-tube FM transmitters, GS single-tube solid-state FM transmitters, AM transmitters and shortwave transmitter lines.

Benton said development work is underway on a new 1 kW solid-state FM transmitter. "Only front-panel design remains to be done. Full-run production should happen by midsummer."

CCA also hopes to market several new transmitters to the proposed low-power FM market in the United States. Benton said, "The company is currently working on a single-tube low-power line of transmitters in 19-inch racks."

Benton predicted CCA's new LPFM gear would be on the market in four to six months.

The new CCA will honor existing war-

million while liabilities totaled nearly \$2.5 million.

Summit National Bank was listed as the principle lender and the only secured creditor in court documents. CCA owed

Summit Bank more than \$326,000.

One hundred and fifty-five unsecured creditors were listed in CCA's filing, including Radio World.

In September 1999, a bankruptcy court in Atlanta dismissed CCA Electronics from its Chapter 11 bankruptcy claim. The move stripped CCA of any court protection, allowing Summit National to begin foreclosure proceedings.

Benton said Summit National repossessed CCA Electronics in December 1999.

Summit National Bank Vice President Ling Chang declined to comment on whether proceeds from the sale were enough to cover the bank's claims against CCA.

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## Comrex Matrix POTS, ISDN And Wireless Codec

This innovator keeps ratcheting up the codec war.

Described by one person at Comrex as "a Vector with an attitude," the Matrix can send high-quality audio over plain ol' phone service, ISDN or wireless.

The base unit provides 15 kHz duplex audio on a single POTS line and is compatible with the Vector and HotLine. Store-and-forward lets you send 15 kHz cuts in non-real time, handy when the line can't keep the data rate up.

Optional modules provide ISDN and GSM wireless functions; the modular design will make future upgrades easier. And it looks cool, too.

A judge: "Everything telco in one box for the remote broadcaster."

Lynn Distler and John Andrews enjoy their award.

Price: \$3,700 for base unit; \$800 for ISDN module; \$500 for GMS module.

Availability: September.

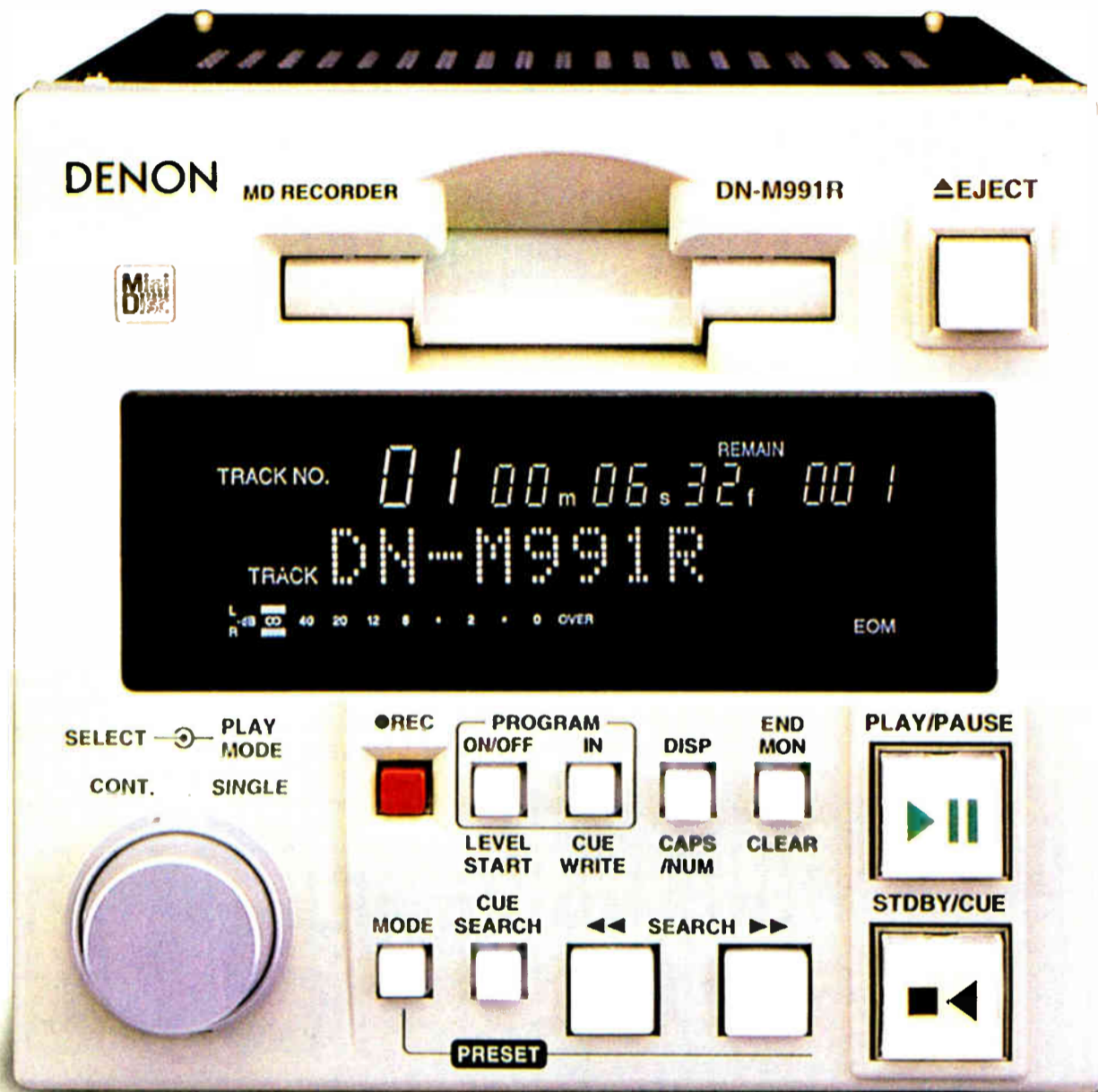
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Let's face it, tape carts have become the broadcast equivalent to dinosaurs and are headed to extinction. With the advent of MiniDisc, why would anyone still rely on an outdated tape cart that, at best, is undependable and offers limited functionality? Good question.

The highly acclaimed Denon DN-M991R MiniDisc Recorder and Player is the logical solution. It packages all the features, performance and reliability that has already established the DN-M991R as the industry leader.

And now, the DN-M991R offers an optional firmware update specifically designed for the broadcast market that promises to expedite the timely demise of the old tape cart machine. Specify DN-M991RM when ordering. For additional information, contact our broadcast specialist at (973) 396-7492.

**NEW Airlock:** This new feature prevents on-air talent from tampering with recorded material even if the protection tab on the disc is left enabled. Now program directors and engineers can program the DN-M991R to function as a 'playback only' device.

**NEW Visual EOM:** Broadcasters can store secondary cue information such as vendor names or cue points. The secondary cue is stored as part of the track name in brackets. When playback reaches the designated End of Message (EOM) point, the secondary information will display and flash, signaling that the track is about to end.

**NEW Five Minute Skip Search:** This new function allows the user to jump through long tracks in five minute increments and is particularly useful for news gathering and interview applications.

**NEW Display Improvements:** Characters scroll to the left at a rate of ten characters per second—two times faster than standard—for quicker recognition of disc or track titles. Two other rescroll improvements have also been incorporated to further improve the DN-M991R's versatility.



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◆ NEWSWATCH ◆

▶ NEWSWATCH, continued from page 2

### RF Safety Deadline Soon

**WASHINGTON** Stations must comply with FCC safety limits for human exposure to radio frequency emissions by Sept. 1. Stations that do not comply with the applicable provisions of Part I of the FCC's rules must have an environmental assessment prepared and filed with the FCC. For antennas located on fixed structures, the responsibility for filing the environmental evaluation lies with the licensee, not the tower owner.

### Bliley to Exit

**WASHINGTON** House Commerce Committee Chairman Thomas Bliley, R-Va., has decided to retire when his term ends in November. Bliley is credited with helping to shepherd passage of the Telecommunications Act of 1996.

"For nearly 20 years, Chair Tom Bliley has served both his constituents and Americans with distinction," said NAB President/CEO Eddie Fritts.

Control of the committee could go to Republican successors Billy Tauzin, La., or Mike Oxley, Ohio. If the Democrats regain control of the House, previous chair John Dingell, Mich., the ranking Democrat on the committee, would regain the chairmanship, said observers.

### 180 Days to Review Mergers

**WASHINGTON** The FCC has proposed reviewing mergers within 180 days. FCC General Counsel Chris Wright said merger applicants often cause delays in the process by giving the FCC incomplete information or making major changes to a deal during the review process.

An internal merger review team has been working to streamline the commission's merger review process and make it more predictable, after Congress and FCC Chairman Bill Kennard called for action.

### Daley: Don't Restrict FCC

**WASHINGTON** Commerce Secretary Bill Daley opposes pending legislation that would restrict the FCC's authority to review mergers of telecom companies, including radio and TV companies.

Several bills seek to limit the FCC's role in approving mergers, either by limiting the amount of time the commission has to approve a merger or by limiting the FCC's authority to impose conditions on merger approvals.

"While both the Justice Department and the FTC conduct merger reviews, they do not vitiate the need for independent commission review, which is broader and done in the public view," Daley wrote in a letter to members of committees that govern telecommunications.

Daley said merger reviews should be completed quickly with predictable standards. The commission is conducting a review of its processes, he said.



### Audemat by Auditem MC3 Monitoring & Measuring System

"It's the first significant RF analysis tool since the FIM-71," one judge wrote.

The MC-3 lets you take field-strength measurements as you drive, monitoring up to 99 stations. It includes a precision mod monitor.

Bonneville International recently conducted more than 300 measurements on 17 stations in Washington in less than four hours — a total of 5,100 field-strength readings.

Onboard GPS and mapping are useful for measuring your station, the competition or the one the boss is thinking of buying.

"It's the most comprehensive RF measurement tool I've ever seen," one judge wrote.

Another: "Even without the audio parameters, the system is the clear next-generation standard-bearer for real-world RF pattern measurement. But at the price, only a select few groups or consultants can afford the system."

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# Traffic From the State

► DELAWARE, continued from page 1

DeIDOT officials contend they plan to supplement traffic services offered by commercial stations, not replace them.

"We are not in the radio business to drag listeners away from any other station," said Gene Donaldson, coordinator of DeIDOT's Intelligent Transportation System. "Our goal is to provide real-time traffic information, both highway and transit, on a minute-by-minute basis to commuters."

WTMC's inception coincided with the start of a major construction project on Interstate 95 southbound, from Wilmington to Philadelphia. The same segment of I-95, northbound, is set to close in July.

## Low-power traffic

Donaldson said WTMC would allow DeIDOT to replace some of the eight 10-watt AM transmitters the state was using to broadcast traffic information, saving the state money.

"The low-power system is a very old system that eats up money for maintenance and covers very small areas ... about a two-mile radius. Each system had to be updated individually by telephone or computer," Donaldson said.

Compare that to WTMC's signal strength, which stretches from central Delaware almost to Philadelphia (about 25 miles) and includes all of populous New Castle County.

Donaldson said he is excited about the opportunity to reach more commuters.

Donaldson said the price was right, too. DeIDOT spent \$50,000 on equipment upgrades for WTMC, which included a new transmitter. No additional employees were needed and WTMC's yearly operating budget is \$25,000. Most of that goes toward maintenance.

WTMC's 24-hour, commercial-free programming includes continuous highway traffic and road construction news, public service information and weather updates during times of severe weather. School closing information may also be included.

However, WTMC will not sound like a commercial radio station.

"We do not employ professional announcers," Donaldson said. Instead, traffic technicians working in DeIDOT's Traffic Management Center near Delaware City, from which WTMC gets its name, will record traffic updates.

Telecommunications consultant Lee Afflerbach, president and CE of Columbia Telecommunications Corp., worked closely with DeIDOT officials in finding a suitable radio station for the project.

Once the deal was made, Afflerbach performed most of the engineering work to put WTMC on the air. First he installed a new transmitter for the station. Afflerbach purchased what he called "a customized 1 kW transmitter" from Omnitronix Inc.

"We needed a dual transmitter, fully



Robin Bryson is the Trafficwatch coordinator for WDEL/WSTW, Wilmington, Del.

redundant in a single cabinet, that operated between 500 W and 50 W of output. (Omnitronix) built a special combiner for it," Afflerbach said.

WTMC is a licensed 500-watt AM daytimer with pre-sunrise and post-sunset nighttime authorization, Afflerbach said. The station broadcasts at 50 watts at night.

Afflerbach built a small production studio in the DeIDOT traffic management center for staffers to record updates.

DeIDOT is using BSI's WaveStation digital automation system. Cool Edit software is used to edit the reports.

"(The studio) is nothing too fancy. We needed to keep it as simple and as streamlined as possible, knowing that the traffic center people are not professional radio people," Afflerbach said.

The audio chain follows an ISDN line from the traffic management center to the transmitter and antenna, which are located in Wilmington. DeIDOT is leasing tower space from WILM(AM).

Afflerbach said DeIDOT is considering increasing the station's broadcast power to reach even further.

"I would imagine we'll make a decision on that sometime this year."

Several Wilmington-area radio stations, including WILM, already provide traffic information on a regular basis.

"It is a major component of our news," said E.B. Hawkins, chief executive officer of Delaware Broadcasting Co., which



Gene Donaldson

"We've always had a very good relationship with DeIDOT. Certainly they are a big part of our coverage," Booker said.

"It won't be like DeIDOT holding back information from us so that they can have the scoop on a traffic backup for their radio station."

Still, Booker has some uneasiness about the new competition.

"It's not totally alarming to have to compete against the state. If it's a trend that continues, maybe then we'll have to look more closely at the competitive impact," Booker said.

Booker compares DeIDOT's WTMC to the National Oceanic & Atmospheric Administration's Weather Radio.

"There are weather junkies out there who listen all the time, maybe so with traffic. You could have a few traffic junkies," he said. "But how much of this stuff can you stand? We have everything else in addition to traffic every 10 minutes."

This is not Donaldson's first attempt to create a traffic information system using a commercial radio station. Both he and Afflerbach tried to convince Maryland officials to purchase a radio station in Montgomery County in 1996.

At the time, the Maryland Department of Fiscal Services refused to give Montgomery County \$300,000 in state funds for the purchase of WINX(AM), Rockville, Md.

"The timing wasn't right on that and it became very political. The state of Delaware has taken a very progressive stance on serving our customers, who are the travelers, and allowing them to make educated travel plans," Donaldson said.

DeIDOT officials do not rule out the possibility of adding additional full-power radio stations to its Traveler Advisory Radio System.

"We're exploring other options at this point that would provide us better coverage over the southern half of (Delaware). We look at every opportunity that will allow us to better manage our traffic systems," Donaldson said.

Donaldson and Afflerbach think WTMC could serve as a role model for other state departments of transportation looking for ways to serve travelers.

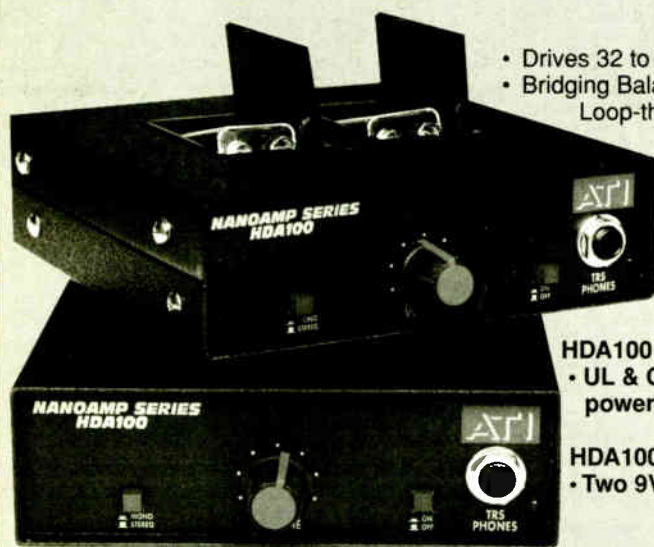
"I think we will change the way these Traveler Advisory Radio Systems are viewed. I think eventually you'll see the move away from the low-power systems," Donaldson said.

WTMC, formerly WAMS, signed on in 1948 and rode the wave of AM's popularity with a top-40 format during the 1960s and 1970s. The station was dark from 1993 until 1998.

Joe Farley Sr. owned it since 1977. Most recently, prior to DeIDOT taking over the frequency, the station was broadcasting a preprogrammed classical format.

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# RADIO GEAR ROUNDUP

NAB2000 featured hundreds, if not thousands, of new products for radio, as well as TV, pro audio and computer professionals.

There simply is no way one visitor could take it all in.

So we sent out two dozen of our editors and contributors to walk the floor for you. Here is a sampling of the most interesting new gear and services of interest to RW readers. We've also provided contact information so you can contact these suppliers or visit their Web sites. Throughout this issue you will also find special boxes describing the 24 winners of our coveted "Cool Stuff" award.

Suppliers: did your new product information not reach us in time for this issue? Tell our readers about it in a future issue. Contact Paul McLane via e-mail to [radioworld@imaspub.com](mailto:radioworld@imaspub.com) for information.

The following RW staff and contributors compiled the information in this section: Paul McLane, Sharon Rae Pettigrew, Leslie Stimson, Bernie Cox, Laura Dely, Paul Cogan, T. Carter Ross, Chris Joaquim, Linda Sultan, Harold Hallikainen, W.C. Alexander, Mario Hieb, Paul Kaminski, Rick Kemp, Ken R., Michael LeClair, Ted Nahil, Tom Osenkowsky and Bruce Rogow.



## Aztec Radiomedia IP2port System

It provides remote management and control via TCP/IP networking, suitable



for radio transmission site supervision, security and other uses.

Comprehensive data interfaces and a powerful IP2 operating system mean you don't need a dedicated

computer at the other end.

Determine status and send commands using Web browsers, telnet and SNMP; receive automatically generated e-mail event and alarm notices; configure, update and synchronize using FTP; provide users with real-time status info. Devices are connected via eight serial interface ports, eight output relays and 16 logic inputs.

Judge: "It's got a Web server built into the remote control unit. Look, Ma,

no PC at the transmitter site!"  
 Price: \$2,400. Available: June.  
 Contact Aztec Radiomedia America at (703) 875-9100 or send e-mail to [america@aztec-radiomedia.com](mailto:america@aztec-radiomedia.com)

## Next Generation of Cards by Digigram

Digigram showed updates to its soundcards. The PCX924 replaces the PCX9 and PCX11 models and retails for \$1,665. It is a full-duplex PCI-bus stereo card with balanced analog with 24-bit A/D chips and AES/EBU or S/PDIF I/Os.



The company also showed the PCX22 playback-only soundcard, which lists for \$750. With 24-bit converters, it has balanced analog AES/EBU and S/PDIF outputs, external AES/EBU synchronization input and a headphone jack.

Digigram showed updates to the VXpocket, the VXpocket 440 and the VXpocket v2. The 440 features four balanced analog I/O at mic or line level. It runs in three modes: full duplex with two I/O; half-duplex record with four in and no out with monitoring via a loop-through; and half-duplex play with four out and no ins. It retails for \$1,069.

The v2 has two balanced analog I/Os and lists for \$729. It now has time code input for video sync in the field.

For more information contact the company in Virginia at (703) 875-9100 or visit the Web site at [www.digigram.com](http://www.digigram.com)

## BuySellBid.com Rollout

At NAB2000, BuySellBid.com promoted its \$9 million national marketing campaign on Clear Channel radio station Web sites. Clear Channel is an equity partner of BuySellBid.com.

Orlando, Fla., was the first market to start the co-branded, multimedia classifieds. Six Clear Channel stations there launched BuySellBid.com on their Web sites in March.

Houston was next and was to be followed by

Jacksonville, Portland, Miami, Ft. Myers, Tampa, Richmond, San Diego, Memphis, Los Angeles, New Orleans, Salt Lake City and Cincinnati in the next few months. In the next year, 47 markets will be included.

The campaign will be supported by a radio and billboard ad program that will invite listeners to place free classifieds and explore the BuySellBid.com network of 3 million online classified listings.

For information contact the company in Washington state at (800) 320-7870 or visit [www.buysellbid.com](http://www.buysellbid.com)

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### It's a Plane ... No, It's a Bird

There is a new bird in the sky. Public Radio Satellite Systems, managed by NPR, announced the launch of Galaxy IVR, which went up April 18.



The new PanAmSat satellite will replace Galaxy XI in mid-June.

For more information contact PRSS in Washington, DC at (202) 414-2675, or visit the

Web site at [www.prss.org](http://www.prss.org)

### Superior Offers 2.5 to 10 kW FMs

Superior Broadcast Products introduced several models of single-tube FM transmitters, the KAFM-2500, KAFM-5500 and KAFM-10000, providing power outputs of 2.5, 5.5 and 10 kW respectively.

All three KAFM transmitters come complete with solid-state exciter and IPA amplifier and operate from single-phase 220-volt power. The KAFM-5500 and KAFM-10000 utilize the Eimac YC 148 tube.

For more information call Superior in Dallas at (972) 473-2577 or visit [www.superiorbroadcast.com](http://www.superiorbroadcast.com)

### Digi001 Now Available For Win98

Digidesign showed ProTools LE software for the Digi001 system.

The rack-mounted interface for the system has eight analog I/Os, two mic preamps, S/PDIF I/O and ADAT optical. The Digi001 system, designed for broadcast applications, lists for \$995.

Digidesign also showed the host-based version of ProTools 5.0.1, which will be available for both Mac OS and Windows 98.

Creation of MP3 files directly from 5.0.1 on both OS will be available soon as an optional plug-in for \$19.95 from the Digidesign Web site.

For more information contact the company in California at (650) 842-7900 or check out the company Internet Web sites at [www.digidesign.com](http://www.digidesign.com) or [www.digi001.com](http://www.digi001.com)

### Pristine Improves RapidFire

Pristine's RapidFire automation system has improved editing and selection capabilities.

Built-in music scheduling features more than 26 categories and users can define criteria by daypart, gender, artist, title or segue rules.

Other RapidFire features include the ability to generate clocks by the hour, if necessary, and 26 pre-defined weekly formats that point to daily formats to fine-tune the scheduling process.

RapidFire is compatible with third-party traffic systems and includes reconciliation of aired events as a standard feature.

Centralized storage is located on NT servers using RAID-5 and client workstations run Microsoft's NWClient for IPX for control and access.

For information from Pristine, contact the company at (301) 670-7500 or visit the Web site at [www.pristinesys.com](http://www.pristinesys.com)

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### CTE International Produces Exciter

CTE International of Italy introduced the VL32 Plus FM exciter, available in 50-, 100- or 250-watt power levels.

It is frequency agile and digitally synthesized. It is modem-controllable (RS232/RS485), comes with CTE management and modulation measurement software, and meets FCC

and CCIR specifications.

CTE's Mike Panzica said, "The VL32 Plus is made to work with CTE's VL1000+ amplifier or in other transmitters. CTE has amplifiers available up to 3 kW."

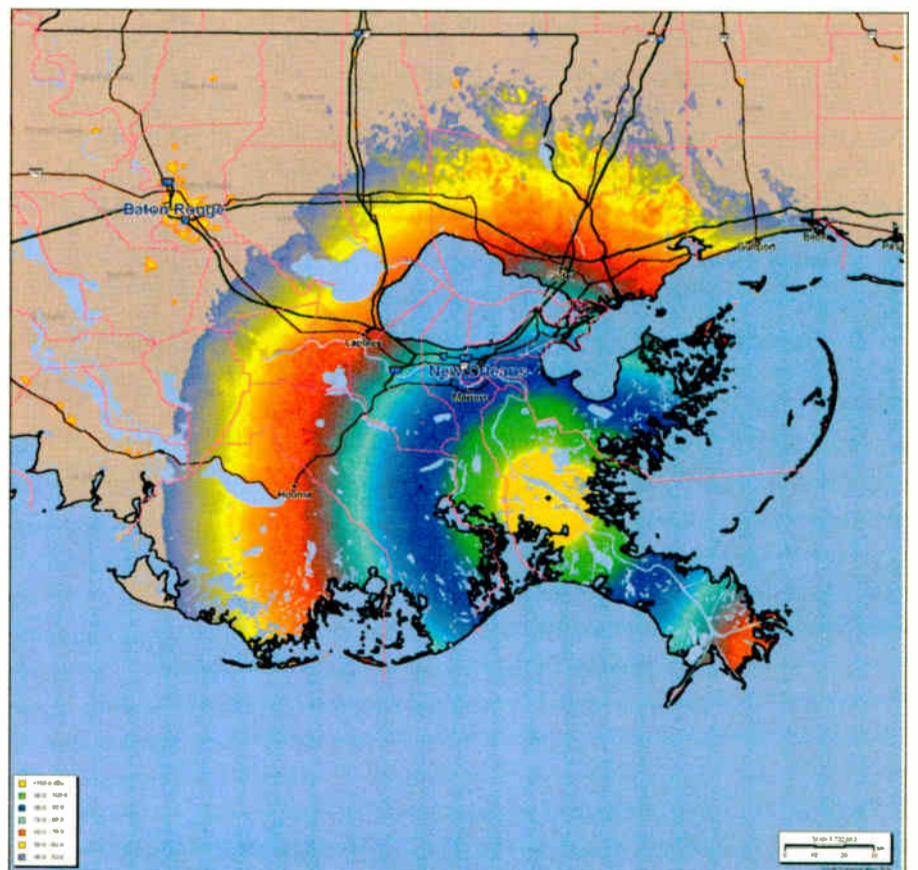
Contact CTE in Italy at +39 522 509450 or send e-mail to [broad.com@cte.it](mailto:broad.com@cte.it)

### V-Soft Probes the Limits

V-Soft Communications introduced the latest in its radio prediction software line, Probe II.

The company said the program produces stunning, atlas-like coverage maps

Several propagation algorithms have been added to its complement of Longley-Rice, TIREM and FCC for studying FM and TV coverage and interference. Probe II integrates 250 MB of U.S. census data with land cover and terrain elevation databases



in several graphic file formats as well as printouts. Probe II now zooms in to show street-level propagation, complete with street names and adjustable high-way signs and other graphics.

to produce complete propagation analysis for broadcast applications.

For more information call the company in Iowa at (800) 743-3684 or visit the Web site at [www.V-SOFT.COM](http://www.V-SOFT.COM)



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Telos Systems, the Telos logo, TWOx12 and Status Symbols are trademarks of TLS Corp.



### RDA Systems Expands Offerings

Recent enhancements to RDA Systems Inc. have positioned the systems integrator to better serve radio, television and cable customers.

"Projects we have recently completed have made a clear statement that we are able to handle the largest and most complex projects in the industry," said President and CEO Rick Dearborn. In anticipation of continued growth we have taken several expansive steps this year."

# RDA Systems

RDA expanded its facilities by more than 15,000 square feet, giving it more room for systems projects. RDA can have multiple rack rooms and studios in engaged in its Pre-Completion process at any given time. RDA Systems has also achieved factory-qualified status by several manufacturers, including Klotz Digital, Wheatstone and StudioHub.

And the company has launched SystemsStore.com at

[www.systemsstore.com](http://www.systemsstore.com), a business-to-business electronic retailer that offers more than 2,000 products and a community area for users to engage in conversations, ask questions or post used equipment for sale.

SystemsStore.com also highlighted the SurgeX range of power protection products.

For more information contact the company in Missouri at (888) 616-7980 or visit the company Web sites at [www.rdasystems.com](http://www.rdasystems.com) or [www.systemsstore.com](http://www.systemsstore.com)

### Connector Connection

Switchcraft was at NAB with new ways to terminate wires.

The AAA Series Q-G twist connector comes with a twist-on combination handle/strain relief and only two pieces to assemble. It is available with three to seven pins, gold- or silver-plated pins and nickel or black finishes.

Another new product is the Professional Punchdown Terminal. It incorporates a split-barrel design and a more rugged, thicker housing to minimize the impact of repeated punchdowns. Look for the PPT in Switchcraft's APP and front-access series and new back-panel series.

For more information contact Switchcraft in Illinois at (773) 972-2700, or visit the Web site at [www.switchcraft.com](http://www.switchcraft.com)



### Microboard's New Duplication Station

Microboards Technology introduced the StartRec ST-200, ST-300 and ST-400 19-inch stand-alone CD audio recorder, duplicator and track editor.

Up to four 8x CD recorders are supported for simultaneous disc burning. The ST-200 with two drives lists at \$3,195.

Editing functions allow the user to move, divide, combine or delete audio tracks, add or erase any index or sub index and create track fade-in or fade out.

Other features include a 6.4 GB hard drive and intuitive control surface. The audio signal can be +4 XLR, -10 RCA or optical digital S/PDIF or AES/EBU.

For more information contact the company in Minnesota at (800) 646-8881, or on the Web at [www.microboards.com](http://www.microboards.com)



### Autogram Digital Upgrade

Autogram offers a Digital Audio Upgrade System for its Pacemaker IIk consoles PM-218 and PM-228.

The option costs \$4,995 and provides six AES/EBU or S/PDIF stereo inputs, two AES/EBU or S/PDIF outputs, 24-bit, 96-kHz crystal semiconductor transceivers, SHARC processors, automatic SRC on inputs and various clocking options.

For information contact the company in Texas at (972) 424-8585 or visit [www.autogramcorp.com](http://www.autogramcorp.com)

### Dawn Catalog in 3-D

Dawn Satellite introduced a new Web site featuring a 3-D product display feature.



"A user could see detailed specs or a 3-D movie so that they can see a product all the way around," said John Joslin, marketing manager. "Now you can really hold the thing and see it." 3-D glasses are not required.

Contact Dawn in Michigan at (248) 391-9200, or visit the Web at [www.dawnsat.com](http://www.dawnsat.com)

### Wicks: CBSI + Datacount

The acquisition of CBSI and Datacount by Wicks Broadcast Solutions means improved customer service and technical support and a depth of product offerings, according to Wes Lockhard, director of development for WBS.

Delta Flex 3.1 is new for CBSI and now includes Revenue Max, a module that helps protect contracts in a traffic schedule, as well improvements that allow fine tuning of spot breaks.

Darts 7.23 is the latest version of Datacount traffic software, with powerful management reports for accounts receivables. D32, a 32-bit system from Datacount, will be available soon and will run on 32-bit platforms like Windows NT.

As a result of the consolidation, WBS offers two new products: Minder and Data Warehousing.

Minder is available now for Darts users and will be available in May for CBSI users. It hooks into the traffic system to create a rate card based on history, past performance and budgets.

Data Warehousing, coming for both Darts and CBSI, will allow centralized storage of all multistation records.

For information from Wicks Broadcast Solutions, contact the company in Alabama at (800) 547-3930 or (334)749-5641, or visit the Web sites at [www.cbsi.org](http://www.cbsi.org) or [www.datacount.com](http://www.datacount.com)

### ERI Adds to Product Line

New from Electronics Research Inc. are several products for the far end of the transmission chain.

The MPX Series of medium-power FM rototiller, sidemount antennas, according to Max Brown, ERI western regional and international sales manager, "is designed to fill the gap between our LPX low-power antenna and SHPX super high-power model. The MPX will handle 12 kW in a single-bay configuration and 18 kW per bay in a multibay configuration."

Also new from ERI was the Type 960-4 bandpass filter with non-adjacent coupling.

The 960-4 filters out close-channel interference as a standalone unit, or it may be used in an 800 kHz combining application, such as with the Constant-Z combiner.

ERI also demonstrated the WARD-735 Guardian supervisory device, to monitor critical elements of a transmission facility.

Monitored situations include line pressure, forward/reverse power, tower lighting, icing sensors and antenna switching status.

For more information contact ERI in Indiana at (812) 925-6000 or visit the company Web site at [www.eriinc.com](http://www.eriinc.com)

### Richardson Electronics Reps Omnicast FM Transmitter

Richardson Electronics, a familiar name to most broadcasters, now is representing Italian transmitter manufacturer Omnicast in the U.S.

The premier Omnicast product presented by Richardson at the NAB200 was the MT1K 1 kW FM transmitter, which features MOS-FET technology, LCD screen with menu-driven operation and micro-processor control.

The unit is remote-controllable by a rear-panel RS232C port. A stereo generator is built in, and an optional 30-watt auxiliary RF output is available.

For more information, contact Richardson Electronics in Illinois at (630) 208-2200 or visit the Web at [catalog.rell.com](http://catalog.rell.com)

### Armstrong Introduces Digital STL Codec

The DTX4/DTRX4 is a four-channel digital encoder/decoder for use as a studio to transmitter link with a conventional 950 MHz band transmission system.

The codec uses ADPCM source coding for minimal audio delay and allows multiple connections in a daisy-chain fashion without signal degradation for multiple hop STLs.

For information contact Armstrong Transmitter Corp. in New York at (315) 673-1269 or visit the company Web site at [www.armstrongtx.com](http://www.armstrongtx.com)





## The AT4047/SV. For a Cold, Cruel, Digital World.

The full, articulate sound of the AT4047/SV might just start another argument about the cause of global warming. That's because it provides the distinctive, warm sound of classic F.E.T. studio microphones.

Broadcast professionals will appreciate its elegant design: the exceptionally low self-noise, transformer-coupled balanced output, high SPL capability, superior mechanical isolation and fail-safe reliability. But most of all, they'll appreciate its

impeccable performance, so critical for today's digital production and transmission technologies.

Whether the task is a simple voice-over or a complex live feed, the AT4047/SV is the perfect solution in a cold, cruel, digital world.



*AT4047/SV Cardioid  
Capacitor Microphone*





**Arrakis Holds a Revolution**

Arrakis introduced the Revolution Digital Console under its Colorado Digital name.

This is a 24 input/12 mixer board for \$3,995 list. It comes with analog and digital inputs and outputs at no extra cost.

DL4 and DL3 prices also were lowered. Both include larger audio storage, voice tracking and audio importing from third-party PC production editors.

The DL4 is for all-new applications and upgrades; DL3 is to expand existing DL2/DL3 installations.

Arrakis showed its new Modulux Flex Studio. Overnight shipping of a complete radio furniture package, user configurable on site for L and U shapes with feature like tabletop equipment pod, rack kits below, copy stand and interview table.

And the 1200 and 12,000 Analog Consoles were shown, with newer microphone pre amp design for better audio performance.

For information contact Arrakis in Colorado at (970) 224-2248 or visit the Web site at [www.Arrakis-Systems.com](http://www.Arrakis-Systems.com)



**Altronic Stops Lightning**

Altronic Research Inc. unveiled a line of field-repairable, gas-discharge lightning arrestors.

The 20000, 22000 and 24000 Series units are designed to protect transmission systems from lightning damage.

Altronic President John Dyess said, "We also introduced our new series of UHF digital-ready, air-cooled dummy loads. These are shipping."

Altronic manufactures a line of air- and water-cooled dummy loads.

For more information contact Altronic Research Inc. in Arkansas at (870) 449-4093 or visit the Web site at [www.altronic.com](http://www.altronic.com)

**Audio Generation And Analysis**

Archimedes said "Give me a lever long enough and a place to stand, and I could lift the world."

Today it's "Give me a fast enough DSP processor and I can do anything!"

Last year, TerraSonde put DSP to work and won a Radio World "Cool Stuff" Award with its Audio Toolbox. This year, the company put the Toolbox in a 2RU mount cabinet and introduced Audio Toolbox Plus at NAB2000.



Audio Toolbox test functions include a sweep signal generator with pink and white noise, stereo dB level meter (accuracy to 0.05 dBu), frequency counter, impedance meter (with sweep), distortion meter, and a digital sample scope

with X-Y phase capability. The system includes a time-code reader/generator, MIDI generator and analyzer, cable tester and phantom-power tester. The Audio Toolbox Plus adds a metal case, a plug-in reference microphone (removing acoustic effects of the instrument case), rechargeable batteries, larger display and PC/Mac interface to the Audio Toolbox.

For more information contact the company in Colorado at (888) 433-2821 or visit the company Web site at [www.terrasonde.com](http://www.terrasonde.com)



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[www.aztec-radiomedia.com](http://www.aztec-radiomedia.com)

**LPB Goes NT, Web, LPAM**

LPB Communications featured its new AM-2000 low-power AM transmitter. This unit is an FCC Part 15 device.

A typical installation would produce a 1/4-1/2-mile radius coverage area. The AM-2000 is a frequency agile transmitter featuring a digitally-synthesized tuner. Its output is rated at 100 mW. It is useful for special promotional and marketing applications.

Salsa NT is LPB's latest offering in automation. It includes scheduling, traffic and billing modules integrated into the system.

Salsa NT can provide audio streams for up to four stations at once. Support for third-party music and traffic and billing systems will be available soon.

WebJockey for Windows is a software package at a reasonable price that performs scheduling and full automation for single stations or Webcasts.

LPB also made design changes to the Hayes Spatial One speakers.

Their 4 kHz notch has been filled but the overall tweeter level reduced slightly. The immediate noticeable effect is an



increase in bass without a sacrifice in clarity.

Also, the 200 Hz bump has changed by decoupling the enclosure.

For more information contact LPB in Pennsylvania at (610) 644-1123, fax (610) 644-8651 or visit the Web site at [www.lpbinc.com](http://www.lpbinc.com)

**Tascam's Recorder Is Built for Musicians**

Tascam showed several new recorders at the show. The newest is the MX-2424 hard disk recorder. It comes standard with a 9 GB SCSI drive and is compatible with Mac and PC file formats using WAV and SDII audio files.

Tascam also displayed the DA-78HR, a 24-bit eight-track MDM and the DA-98HR that adds AES/EBU I/O. Both the 78 and 98 can record eight-tracks at 44.1 and 48 kHz, or four-tracks at 96 kHz or two-tracks at 192 kHz.



For more information contact Tascam at (323) 726-0303 or visit the company Web site at [www.tascam.com](http://www.tascam.com)



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**Talk to Walk**

It might be the climate or maybe the all-you-can-eat buffets, but Talk America Radio Networks announced it is moving its broadcast facility to Las Vegas.



"We're going to move the entire operation from Canton, Mass., to Las Vegas by July," said Tom Star, president.

For more information contact the company in Massachusetts before it moves at (781) 828-4546, or visit the Web site at [www.talkamerica.com](http://www.talkamerica.com)

**AKG Says 'No Sweat'**

The AKG Acoustics CK77 WR sweat-proof lavalier features two active and one passive diaphragm, as well as dual and horizontal diaphragms, to cancel clothing and handling noise.

The CK77 WR was on display at NAB2000, along with the C444L sweat- and moisture-resistant head-worn microphone for remote broadcasting and on-air use and the C3000B one-inch large-diaphragm cardioid microphone.

For more information contact AKG Acoustics in Tennessee at (615) 399-2199, fax (615) 367-9046 or visit the Web site at [www.akg-acoustics.com](http://www.akg-acoustics.com)

**Mics Make Shure At NAB**

Shure Inc. featured its SM7A cardioid dynamic microphone.



The SM7A features a frequency response of 50 Hz to 20 kHz, a uni-directional polar pattern, humbucking coil, bass roll-off and midrange controls, internal air-suspension shock isolation, built-in pop filter and a locking yoke mount.

The list price of the SM7A is \$584.

For information contact Shure in Illinois at (847) 866-2200, fax (847) 866-2279 or visit the Web site at [www.shure.com](http://www.shure.com)



**Harris Intraplex IntraLink-IP IP Audio Multiplexer**

The letters IP almost drowned out the letters LPFM at NAB, and Harris didn't miss the boat.



This IP Audio Multiplexer provides transport and connectivity over 10/100BASE-T (Ethernet) or T1 circuits for a range of real-time program audio applications, including STL, TSL, RPU, backup links, production and spot delivery, Webcasting and point-to-multipoint distribution.

"This box lets you use the Internet for a low-cost two-way STL," our judges said. Another called it "the tip of the coming iceberg to hit broadcast hardware (with) IP solutions."

Jai Eu and Bill Gould of Harris Intraplex Transmission Solutions are shown.

Price: TBA. Available: Late summer.

Contact Harris Corp. at (513) 459-3400 or visit [www.harris.com](http://www.harris.com)

**Netia Offers Production Modules, Scheduling**

"Radio-Assist is actually a group of nine different software modules that will cover just about everything a station would want to do," said Tyler Callis, regional sales manager, North America for Netia Digital Audio.

The modules include Audiotake (acquisition), Creator (production), Director (broadcast prep), Music-All (song management) and Odyssey (on-air broadcasting).

Additional modules are designed to handle Internet and administration.

Another offering from Netia fits the bill for music scheduling software.

Music-All, part of the Radio-Assist integrated software for radio station control, schedules music using a Windows NT software package.

Music-All manages all types of audio and can generate a global playlist including music, commercials and voice tracks.

Its features include linked data and dialog to the Internet, providing easy e-commerce abilities.

Reporting features include the ability to produce reports based on defined criteria like artist, title, time of day or events like a failure to air.

For information from Netia, contact the company in Texas at (877) 699-9151 or visit the Web site at [www.netia.net](http://www.netia.net)



**Bext Creates Digital Exciter**

Bext Inc. unveiled its new digital FM exciter, the PT-series. Microprocessor supervised, the PT-series provides S/N of better than 90 dB. Built-in VSWR foldback ensures protection and continued operation regardless of load.

VP of Sales and Marketing Anders Madsen said, "The PT-series comes in 50- and



100-watt power levels and is configurable as digital, digital/analog or analog only."

The TFS-series of solid-state FM transmitters also was rolled out at the show. This series of frequency-agile broadband rigs comes in power levels from 1 kW to 30 kW. The design is modular and modules are hot-pluggable.

For more information call Bext in California at (619) 239-8462 or visit the Web site at [www.bext.com](http://www.bext.com)

**Management Data Offers Solutions**

Management Data Media Systems AG offers three integrated products for broadcast solutions.

Simon, a traffic, billing and scheduling software system, is designed for larger markets. D'Accord 3.0 is a radio automation and media handling system for stations or networks.

The new focus with D'Accord 3.0 is on the multimedia content database that allows stations to store and work with audio and Web



content. The system can run on an NT 4.0 or Sun Solaris server with clients running Windows 95, 98 or NT 4.0.

Web@ntz is a new media business solution for the Internet, which delivers audio to the Internet, performs file conversions and generates real-time playlists.

Part of the integration includes e-commerce applications that, among other things, can generate a picture of the CD jacket for the music on the air and provide a link to a related e-commerce site that allows the user to purchase the CD.

For information from Management Data, contact the company in Washington, D.C., at (202) 530-4948 or visit the Web site at [www.mdmsus.com](http://www.mdmsus.com)

**Marti Gets Jump On Low-Power FM**

Marti Electronics, a subsidiary of Broadcast Electronics, premiered its "Plug-N-Play" LPFM transmitter, the PNP150.



This 150-watt FM transmitter features a digital exciter section, built-in stereo generator and "colorless" audio processor, 165-watt output, remote control connections and analog and digital inputs.

John Lackness, new Marti sales manager, said, "Twenty-watt and one kW versions are in the works."

For more information contact Marti in Texas at (817) 645-9163, or visit the Web site at [www.marti.bdcast.com](http://www.marti.bdcast.com)



### Smarts Gets Smarter Yet

Smarts Broadcast Systems introduced an MPEG production system that adds editing terminals to the Smartcaster system.

Terminals can be used for ripping CDs into the system or editing multiple WAV files to be converted to the MPEG format for storage.

These systems can run on PCs with audio cards. It comes bundled as a hardware and software unit for



\$5,000 or as software only \$2,050.

Also, Smarts – The Second Generation is new, Windows-based traffic, billing and logging software.

Sales orders can be entered remotely via modem. Inventory of unsold air time and reports can be stored, viewed, faxed or printed from a central location.

Financial information is compatible with major database and spreadsheet programs and major accounting packages.

Features include unlimited account numbers, product codes, voice separations, clients and salesperson designations.

For more information contact the company in Iowa at (800) 498-0487 or visit the Web site at [www.smartsbroadcast.com](http://www.smartsbroadcast.com)

### Automating FM Coverage Measurements

The Aztec Radiomedia AZ100 combines FM signal analysis equipment, a GPS receiver and a datalogger to automate FM signal coverage measurements.

This instrument logs (on a flash memory card) position along with the RF level and subcarrier characteristics.

The device is frequency-agile, therefore several stations can be logged during a single session. The companion FM Explorer software (free download at [www.aztec.fr](http://www.aztec.fr)) provides a number of graphical views of the collected data, but a computer is not required for data collection.

Finally, the serial ASCII data format is available so the user can write his or her own analysis software.

For more information contact the company in Virginia at (703) 875-9100 or visit the Web site at [www.aztec.fr](http://www.aztec.fr)

### Guardian<sup>2</sup> Controls Failures

The Guardian<sup>2</sup> Broadcast Audio Fail Control Unit by British manufacturer sbs provides management of audio signals, such as telco lines, STLs and composite signals.

Incoming signals are monitored. If a fault is detected on one channel, the system will derive a mono feed from the remaining channel. If both are lost, it will switch to an external source, such as a CD, to keep transmissions running.



Audio signals are passed through the system on relay contacts, giving a fail-safe system with no active components.

For more information contact Broadcasters General Store in Florida at (352) 622-7700 or visit the sbs company Web site at [www.sbs.uk.com](http://www.sbs.uk.com)



## Sound Advice.

1. Demand UNCOMPRESSED 16-bit linear audio in your all-digital air chain. Compression means compromise and we just won't hear of it.
2. Select a digital STL that can be configured with UP TO TWO PAIRS of linear stereo audio. It's like getting two radios for the price of one.
3. Exercise your FREEDOM OF CHOICE. Choose 32, 44.1 or 48kHz audio sampling. It's your broadcast – select the rate that works best for you.
4. Choose a digital STL that CAN ADAPT TO ANY RF ENVIRONMENT with user-defined 16, 32 or 64 QAM rates. (Flexibility is always a good thing.)
5. Purchase a 950 MHz RF STL. The channel allocation is free, and the money you save over a T1 STL goes straight to your bottom line.

Moseley's Starlink SL9003Q is the only 4-channel digital studio transmitter link on the market with all these features. Not just an STL, a sound investment.

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### The Scoop on AETA Products

AETA Audio MIX 2000, shown, features low noise at -130 db, input headroom of 46 db, a compressor limiter, selectable high pass filter, four inputs and wide variable brightness LED meters.

Alvin SooKoo, operations manager for AETA said, "It's a small and powerful mixer that offers all these features and will run for nearly three hours on eight AA batteries."

Also, the Scoop Reporter II, combining POTS and ISDN connections in one box, allows remote broadcasting from just about anywhere.

POTS connections use the Scoop's Code Excited Linear Prediction algorithm



for audio bandwidths of up to 8.4 khz with a 28.8 kbps connection. ISDN support includes G.711, G.722, MPEG Layer II and J.52.

The Scoop Reporter II is PC programmable and comes with a three-channel mixer.

Wrapping up AETA Audio's new offerings is the HI FI Scoop 3.

This ISDN codec handles a range of compression algorithms including low-delay ADPCM and the ITU-T J52-compliant algorithm, which can detect different algorithms and adjust to make the connection.

For more information contact AETA Corp. in New Jersey at (973) 659-0555 or visit the Web site [www.aetausa.com](http://www.aetausa.com)

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### Omnia ToolVox All-Digital Mic Processor

designed for broadcast use, which is one way to win our judges' hearts.

It includes dynamics settings, de-essing, Waves TrueVerb, three independent EQ sections, multi-level phase rotation, phantom power, 100 user presets, Ethernet and RS-232 ports for remote control, and a nice



Cutting Edge is expanding its Omnia brand to other products, including this cool mic box.

First shown as a prototype last year, the ToolVox is a DSP-based box

mic preamp.

Price: \$1,780. Available: Now  
Contact Omnia/Telos at (216) 241-3343 or visit the Web site at [www.omni-audio.com](http://www.omni-audio.com)

### EpiCenter, ReeLogger From Computer Concepts

Computer Concepts' new hardware and software product EpiCenter for audio management can replace traditional signal routers.

"It can accept all analog and digital sources, route them, process them and re-route them in real time to any other analog or digital format," said Ted Lantz, sales manager. "The system can also simultaneously record and play hundreds of audio events."



All sound cards provide 24-bit audio to the bus, which directs the signals to the output selected. Several varieties of equalization, compression and limiting are provided along with effects such as reverb, chorus, flanging, gating and pitch shifting.

The company also promoted ReeLogger 2.0, capable of storing up to three months of programming on hard disk. It can be set to roll over automatically.

"It's perfect for talk shows because you can go back and check anything," said Greg Dean, chairman. "It can also be used as a skimmer to review jock shows by selecting a higher sample rate for better fidelity."

For information contact the company in Kansas at (800) 255-6350 or visit [www.computerconceptscorp.com](http://www.computerconceptscorp.com)

### Web Beats LPFM At Inovonics Booth

Inovonics said the greatest interest among showgoers at its booth revolved around Internet audio broadcasting.

"We anticipated interest in LPFM, what with Inovonics' reputation for 'cost effective' products, but I can't remember more than a couple of people interested in this controversial new means of accessing the spectrum," said President Jim Wood.



About one-third of broadcasters who now feature an "Internet simulcast," and three-fourths of those who do not, have little or no knowledge concerning the mechanics of Webcasting, Wood said.

"Their question was: 'What do I need and how do I do it?'"

Inovonics promoted WebCaster, an analog audio processor tailored to deal with the limited bandwidth and throughput of a listener's dial-up modem connection to the Internet.

Shown, Ben Barber demonstrates the processor to a broadcast group from Mexico.

For information, contact Inovonics in California at (800) 733-0552 or visit the Web site at [www.inovon.com](http://www.inovon.com)

### AudioScience Adds Linux Support

In response to growing use of alternate operating systems, soundcard manufacturer AudioScience Inc. introduced a Linux driver and software development kit for its broadcast audio adapters.

The Linux driver supports current AudioScience broadcast audio adapters. It requires Linux kernel version 2.2 and is a loadable module.

"We believe the Linux operating sys-

tem offers several advantages for system integrators," said Andrew Elder, director of software engineering for AudioScience.

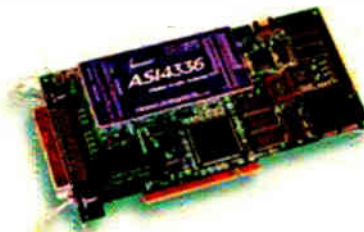


"It has excellent networking support and a range of top-quality tools for developing system software. The fact that a significant portion of Internet Web servers run

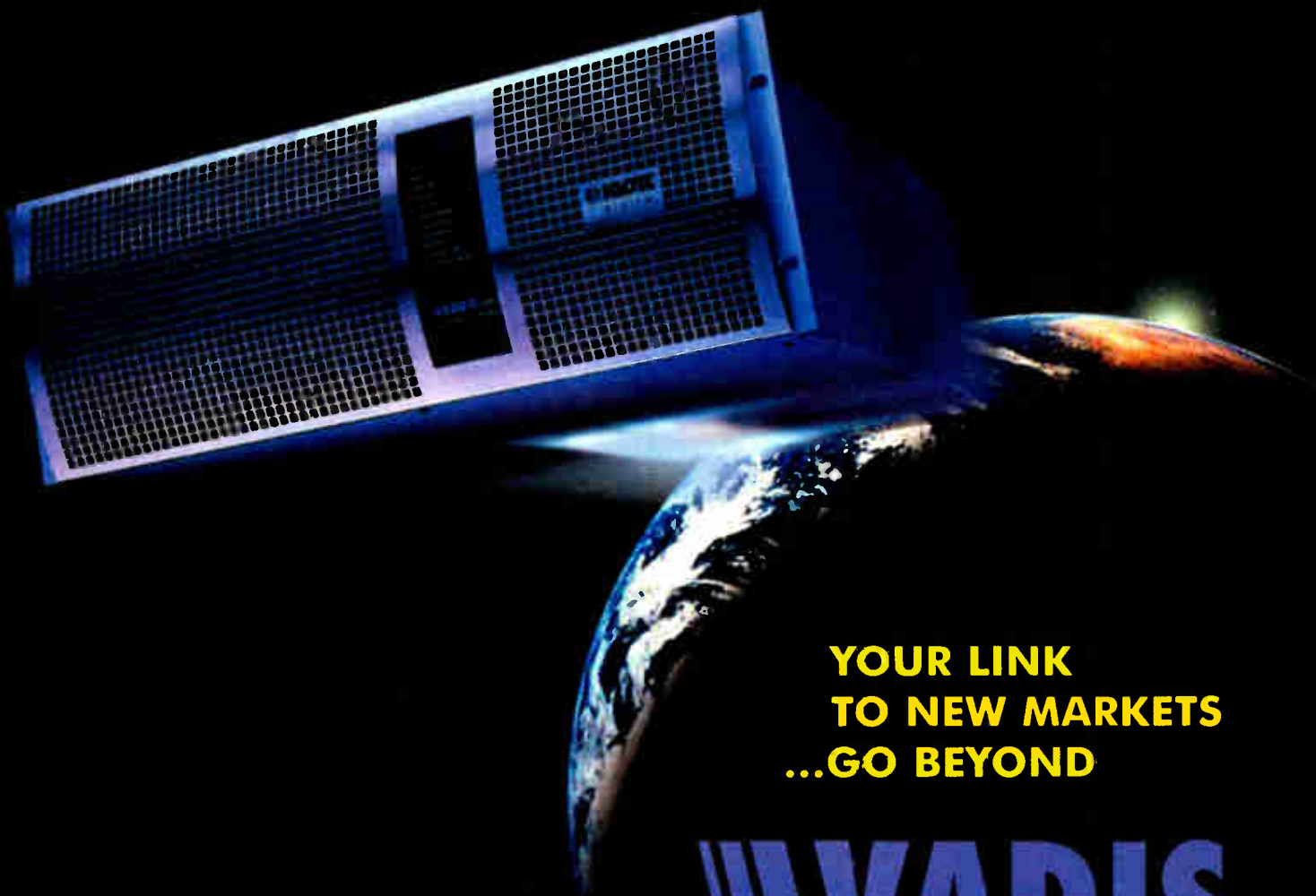
Linux is a testament to its stability and predictable behavior under heavy load."

The Linux driver is being released in source form as a hardware programming interface development kit.

For information, contact the company in Delaware at (302) 324-5333 or visit [www.audioscience.com](http://www.audioscience.com)







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Two-channel analog and digital signal generators, two-channel analog and digital signal analyzers, trace window, two-channel continuous-time and FFT analyzers, sweep analyzer, digital interface tests including jitter and Channel Status, Eye diagram, VB Script-based automation and much more.

Price: \$7,995. Available: June

Contact the company in New Jersey at (973) 983-9577 or visit the Web site at [www.prismsound.com](http://www.prismsound.com)

### CJDS Puts Invoicing Online, Signs Premiere

Spotdata is a Web-based system that allows agencies and media buying services to download electronic invoices from broadcasters, accelerating reconciliation and payment processes.

It uses an open standard and security measures. Spotdata interfaces with other CJDS automation tools.

"Now the door is open for all radio stations to begin doing business electronically," said Wayne Ruting, CEO of Columbine JDS.

CJDS said Premiere Radio Networks will be sending invoices electronically through Spotdata.



Premiere is the first network radio client to use Spotdata nationwide.

Premiere President Kraig T. Kitchin said, "They have shown the industry, starting with the advertising agencies and now with media partners, a real tangible way of solving one of the transactional problems in today's electronic media world."

Contact the company in Colorado at (303) 237-4000 or visit the Web site at [www.cjds.com](http://www.cjds.com)

### Neumann Unveils Mic At NAB

Neumann brought its KMS 105 supercardioid vocal microphone to the show.

The KMS 105 offers 145 dB maximum SPL, a 127 dB dynamic range and high-resolution and neutral off-axis response.



In addition, Neumann displayed its line of products for broadcast including the KM 184 miniature condenser microphone and the TLM 103 large-diaphragm condenser microphone.

For more information contact Neumann USA in Connecticut at (860) 434-5220, fax (860) 434-3148 or visit the company Web site at [www.neumannusa.com](http://www.neumannusa.com)

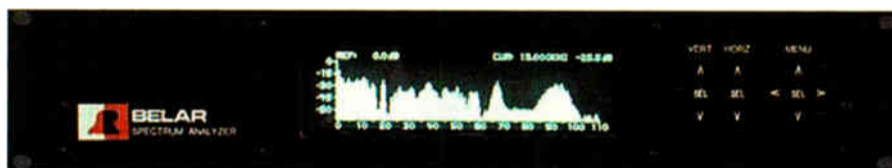
### Cooler Spectrum Analyzer

Belar's CSA-1 spectrum analyzer won the Radio World "Cool Stuff" Award in 1998. It just got cooler.

The FFT analyzer's upper frequency limit has been extended from 150 kHz to 2 MHz, thanks to the new 8 M samples/sec A/D converter.

The analyzer now can be used to view audio, the FM composite spectrum or the entire AM broadcast band to do equipment performance measurements. With an FM band downconverter, the user can view a 2 MHz slice of the FM band, to do FM performance measurements.

For more information contact the company in Pennsylvania at (610) 687-5550 or visit the Web site at [www.belar.com](http://www.belar.com)



### Harris Acts on Impulse

Harris Corp.'s recent acquisition, Pacific Research & Engineering, is now Harris Pacific.

The company offers the new Impulse digital on-air and production console. The desk-top board promises digital technology at analog pricing.



Impulse comes in 12- or 20-fader sizes with two standard telco positions. Inputs accept digital and analog sources and are reconfigurable in the studio from A to D or back by swapping internal sub-modules.

Remote control logic, three stereo program busses, two automatic off-line/program telco mix-minus inputs, telco record split-feed and mono analog output are included.

For more information, contact the company in Ohio at (800) 622-0022 or visit the Web site at [www.harris.com](http://www.harris.com)

### Wireless Phone Access to Radio Sites and Clients

WebPresence demonstrated its WEBNTR.com Radio Advertiser Guide on wireless phones from NeoPoint.

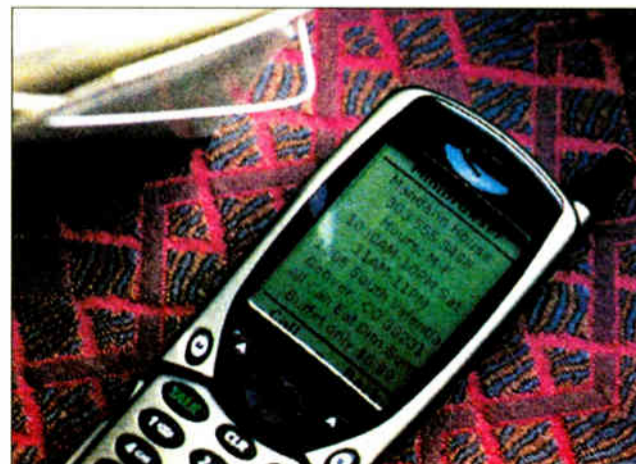
With Wireless Application Protocol, listeners no longer need a PC to get advertisers' product information, retail locations, coupons or phone numbers.

Using WAP phones, which include a data display listeners can look up advertiser information immediately upon hearing a spot, while they are in the car.

"Since radio is most frequently heard in the car, it is natural to combine it with the emerging mobile Internet," said David Owen, president of WebPresence. By providing advertisers with another means of touching the consumer, he said, stations increase the value of their inventory and create new NTR opportunities.

The WEBNTR.com suite of hosted applications also enables stations to put advertisers on-air and online.

For information, contact the company in Massachusetts at (978) 448-8882 or visit [www.webntr.com](http://www.webntr.com)





# No Tradeoffs

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## ***"David-II" FM PROCESSOR/STEREO-GEN***

Famous the world over for surprisingly competitive and clean audio at a budget price. Digital synthesis design gives great specs and terrific sound.



## ***FM MOD-MONITOR WITH PRESELECTOR***

Off-air modulation measurement with easy-to-read display, 8 station presets, alarms and multipath indicator. A companion tunable subcarrier monitor/demod is also available.



## ***OFF-AIR AM MOD-MONITOR***

Features a built-in, tunable preselector, two sets of peak flashers, program and carrier-loss alarms and an RS-232 interface. An active outdoor antenna is optionally available.



## ***WEBCASTER INTERNET PROCESSOR***

Designed from the start for the limited bandwidth and throughput of current 'streaming' audio services. Crisp for audio dial-up modem connections.



## ***RDS/RBDS "MINI-ENCODER"***

Quickly program it with any PC to transmit station call letters, format and other identifiers, translator frequencies, promos/slogans, phone number, etc.

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## Roland Cranks New Products

Roland showed its updated VS-1680, now called the VS-1880 and selling at a lower list price of \$2,795.



It offers two more tracks of playback that can be used for the stereo mix. It also has a button for CD-RW burning from the mix without creating an image file.

Roland also showed its VP-9000 VariPhrase Processor for manipulation of sampled phrases. Real-time manipulation can be done with the pitch, time and formant/groove knobs on the faceplate or by MIDI control. All timestretch and pitch changes are

nondestructable.

Also new: Variphrase is a hardware product that can speed up or slow down an audio track up to 40 percent without noticeable artifacts.

"This will work wonders on those

60-second spots," said Jim Norman, Variphrase product manager.

The device uses a MIDI controller and software that recognizes and corrects formants, making a more natural sound when speed-modified. The user can also change the tune of a solo vocal using the re-triggering function.

For more information contact Roland in California at (323) 890-3700 or check out the Web site at [www.rolandus.com](http://www.rolandus.com)

## Aphex Scores With 2020; Hires Gordoni

Aphex Systems said DMG Australia, one of that nation's largest commercial



radio chains, standardized the sound of its network by purchasing six FM Pro 2020 audio processors. And Finnish radio network Radiomafia chose the 2020 FM Processor for all programming. Aphex also appointed industry veter-

an Steve Gordoni to sales and marketing manager. He is a former radio chief engineer with systems and sales experience at Broadcast Electronics, Ram Broadcast Systems and 360 Systems.

The company is shipping its model 1100 Discrete Class A Microphone Tube Preamplifier. With extreme low noise, 24-bit 96-kHz digital outputs and MicLim protection circuit, the dual-channel 1100 is for broadcast, pro recording and production in the digital or analog domains.

The 1100 delivers an EIN specification of -135 dB. The company said the MicLim circuit adds an additional 20 dB of headroom, making it virtually impossible to overload.

Aphex also customized its 1788 Remote Controlled Preamp, winner of a "Cool Stuff" Award from RW last year. Now, for users who need fewer than eight channels, Aphex offers the 1788 in formats of two, four and six channels, starting at \$3,195.

For information, contact Aphex in California at 818-767-2929 or visit [www.aphex.com](http://www.aphex.com)

## 360 Upgrades 8-Track

360 Systems showed its upgraded TCR-8 eight-track recorder with DVD-RAM drive. It can do editing and crossfades.

The unit has increased capability to sync to other systems and also has the ability to interchange WAV and SDII files.

The company also promo'd its popular digital audio storage system.

"DigiCart/II Plus is now on just about every sports remote truck, and even Howard Stern is using one," said Don Bird, vice president, sales and marketing for 360 Systems.

It's a hard disk recorder designed to replace analog carts with digital I/O and lin-



ear or compressed (user-selectable) audio. DigiCart/II Plus is offered in several configurations with up to 148 hours of storage capacity.

For more information contact the company in California at (818) 991-0360, or check out the Web site at [www.360systems.com](http://www.360systems.com)

## Eight-Channel A/D By Benchmark

Benchmark Media Systems makes conversion more transparent with its AD2408-96, an eight-channel, 24-bit, 96 kHz audio A/D converter.



"We have many different noise shaping curves," said Benchmark President Allen Burdick. "We have the ability to give you 24-bit output and word-length reduced output at the same time. With these converters, you could make a 24-bit master recording and then have a 16-bit safety backup at the same time."

Retail price is \$4,995.

For more information contact the company in New York at (800) 262-4675, or visit the Web site at [www.benchmarkmedia.com](http://www.benchmarkmedia.com)

# Caller... are you there? Are you there caller...?



On-air hosts just want to sound good. And, with the help of the PROtalk4, they do.

The PRO:alk4 is designed around the features busy talent depend on to keep calls flowing smoothly. Backlit buttons make operation quick and simple. Talk to all four callers at the same time, with automatic level balancing for a consistent on-air sound. Independent digital hybrids provide exceptional audio quality in the studio and between callers.

Plus, the PROtalk4 stands up to your most demanding work environment, with a robust but



**PROtalk4**

We hear you

elegant housing, compact footprint, and straightforward rackmount connections.

- Versatile speakerphone operation
- Digital Hybrid Technology
- Mix output for call recording
- Automatic mix-minus to caller
- Compact Console
- 1U rack-mount control unit
- Adjustable level controls
- 4 caller conferencing

Before call management problems leave your on-air talent all strung out, take a closer look at the easy-to-use PROtalk4.



### Hafler Monitors at NAB

Hafler unveiled a passive nearfield monitor, the M5, shown here, at the show. The M5 has a retail price of \$249.

The company said the unit is based on the same sonic platform as the TRM6 active monitor but in a passive, more compact package.



The company also featured its active studio monitoring systems, the TRM6 active monitor and the TRM10s Trans•ana active subwoofer.

The down-firing, ported TRM10s augments the performance of the TRM6 Active Monitor System or any small monitor when frequency response down to 25 Hz is needed.

The TRM6 is a bi-amplified, two-way system offering a free-field frequency response of 55 Hz to 21 kHz, +/-, 2 dB and the peak acoustic output per speaker pair using music as a sound source at one meter is 120 dB or greater.

The TRM10s is a combination of the Hafler class G Trans•ana amplifier circuitry coupled to a 10-inch subwoofer.

For more information contact Hafler Professional in Arizona at (888) 423-5371, fax (480) 894-1528 or visit the Web site at www.hafler.com

### Dalet's Improved Surfer

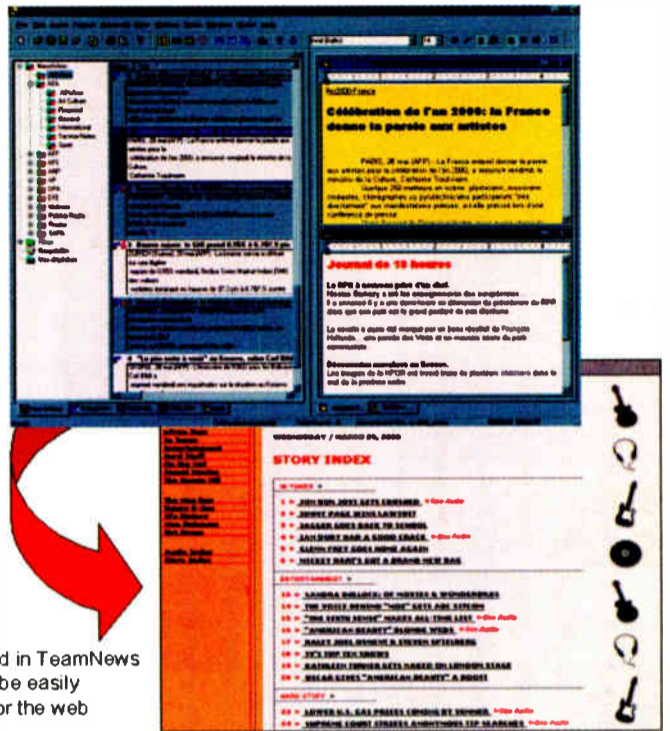
Dalet showed several enhancements to Surfer, the editor for the Dalet5.1 digital automation system.

It now supports MP2 as well as linear formats. It can mix the formats and save it to a common linear or MP2 file.

Other improvements include preset zooms, easier adjustment of volume, editing while recording and time stamping.

The company also announced its participation in the large digital studio project at XM Satellite in Washington, D.C. (RW, May 10, page 24).

For more information, contact Dalet in New York at (212) 825-3322 or check out the Web site at www.dalet.com



Stories created in TeamNews for on-air can be easily re-purposed for the web

### Studer Updates Console, Debuts Router

Version 3.0 software was introduced for the Studer On-Air 2000.

Suitable for radio on-air and production, the digital console now can select up to six clean-feed channels.

A user can have six callers on the line, ready to go on the air.

Studer also debuted the Route 5000, an advanced digital audio routing sys-

tem with integrated DSP, based on the MADI-router product line.

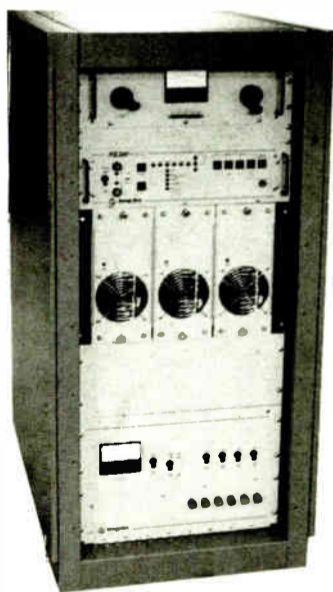
The company highlighted the features of Version 3.5 of its DigiMedia radio station automation system.

And it announced a major upgrade to the control surface of its digital mixing system, the D950.

For more information contact Studer North America, located in California, at (510) 297-2711 or visit the company Web site at www.studer.ch

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Check Out Our Recent Shipments ...



### PULSAR 1000

The World's Finest 1 KW AM Transmitter!

Users claim...

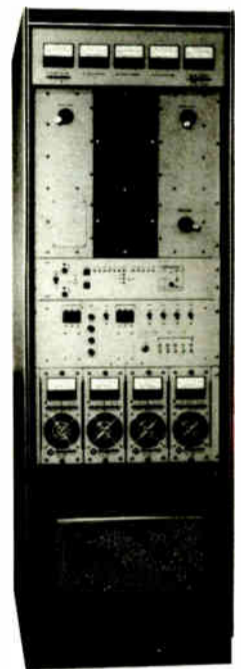
"Pulsars sound like FM!"

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- KMVL Madisonville, TX
- WTRN Tyrone, PA
- WJNL Petoskey, MI
- WGVA Ganeva, NY
- WROD Daytona Beach, FL
- WBBX Kingston, TN
- WERT VanWert, OH
- KSAR Salem, AR
- GINEN Port-Au-Prince, Haiti
- WRRE Juncos, PR
- KJSA Mineral Wells, TX
- KKSA San Angelo, TX
- KCLE Cleburne, TX

### ECO USERS

- KQEZ Houston, AK
- KSNY-FM Snyder, TX
- MURHI Lagos, Nigeria
- KOXE Brownwood, TX
- WKSD Paulding, OH
- WBEU Brookville, PA
- APPLIED Caracas, Venezuela
- KPCL Farmington, NM
- WMRT Marietta, OH
- KJDY-FM Canyon City, OR
- KKLK Daingerfield, TX
- KFCM Cherokee Village, AR
- KSAR Salem, AR
- PROGRESSIVE Phillipines
- WSOR Naples, FL
- INSULAR Phillipines
- CATH. DIOCESE Haiti
- WQLT Florence, AL
- WXFL Florence, AL



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### Directional AM Antenna Controller

Kintronic Labs showed the DAC-MOD-2-12/C1 PLC-based AM directional antenna system controller.

The system features full-color, touch-screen operation and is capable of control,



status reporting and history recording of critical elements of a DA system.

The controller is user-friendly and graphics-intensive. If, for example, an RF contactor fails to switch to the proper position, an image of one is displayed on screen.

"The most advantageous features are the bitmap image of the pattern in use and the ability to configure the controller for any number of transmitters, dummy loads and patterns," said Tom King, president of Kintronic.

"The features are able to be altered to accommodate changing configurations."

For more information contact Kintronic Labs in Tennessee at (423) 878-3141, fax (423) 878-4224, e-mail: ktl@kintronic.com or visit the Web site at www.kintronic.com

### Otari Releases Update for RADAR II

Otari announced version 2.09 software upgrade for the RADAR-II hard disk recording system.

New features include a revision of the waveform display, implementation of DVD-RAM and larger SCSI hard drives, new macro keys, auto offset calculate and an improved backup and restore implementation.

The company also showed the RADAR-II 96-kHz AES/EBU 24-channel card. A 96 kHz turbo card is in the works.

For more information contact Otari in California at (818) 594-5908 or visit the Web site at www.otari.com

### Genelec Gets Active



Genelec debuted two upscale monitors in Las Vegas.

The 2029B digital active monitoring system is a nearfield bi-amplified audio monitor with AES/EBU 24-bit, 96 kHz digital input and standard analog inputs.

It is designed for applications that include digital on-line/off-line editing systems, digital broadcast consoles and digital broadcast confidence monitoring.

The 2029B stereo system is \$1,375.

Also on display was the S30D active monitor, shown, an upgrade to the S30C tri-amplified active monitoring system. The S30D features an extended bandwidth to 50 kHz and LF cut-off of 36 Hz with an optional 24-bit, 96-kHz digital input.

The S30D list price is \$2,850 per pair.

For more information contact Genelec Oy in Massachusetts at (508) 652-0900, fax (508) 652-0909 or visit the Web site at www.genelec.com

DJ Dave... I am sorry to bother you at home, but I've detected a fault in spot number 321. It may be missing. Perhaps you should look into it.

WaveStation 3.0 with WebConnect  
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## Complete station makeovers. Employees not included.

Today's radio industry is always changing. Success depends on how your station changes with it. That's why Harris leads the way in constructing new stations or redesigning existing ones. We help you through the entire process, from concepting, budgeting and planning to furniture design and fabrication. We offer pre-packaged or completely-customized design capabilities, along with the widest selection of analog and digital products in the industry. Our commitment is to provide a facility that can change as your needs do. Cost-efficient. Future-proof. Successful. And with Harris, always in style.

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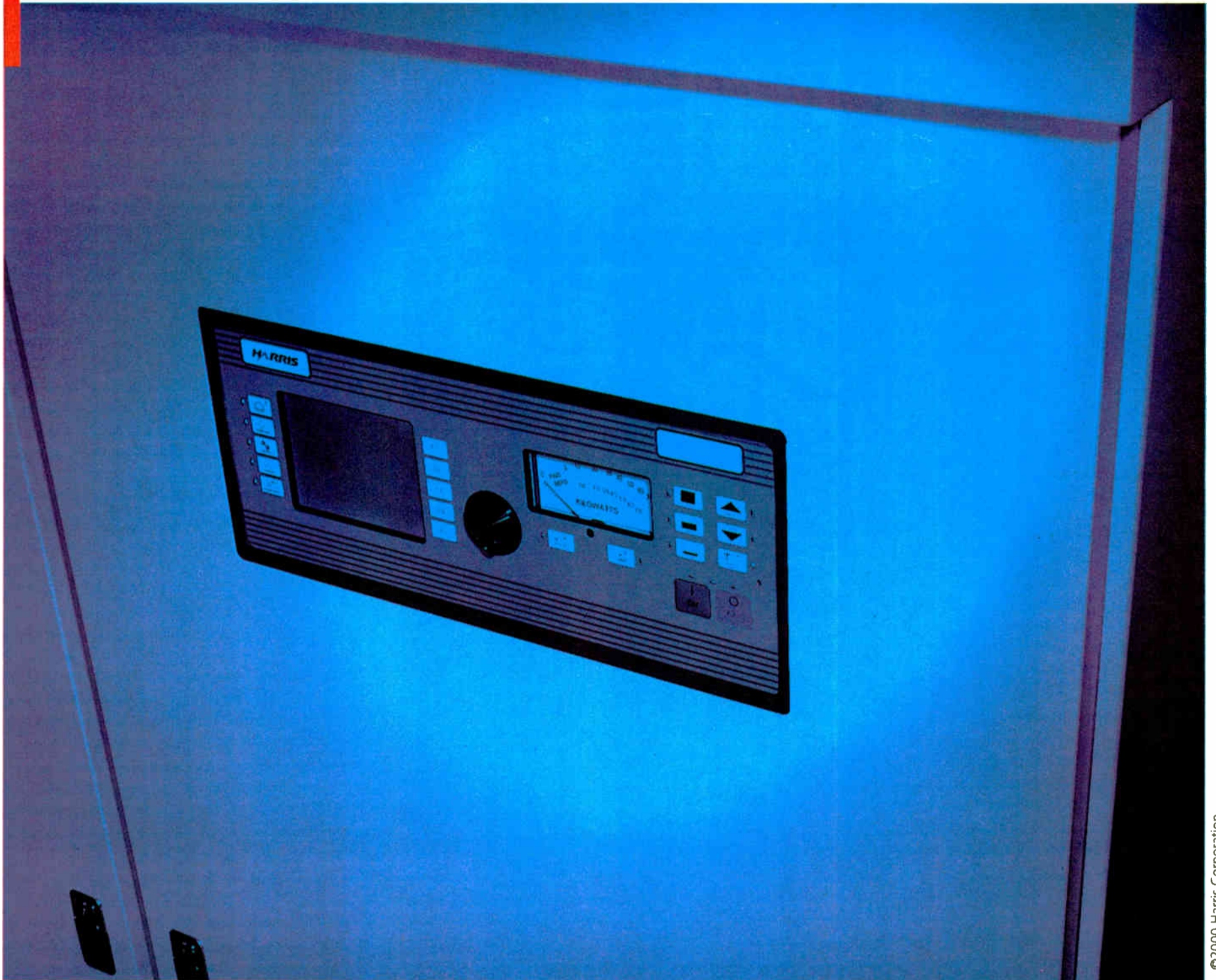
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**HARRIS**

World Radio History



# ***A more linear, efficient & reliable DX transmitter? We like to think it was Destiny.***



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Introducing DX DESTINY™, the new 3DX-50 AM transmitter that takes Harris' industry-standard digital transmitter technology to the next level with patent-pending 3D™ Direct Digital Drive. 3D technology is a new concept that allows the Destiny to improve modulation linearity and keep your station on the air at maximum power and performance *continuously*—with improved energy efficiency and signal accuracy for optimum IBOC amplification. Additional innovations include DSAM™ Digital Serial Adaptive Modulation, which substitutes spare RF modules automatically so you don't have to make emergency trips to the transmitter site; IntelliStat™, the ultimate in diagnostic user interfaces; hot pluggable RF modules; and redundant digital exciter capabilities. Together, they enable the DX Destiny to operate at maximum performance at all times. The DX Destiny— built for your freedom and peace of mind. AM radio's destiny has arrived.



DX Destiny redefines the standard for 50kW AM transmitters.

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***Solid-state reliability. Built-in redundancy.  
You'll appreciate why we named them ZZZs.***



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Engineers sleep easier with the Harris Z Series of FM transmitters for lots of reasons. Like their solid-state reliability, redundant IPA systems and power supplies, hot-pluggable RF modules for easy on-air repairs, *and* the option of two exciters with automatic switching built in. Outfitted with our unrivalled DIGIT CD™ FM digital exciter, Zs deliver the trend-setting, CD-quality sound listeners increasingly expect. And now, we're putting your worries about the future to rest as well. We're actively working with DAB system proponents on modifications to Z transmitters for IBOC field testing, so when a new standard is established and you need to start broadcasting IBOC DAB, you won't be caught snoozing with Harris. Or, then again, maybe you will.



Z Series transmitters include an easy-to-read LCD panel for diagnostics plus a main and backup controller.

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World Radio History





## Serafine SFX Dazzling Effects Library

Ambience. Doors. Electronic. Foley 1 and Foley 2. ...

If this list excites you, you probably do audio production.

Footsteps. Home/Office. Human/Animal. Industrial. ...



The SFC Serafine Collection is an impressive effects library from the sound designer of "Star Trek," "Tron" and "The Hunt for Red October."

Great for spots, morning shows, fun Web site tricks, and your station voice mail system.

Pronounce it "ser-ah-FEE-nee."

Magic/Surreal. Metal. Recreation. Special FX/SciFi. Transportation. Water. ...

Price: Pro CD Set \$1,395. Highlight CD \$295. Available: Now

For more information contact the company in California at (310) 399-9279 or visit the company Web site at [www.frankserafine.com](http://www.frankserafine.com)

## Tannoy Reveals Reveal Active

Tannoy made noise with its Reveal Active monitor during NAB2000.

The system combines the Reveal with twin 50-watt amplifiers and a crossover and has a frequency response of 65 Hz-20 kHz.

The one-inch soft-dome tweeter is matched to a 6.5-inch long throw bass unit. The drive units are mounted on a 1.5-inch-thick baffle that is curved to minimize diffraction. Both drive units are magnetically shielded to allow the system to be used close to video monitors.

The list price of the Reveal Active monitor is \$899 per shielded pair.

For more information contact Tannoy in Ontario, Canada at (519)745-1158, fax (519) 745-2634 or visit the company Web site at [www.tannoy.com](http://www.tannoy.com)

## Strategic Provides Music On Hold

The MarketMinder 32 MOH-1000 Interface from Strategic Solutions allows up to eight radio stations to be heard over a telephone hold system by rotating the air signals in sequence. An optional voiced promo can also be added.

Stations or consultants can monitor any of the air signals from this rack-mounted unit independent of whichever source is selected for on-hold at the moment.

Contact the company in Ohio at (513) 860-9052 or visit the Web site at [www.strategicIT.net](http://www.strategicIT.net)

## On-Air Processors in Buyer's Guide June 7

## Alesis Shows Swiss Army Knife

Alesis showed its Masterlink ML-9600 hard-disk recorder that combines recording, digital signal processing, audio editing, CD creation and playback. It's like a "Swiss army knife" for a digital studio.



Masterlink takes two-track audio from an analog or digital source like mixers, DAWs, or a CD and loads it on the hard drive. The files are manipulated through the DSP and can be saved as an AIFF file or burned to a CD.

For more information contact Alesis in California at (800) 525-3747, or visit the Web site at [www.alesis.com](http://www.alesis.com)

## Quantum Simplifies Storage

Quantum markets several sizes of file servers, called Snap Servers, that omit expensive extras.

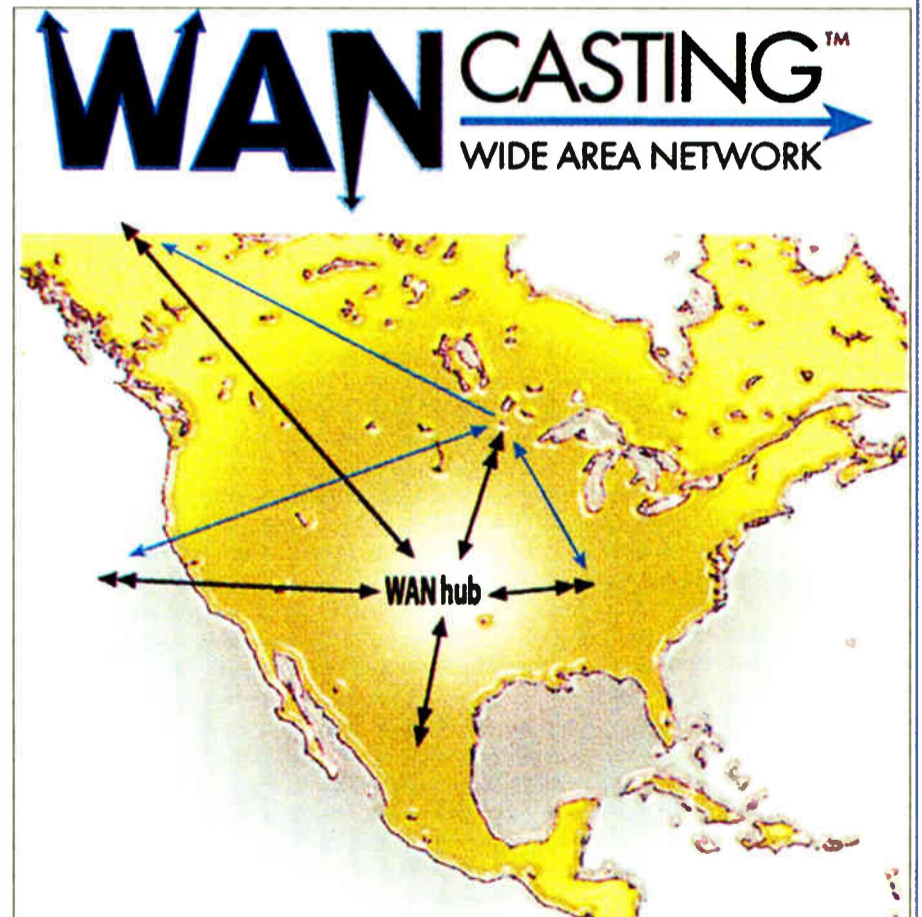
"These little boxes are multi-platform, they can store fonts, graphics, video and audio in 10, 20,40 and 120 GB sizes, all in a no-frills package," said Jeff Hill, senior director of product marketing.

There is no keyboard or monitor. Software system updates are downloadable at no cost. Prices start at \$499.

For more information contact the company in California at (408) 232-6831 or visit the Web site, [www.quantum.com](http://www.quantum.com)

## PSi Automates, Unveils Multi- Stream Method

Prophet Systems Innovations exhibited NexGen Digital, an automation system offering compressed and non-compressed audio, WANcasting, VoiceTRAC recording concurrent with on-air programming and scalability to handle 128 stations. The system offers up to 3.4 Terabytes of online storage



and up to 112 channels on air.

The company also announced a partnership with LinuxSC to produce an Internet-enabled delivery process called Carboncast.

This streaming method converts audio to a file format, which is sent to a remote server that functions as a reflector. It turns this stream into as many "user on demand" streams as are requested.

For information, contact the company in Nebraska at (800) 658-4403 or visit the Web site at [www.prophetsys.com](http://www.prophetsys.com)

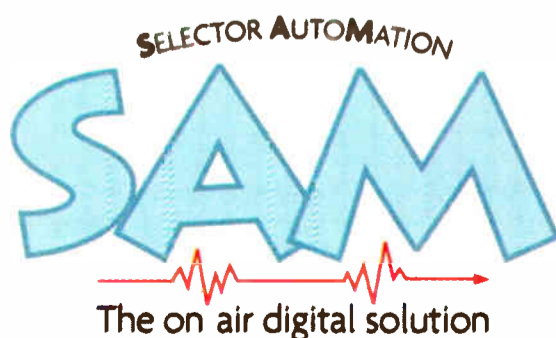
## Selector for Windows

Radio Computing Services said its Selector for Windows retains the power of the classic DOS version while incorporating Windows features like drag-and-drop, icon selection of functions and graphical representation of clock views, song and browse lists.

"The ability to navigate music categories and edit song information requires substantially less keystrokes and all the classic features of the DOS version remain," said Matthew McBride, general manager for RCS.

Linker is now integrated into the product and handles all non-music events (except traffic) like promos, voice tracks and newscasts.

For information from RCS, contact the company at (914) 428-4600 or visit the Web site at [www.rcsworks.com](http://www.rcsworks.com)





**Musicam USA Promotes Prima LT Plus**

The Prima LT Plus is a full-function, point-to-multipoint, bi-directional digital audio codec from Musicam USA. It contains three digital interface slots that can hold any combination of ISDN terminal adapters, V.35, X.21, RS422 or RS530 interfaces. This lets the user send stereo audio to as many as three locations, or mono to six, simultaneously via ISDN.

The unit can bond multiple ISDN lines to send audio at up to 384 kbps, and supports standard bit rates through its other interfaces.

The Prima LT Plus contains Musicam, the compatible enhancement to MPEG Layer 2 coding.

For information, contact the company in New Jersey at (732) 739-5600 or visit the company Web site at [www.musicamusa.com](http://www.musicamusa.com)



**Burk Makes Remote Monitoring Easier**

New at the show from Burk Technology was the SP-16 Status Panel.

Retailing for \$350, the panel connects to the ARC-16 studio unit to provide a continuous display of all status channels at a remote site.

Even when another site is selected from the front panel of the ARC-16, the user will know instantly when status changes.

Up to two panels can be installed at each ARC-16 studio unit location.

For information contact the company in Massachusetts at (800) 255-8090 or visit the company Web site at [www.burk.com](http://www.burk.com)

**PSI Adds Sidemount Antenna**

Propagation Systems Inc. unveiled the FMR medium-power sidemount FM antenna.

PSI President Doug Ross said, "We introduced the FMR to complement our highly successful high-power rototiller antenna, the FHR."



PSI manufactures FM, VHF and UHF antennas and transmission line. In addition, the company designs and fabricates diplexers, combiners and filters.

For more information contact Propagation Systems Inc. in Pennsylvania at (814) 472-5540, fax (814) 472-5676 or e-mail [psiba@surfshop.net](mailto:psiba@surfshop.net)

**OMB America Intros 500-Watt FM Transmitters**

OMB Broadcast, based in Venezuela, introduced its EM-250 and EM-500 FM exciters at this year's convention.



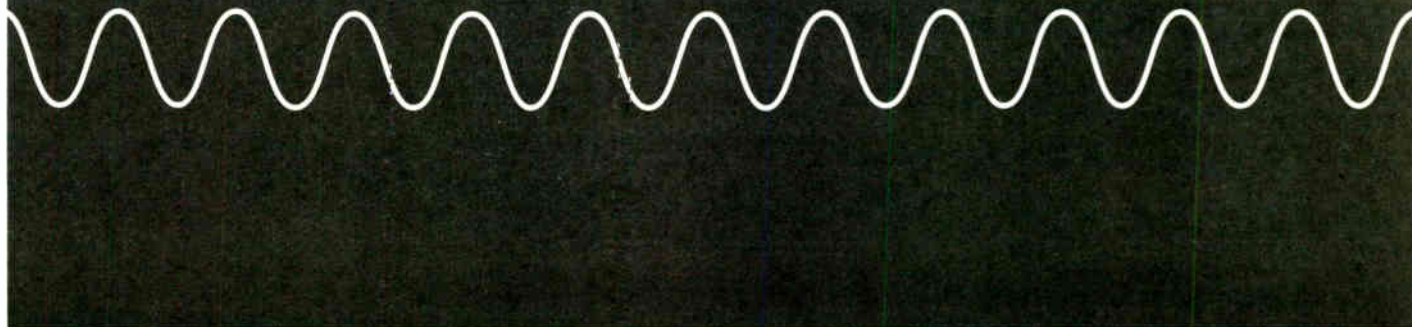
The exciters are digitally synthesized in 10 kHz steps and feature a front-panel display of deviation, power, frequency and modulation.

Both baseband and SCA inputs are provided.

In addition to its new exciters, OMB offers a line of FM products from 15 watts to 25 kW.

For more information call OMB's international office in Miami at (305) 477-0973 or check out the company Web site at [www.omb.com](http://www.omb.com)

**NO SAGS  
NO SPIKES  
NO SURGES**



**STABILINE® Automatic Voltage Regulators Prevent Transmitter Power Problems**

"Dirty" power, like sags, surges, spikes and brownouts, are typically caused by power line disturbances or inadequate distribution systems. Left unregulated, poor power quality can degrade sensitive broadcast electronics in receiving stations, studios, mobile production vehicles and transmitter sites. The result? Equipment failure, software integrity loss, reduced tube life, and poor signal quality.

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WHR Series STABILINE® Automatic Voltage Regulators can prevent power quality problems.

quality problems with WHR Series STABILINE® Automatic Voltage Regulators. STABILINE® AVR's offer exceptional protection to help radio and television broadcast facilities maintain output voltage to +/-1%, with a 99% efficiency rating.

STABILINE® Regulators automatically feed voltage sensitive equipment a constant voltage level even when power line input voltage and system loads vary — with no waveform distortion, high overload capacity and the lowest

added source impedance available. For severe applications we offer all buck and boost capabilities. Standard STABILINE® AVR's are available up to 1680 kVA, with a wide range of features and unique options.

WHR Series STABILINE® voltage regulators: the preferred choice of broadcasters worldwide, from the name you trust in voltage regulation, Superior Electric. For more information, contact Lori Stepp today.



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### LBA Has Rights To Crossed-Field, Hopes for Rollout

LBA Technology concluded a deal with the inventors of the Crossed-Field Antenna and said it hopes to begin marketing the omnidirectional systems in the United States within a year.

The agreement provides for the exclusive manufacturing and marketing rights for the CFA AM broadcast antenna in the western hemisphere.

The CFA is a controversial technology invented by Maurice Hatley and Fathi Kabbary. As reported in several articles in *RW* in the past year, this technology, when applied to medium-wave (AM) broadcasting, promises to reduce transmitting tower heights — from the usual 200-to-400-foot range, to less than 30 feet, while maintaining efficiency and signal quality.

The CFA splits the transmitter power into magnetic and electrical components and recombines them in an "interaction zone." When the phases of the components are correctly set, the inventors say, Poynting vector synthesis occurs, launching radiation into space.



Photo courtesy of Antennex Online Magazine, www.antennex.com

LBA said it will conduct a "rigorous program" of development and testing, including testing for compliance with FCC requirements, to validate performance of what has been described as a revolutionary concept.

For information, contact the company in North Carolina at (800) 522-4464 or visit [www.lbagroup.com](http://www.lbagroup.com)

### Orban Releases Version 3 Audicity Software

Orban brought Version 3 software for Audicity to NAB2000.

Version 3 has five new digital effects and a stereo "toolkit" with a new compressor/EQ combo and a mono-to-stereo synthesizer. The new import/export feature condenses productions into a single file.

The CPU tower supports SCSI CD ROM drives for importing files from a CD or productions from a CD-R. New creating and naming features help manage customized effects. Systems upgrades are available for \$450 per single system.

For more information contact the company in California at (510) 351-3500 or visit the Web site at [www.orban.com](http://www.orban.com)



### Soundelux R-1 Cardioid FET Condenser Microphone

"The company did its homework. Soundelux designed a mic for radio talent."

The R-1 cardioid mic offers a rich tone, 1-inch diaphragm with gold on 6-micron-thick Mylar, and transformerless FET.

Nice for use with critical digital recording tools thanks to its low self-noise, the R-1 is also priced right.

Features include internal pop filter and optional shockmount.

Price: \$599. Available: June 1.

Contact the company in California at (323) 464-9601 or visit the Web site at [www.soundelux.com/mics](http://www.soundelux.com/mics)



### QEI Solid-State Is IBOC-Ready

QEI presented its new Quantum M-Series of solid-state FM transmitters at NAB2000.

This series of transmitters is available in power levels from 1.2 to 9.6 kW. The high-efficiency units feature modular 600-watt power amplifiers, which can be stacked to produce the power output the customer needs.



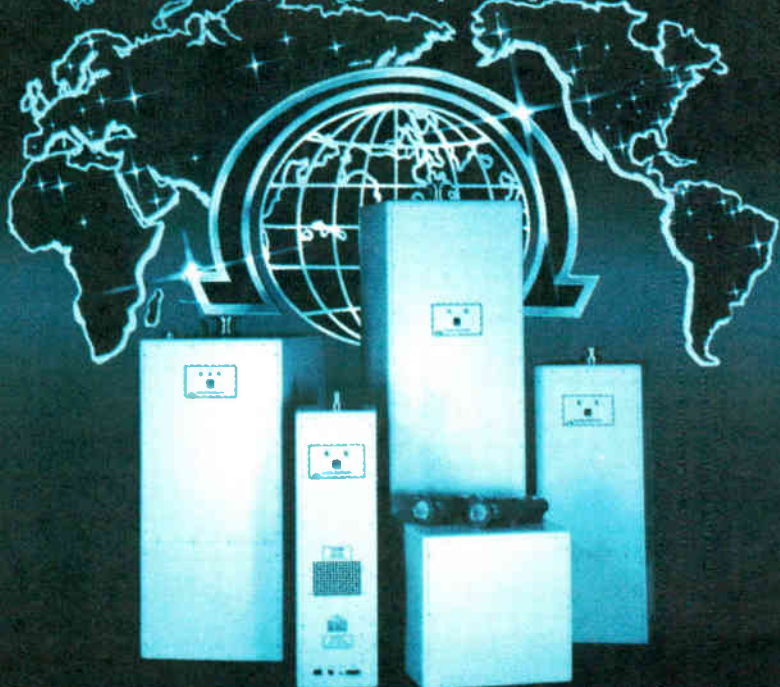
The M-Series comes in a cabinet less than five feet tall, yet it is self-contained.

QEI's Bob Brown said, "The M-Series of FM transmitters is ready for IBOC. We have achieved good results so far with minimal modifications to existing transmitters. The mods have primarily consisted of linearization of the PA and IPA stages to pass the IBOC signal."

For more information contact QEI in New Jersey at (800) 334-9154 or on the Web at [www.qei-broadcast.com](http://www.qei-broadcast.com)

## ALTRONIC RESEARCH INC.

Performance By Design



MANUFACTURER OF RF COAXIAL LOAD RESISTORS.

DUMMY LOADS FROM 1 KW TO 1500KW, AVAILABLE IN AIR, WATER OR SELF CONTAINED HEAT EXCHANGERS.

HIGH POWER NON-REACTIVE CERMET RESISTORS FROM 1 OHM TO 20 MEGOHMS.



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If time is money, what  
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radio commercial every  
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If you're in the radio business to  
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**“Cash”**

Through an exclusive time-  
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## Prime LED Bargraph Systems

PPM, loudness, peak hold and combo displays are available.

The company offers various display, driver and mounting options.

"I can think of at least two projects right now for these meters. I wanted to take the display unit with me the minute I saw it," one of our judges wrote.

Shown in the booth are Will Wohler, Sue Vieau and Richard Dozier.

"Cheap, quick and nifty."

Prime LED makes LED bargraph displays that you can mount for your own application, be it audio levels, audio "phase" polarity, temperature, just name it.

Each segment may be illuminated red, green or amber under driver control, and the bargraphs are available in ultra-high resolution, medium resolution and high-visibility versions.

Audio level interpreter PCBs accept and interpret analog or AES/EBU digital audio signals and generate a range of audio parameters for display. VU,



Price: Varies. Available: Now. Contact Prime LED in Texas at (817) 560-1114 or visit [www.primeled.com](http://www.primeled.com)

## Continental, Harris Ink Deal

Continental Electronics Corp. and Harris Corp. announced a strategic alliance to provide high-power AM radio broadcast transmission systems to worldwide markets. The pact includes short-wave, medium-wave and long-wave transmission equipment, engineering services and turnkey installations.

Tech-Sym Corp., the parent of CEC, is seeking to sell the division. Tech-Sym recently sold its television broadcast assets to ADC.

Continental VP of Marketing Adil Mina confirmed that Harris was among the companies that had requested an information package when Continental was first put up for sale, but he said no purchase was imminent. Harris officials also confirmed that the two companies had talked.



Competitors and Allies: Adil Mina, left, shakes hands with Don Spragg of Harris.

The manufacturers have competed for decades, and will continue to do so in other product lines including domestic transmitters. Executives of both would not speculate publicly on whether this announcement might lead to an outright purchase of CEC by Harris.

The two companies signed a "memorandum of understanding" that positions them to serve jointly as a primary supplier for large international and government projects that require high-power systems.

The deal covers the Harris DX Series of 100 to 2,000 kW digital solid-state medium-wave and long-wave transmitters, and Continental's 250 and 500 kW shortwave transmitters and large turnkey installations.

Don Spragg of Harris said the two companies complement one another — CEC as a leader in major systems and shortwave applications, Harris with strengths in high-power solid-state technologies and medium- and long-wave jobs.

Mina said shortwave remains a critical global medium.

"Satellites fail. The Internet can be stopped. Shortwave is today the only way you can send a message and be sure no one can censor it, no one can stop it."

Mina estimated Continental's annual broadcast sales at \$40 million to \$50 million.

— Paul J. McLane

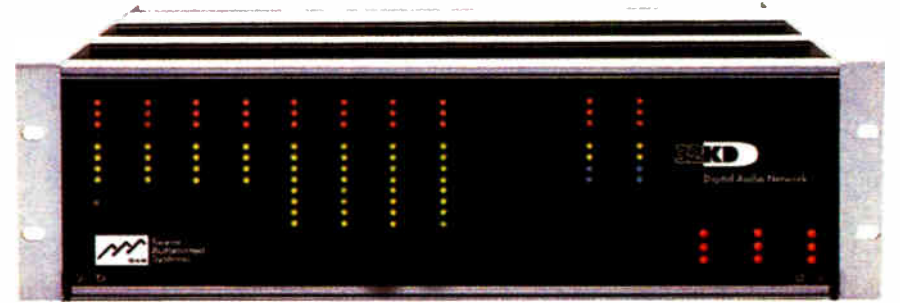
## SAS 32KD

The SAS 32KD Digital Audio Network from Sierra Automated Systems & Engineering is a modular, distributed core audio routing system that can perform routing, mixing, sound processing, IFB and mix-minus.

The frame is 3RU high and houses 12 universal module locations. Each frame supports up to 128 I/O channels plus network interfaces, control, processing and power.

Scalable size allows linear expansion up to 4,096 channels, with digital and analog 24-bit I/O. Fiber optic interfaces allow multiple 128-channel mainframes to be networked.

For information contact the company in California at (818) 840-6749 or visit [sasaudio.com](http://sasaudio.com)



## Headphones, Mics From Beyer

In Las Vegas, beyerdynamic introduced a low-cost, closed-system headphone. With response of 20 to 18,000 Hz and power handling of 112 dB SPL, the DT231 is suitable for audio monitoring where bleed would be a problem.

The firm also introduced the M 99, a large-diaphragm, moving coil, dynamic microphone for on-air announcing and voiceover recording.

Also, the new MCE 58 is an ENG mic that uses an electret condenser element rather than the customary dynamic element. The company said the element is more sensitive, with a wider frequency response, and has lower self-noise than a dynamic microphone — important in the era of digital recorders.

The company also expanded its mic line with the introduction of the first digital, condenser, studio shotgun microphones. MCD 836 / 837 short and long shotguns are intended for specialized studio audio, film and video.

For more information contact beyerdynamic in New York at (631) 293-3200 or visit the Web site at [www.beyerdynamic.com](http://www.beyerdynamic.com)



## Antenna Concepts Focuses Signals

New from Antenna Concepts Inc. was the Ultra Tracker II FM antenna, a descendant of the popular Ultra Tracker antenna, shown.

Referring to the unique elevation pattern of the Ultra Tracker II and its attendant increase in signal density, Antenna Concepts COO Jeryl Schooler said, "What a station is licensed for, they're finally realizing."

The company said these characteristics are produced by reduction of side lobes, which are common in an array of FM antenna elements. The Ultra Tracker II places all available power into the main lobe, reducing downward radiation and multipath caused by reflection of side-lobe energy.

For more information contact Antenna Concepts Inc. at (530) 621-2015 or visit the company Web site at [www.antennaconcepts.com](http://www.antennaconcepts.com)





# Get The Scoop Anywhere, Anytime

**F**ield reporting the way it's supposed to work. Introducing the all new Scoop Reporter II portable CODEC from AETA Audio. This rugged unit combines POTS and ISDN facilities with an integrated three-channel mixer and internal battery supply. Featuring 99 user programmable presets, the Scoop Reporter II will handle two microphones and one line level input. A balanced XLR output can be used for studio producer IFB and Mix-Minus feeds from studio, or to feed the local PA. The Scoop Reporter II will operate on voltages from 85 to 240 volts at 47 to 440Hz. When AC is not available or fails, the unit will run on standard "D" cell alkaline batteries. The intuitive interface is so easy to use, your talent will be able to run a remote broadcast with no technical assistance. And with our 24-hour technical support, you'll never miss another field report. The Scoop Reporter is the all-in-one box that will get the scoop anywhere, anytime.

**D-CELL  
BACKUP**

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- Send and receive 7.5kHz audio with POTS

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World Radio History

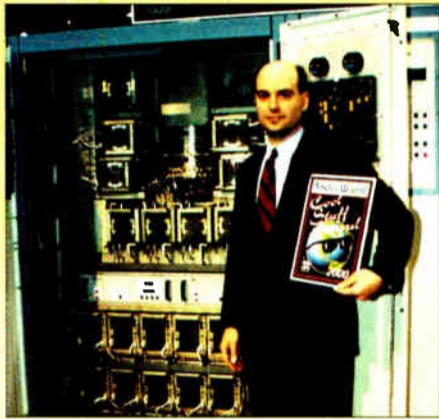




### Nautel Ltd.

Q20 Solid-State 20 kW Single,  
Q40 Solid-State 40 kW Dual FM Transmitter

"Just what all the Class B and C-2 stations have been waiting for," judges wrote. The solid-state Q40 FM 40 kW is made up of two 20 kW standalone Q20 FM transmitters integrated to operate as a 40 kW active reserve transmitter system. Single or dual digital exciters with coherent drive components are included.



ed. System controls, metering and diagnostics for 40 kW operation are incorporated within the dual cabinets.

Three standard 40 kW configurations are offered: Passive Hybrid Combiner; Automatic Switcher/Combiner; and Automatic Contactless Switcher/Combiner. The latter two automatically apply full power from a single Q20 directly to the antenna in the event of problems with one transmitter section.

Q20 features include extensive on-air serviceability, separate power supply for each PA module, dual IPA and IPA power supplies, dual low-voltage power supplies and dual digital exciters.

Gary Manteuffel is shown in the Nautel booth.

Price: Contact factory.  
Available: Fall 2000.

Contact the company in Maine at (207) 947-8200 or visit the Web site at [www.nautel.com](http://www.nautel.com)

### Wheatstone Debuts Consoles, Certification

The new Wheatstone D-700 includes the quality and features of the popular D-600 digital console and adds a more powerful master control module and additional output module, giving every channel two stereo aux send controls.

The D-700, shown here, also can store and recall 99 user presets, allowing it to memorize entire console configurations including bus assign, EQ, send levels, source selection, display titles and on/off status. Multi-level



security gives each operator a personalized access code, while the engineer retains master control.

New to the Audiotronics line is the 220, a modular digital console with four stereo program busses, each with digital and analog inputs.

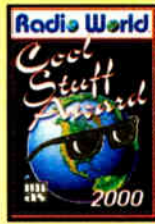
Serial interface allows the 220 to communicate with automation and router systems. The board has sample rate conversion on all digital inputs, and a choice of clock rates.

A year after acquiring Audiotronics, Wheatstone is offering a new version of the NuStar digital console. The NuStar 4.0, shown in second photo, has a digital engine that is installed away from the console interface. Components are hot-swappable, and up to 256 stereo sources are possible.



Wheatstone also rolled out the ATC-1, a new digital AES router that can provide up to 256 AES in and out. And the company began certifying integrators as factory-trained, to ensure smooth project installations. The first company to attain that certification was RDA Systems Inc.

For information contact Wheatstone at (252) 638-7000 or visit [www.wheatstone.com](http://www.wheatstone.com)



### MediaTouch iMedia Logger/ Recorder

mer, time-shift device and spot verification system, or to monitor the other guys.

Judge: "Throw away your tape recorder loggers of all kinds. This does it all!"

Price: \$2,995 to \$3,995.

Contact Broadcasters General Store in Florida at (352) 622-7700 or visit [www.omt.net](http://www.omt.net)

The iMediaLogger provides real-time audio recording of up to four simultaneous mono or stereo source feeds, using a pair of two-channel discrete audio cards.

It operates in incremental logger mode of scheduled source feed record mode, and offers several recording formats, including MPEG-II, MP3, WMA, ACELP.net and codecs.

Use it as a talent skim-



### RFS Tops the South; Intro's Lightweight Antenna

Radio Frequency Systems helped complete an FM broadcast installation atop the tallest building in the southern hemisphere.



The Sky Tower in Auckland, New Zealand, at 1,075 feet, features a 13-channel FM combining system, completed in October.

RFS also introduced the Model 828 series of side-mount FM antennas with one-half wavelength spacing.

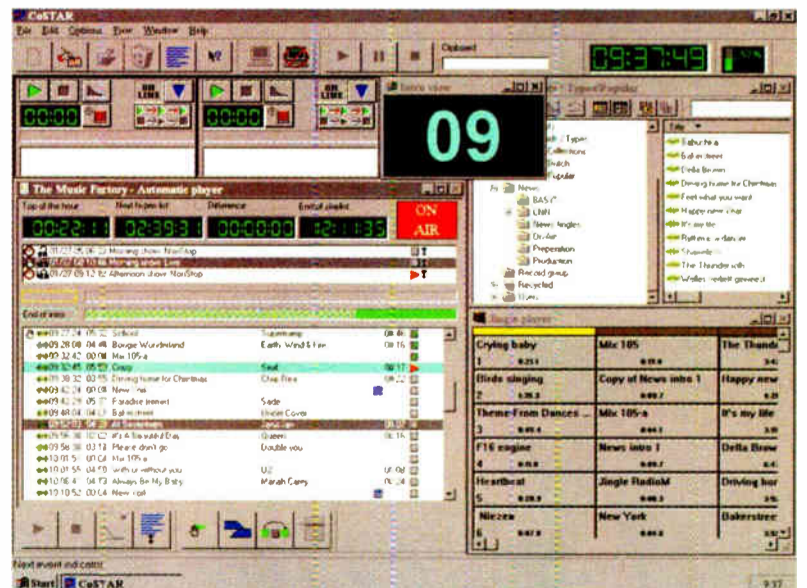
In this configuration, the stainless-steel 828 will cover the FM band within a 1.2:1 VSWR window.

According to Norm Franke, RFS Broadcast sales manager for the Asian region, "This antenna brings the best of both worlds. It is lightweight, easy to mount and covers the entire FM band making it ideal for multistation combined operation."

For more information contact RFS in Connecticut at (203) 630-3311 or visit the Web site at [www.rfsbroadcast.com](http://www.rfsbroadcast.com)

### Fairlight On-Air Shows New Products

Fairlight On-Air was at show for the first time, showing a range of digital and analog consoles along with its CoStar digital storage and playout system. It is designed for managing the capture, storage, distribution and editing of broadcast audio.



The company demonstrated the Fusion digital audio mixer. It has a modular DSP engine, separate configurable control surface and several features for multimedia production use. Depending on the configuration, it lists for around \$15,000.

For more information, contact Fairlight in California at (800) 432-4754 or visit [www.fairlightonair.com](http://www.fairlightonair.com)



### RDS Takes On New Millennium

Register Data Systems, a provider of traffic and billing systems for stations, offered a peek at a traffic system named Millennium.



Not yet shipping, the system runs on the Microsoft Windows 95/98/NT/2000 platform and takes advantage of the scalability and reliability of Microsoft's SQL Server as the back-end database.

The company said because it uses a high-end relational database, Millennium can handle trillions of clients, traffic orders and invoices. It can juggle multiple stations with combined or distributed A/R.

The Millennium is built to handle multi-user concurrent access via LAN, WAN or across the Internet.

For information, contact the company in Georgia at (800) 521-5222 or visit [www.registerdata.com](http://www.registerdata.com)

### Klotz Unveils Paradigm Producer

Klotz Digital has developed the Paradigm Producer, a production platform for Webcasting and Internet radio.

"The next generation of radio transmission is no longer limited to audio content but will also support graphics and video display," said CEO Thomas Klotz.

"This merger of media can only take place in the Web. In this way, everyone can share in the produc-



tion chain and provide their content to different user groups."

Paradigm Producer is equipped with a Klotz X4P network board, so users can access a secure audio-media content exchange network for professionals directly through the Net.

For audio production and editing, the console is equipped with several controls: 24 stereo input sources can be assigned to eight input faders. Each input channel features controls for gain, phase reverse, pan/balance, compressor/limiter and EQ parameters and output bus routing.

For more information contact Klotz Digital America at (678) 966-9900 or visit [www.klotzdigital.com](http://www.klotzdigital.com)

### RadioSoft Shows ComStudy 2.2



RadioSoft showed ComStudy 2.2, designed with the engineer in mind.

Capable of engineering and mapping for all AM, FM and TV apps, the programs incorporate popular algorithms, overlays, underlays and other necessary features to give engineer confidence in the predicted coverage of stations. You can view the terrain and coverage maps in 3D and rotate them in all three axis in real time.

For information, contact RadioSoft at (888) RADIO95 or visit the Web site at [www.radiosoft.com](http://www.radiosoft.com)

### Personalized Sound Processing

New from Thum + Mahr was the Yellowtec VIP/digital voice processor. Like its analog predecessor, the VIP/digital uses "smart cards" to store personalized processor settings for each announcer.

DSP powered and easy to operate, the VIP/digital is bundled with natural reverb from Waves. Its algorithms are designed to provide versatile microphone processing in harmony with the general sound processing of a station.

Configuration of sound profiles is easy to achieve with Windows-based software and these profiles are recalled with a smart card, a credit-card-sized "key" equipped with a microprocessor that allows everyone at the station recall their signature settings.

For information e-mail to [daniel@yellowtec.com](mailto:daniel@yellowtec.com) or visit [www.yellowtec.com](http://www.yellowtec.com)



### MPX5 & MaXIM

With impeccable reliability and a sound that remains clean whether set to loud and punchy or open and transparent, MPX5 and MaXIM are the combination of choice for stations worldwide wanting the very best analogue processing equipment. MaXIM provides precise peak level control using split-band limiting and intelligent program-dependent control to utilize every last drop of available modulation without degrading already processed signals. MPX5 is a very high specification stereo generator with DSP filtering and advanced overshoot compensation allowing increased modulation allied to superb sonic performance.

### FM10 & FM30

For a complete low-power broadcast solution or as exciters for higher power systems, FM10 and FM30 share sbs' renowned ultra-linear modulator and a wideband design that allows direct frequency setting - no tuning required. They are engineered for many years of trouble-free operation at full rated power (10W for FM10, 30W for FM30), and are fully protected against faults in the antenna system. Comprehensive input options include composite / multiplex, mono, stereo - with an integrated stereo generator/processor section for true "plug and play" operation - and AES/EBU digital.

### TX400 & RX400

The complete package for STLs and remote broadcasting. Available on any permitted frequency from 48 to 1300 MHz, and with a wide range of options - mono or internal stereo generator; limiters, AES/EBU, wide or narrow band FM - a TX400 system will suit every application. The matching RX400 completes the link, delivering high-quality balanced audio or composite / multiplex signals, and can also be used alone for demanding off-air monitoring or as the receiver for a translator system.

### PA125 & PA250

Because the Power Amplifiers are one of the most important links in the transmission chain, the PA125 (125W) and PA250 (250W) FM power amplifiers have been engineered for ultimate reliability. Load and internal operating conditions are continuously monitored, protecting the transmitter, keeping your station on-air and reporting potential problems via the telemetry interface. The innovative "fresh-air-tunnel" design eliminates short-lived air filters, whilst the generously rated power supply combines high efficiency with rejection of mains-borne spikes and surges.

### Guardian2 & ACU3

Intelligent management of the whole transmission chain for total peace of mind. Guardian2 dynamically monitors both audio and composite / multiplex signals, switching seamlessly in the event of a fault to the reserve STL, secondary processor or, as last resort, an on-site source. ACU3 responds to problems in a dual redundant transmitter system, selecting between main and reserve chains (up to 100 W internally or higher power with an external relay). And with a full telemetry / control interface fitted to both units, you always remain in the picture and in control.



Solutions at every level



Broadcasters General Store  
Phone 352-622-7700  
Fax 352-629-7000  
[www.bgsfl.com](http://www.bgsfl.com)





### JK Takes to the Field

JK Audio unveiled two products.

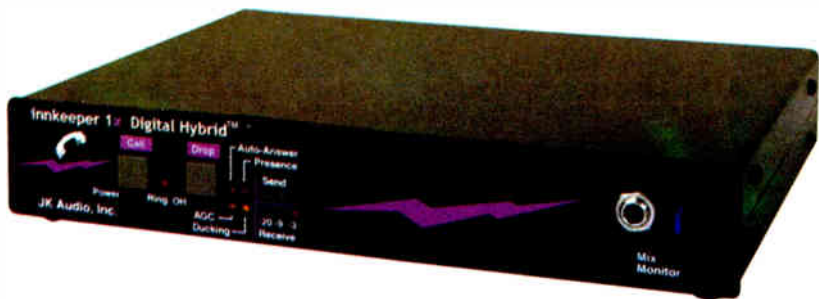
RemoteMix Sport put a smile on the face of sports broadcasters who stopped by. It offers three mics, three headphones, phone line and PBX interface, all in one unit.

The company said its big surprise at the booth was the response to the new

Innkeeper 1x Digital Hybrid, shown. The live demo over real phone lines let people listen to this high-performance hybrid.

Innkeeper Digital Hybrids use only the transmit signal to tune the algorithm to every call. It offers full echo cancellation, better than 50 dB of null automatically.

For information, contact JK Audio at (800) 552-8346 or visit the Web site at [www.jkaudio.com](http://www.jkaudio.com)



### Rules on ROM

Rules Service Company showed a way of keeping broadcasters aware of FCC regulations.

"We're introducing the FCC rules on CD ROM," said Barbara Vaszil, editor. "All the rules are updated every other month and you can purchase the rules either in packages or separately."

Why not just download the rules from the FCC Web page? "Our Rules are updated every other month, the FCC updates the Internet rules once a year," said Vaszil.

For more information contact the company in Maryland at (301) 424-9402, or visit [www.rule.serv.com](http://www.rule.serv.com)



### Olympia Solves Problems

InterMax! is an Internet File Transfer software solution.

It offers radio station groups and program/spot syndicators audio file distribution across the Net, with unattended operation on the client side, and confirmation of transfer completion and integrity.

Also, MixMax! is a six-channel automated audio mixer that complements automated and live operations. With an on-board CPU and flash memory, MixMax! stores and recalls combinations of channel status/levels, fade and crossfade duration, plus auxiliary output closures.

Eight operating scenarios can be programmed and recalled using a serial PC connection, or via GPI input closures.

For information, contact Olympia Management in Missouri at (314) 345-1030 or visit [www.radiomax.com](http://www.radiomax.com)

### MCI Helps Consolidate Tower Space

New from Micro Communications Inc. was the Model 45200 FM high-power bandpass filter module.

With tower space at a premium, it is becoming common practice for FM stations to share a common antenna and transmitter site.

In order to multiplex stations, it is necessary to isolate each transmitter from the others.

"There is a need to consolidate vertical real estate," said Dennis M. Heyman, COO at MCI.

"The 45200 can accomplish this with reduced cost compared to individual tower construction and real estate expenditures."

For more information contact Micro Communications Inc. in New Hampshire at (800) 545-0608 or visit the company Web site at [www.mcibroadcast.com](http://www.mcibroadcast.com)

### Rugged 1 kW AM For Armstrong

Armstrong Transmitter Corp. raised the curtain on a self-contained 1 kW AM transmitter, the X-1AM.

This IBOC-ready unit comes in a single rack-mountable unit that is 12-1/4 inches high and 20 inches deep. It features a switching power supply, 600 W power modules and includes three pre-set power levels.

Armstrong Sales and Marketing Manager Ernie Belanger said, "The X-1AM is rated for 150 percent positive modulation but there is enough reserve capacity to make 165 percent.

"We also have the X-500AM, rated at 500 watts output."

For information contact Armstrong at (315) 673-1269, send e-mail to [sales@armstrongtx.com](mailto:sales@armstrongtx.com) or visit [www.armstrongtx.com](http://www.armstrongtx.com)



### Crown Brings Prototype LPFM

Crown Broadcast brought its in-development LPFM transmitter, a 10-watt working prototype, to NAB2000.

The prototype was housed in a compact case — "smaller than a breadbox." The DSP-based unit, designed around a 32-bit DSP-processor, features built-in stereo generator, digital and analog inputs. An RF output range from 1 to 100 watts is anticipated. The LPFM transmitter will be available this summer.

"It is the first time that these rugged processors have been used in very demanding applications like FM exciters for broadcast," the company said.

Crown's V.P. of Engineering and Product Development J. Paul Firminger said the transmitter is for the international as well as domestic markets. "Regardless of what happens with U.S. low-power FM, Crown will still proceed with low-power design work."

For information, contact Crown Broadcast in Indiana at (800) 294-8050 or visit [www.crownbroadcast.com](http://www.crownbroadcast.com)

## Digital Audio Just Got Easier!

**12:16:35**

**On The Air**

Time	Cart	Title	Artist	Length	Intro	End	Type
12:13:07	L002	Simon & Schuster		00:00			
12:13:12	M1012	Photograph	Def Leppard	04:54	:22		F MUS
12:18:08	M2174	Friends	Elton John	02:20	:05		C MUS
12:20:26	M1732	Dance The Night	Van Halen	02:47	:13		F MUS
12:23:13	V026	Voice Track 26		00:12			VTK
12:23:25	DALIVE	SPOT SET		03:00			I COM
12:26:25	J011	Jingle / Fast		00:06			Jin
12:26:31	M0713	Listen To Her Heart	Tom Petty	02:48	:11		C MUS
12:29:19	V027	Voice Track 27		00:15			VTK
12:29:34	M2214	Black Friday	Steely Dan	03:40	:12		F MUS
12:33:14	M0015	All Day Music	War	04:04	:19		F MUS
12:37:18	L015	Liner # 15		00:15			LC

**CartWorks**  
Digital Audio Systems

For information call: 1-800-795-7234

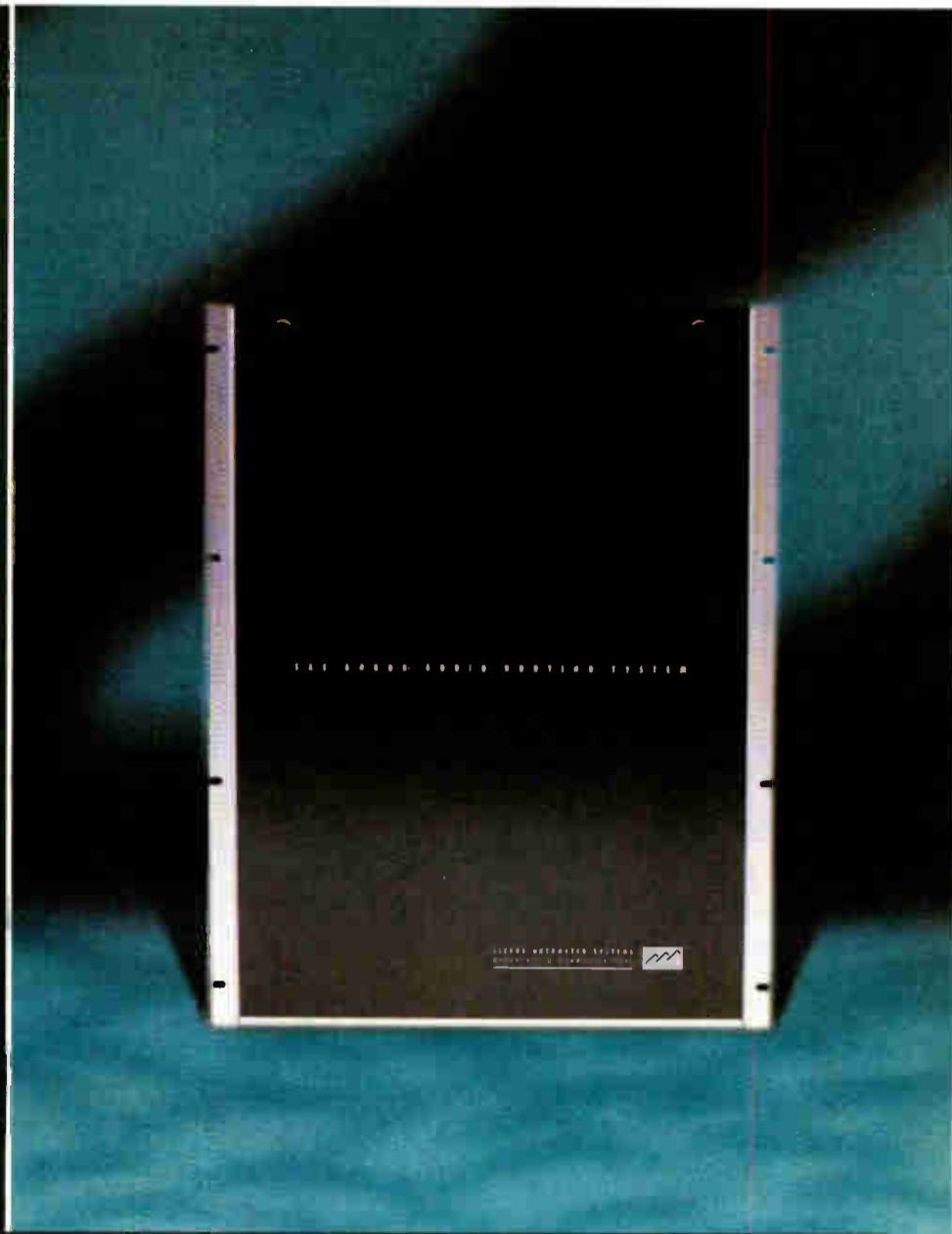
Or visit us on the web: [www.cartworks.com](http://www.cartworks.com)



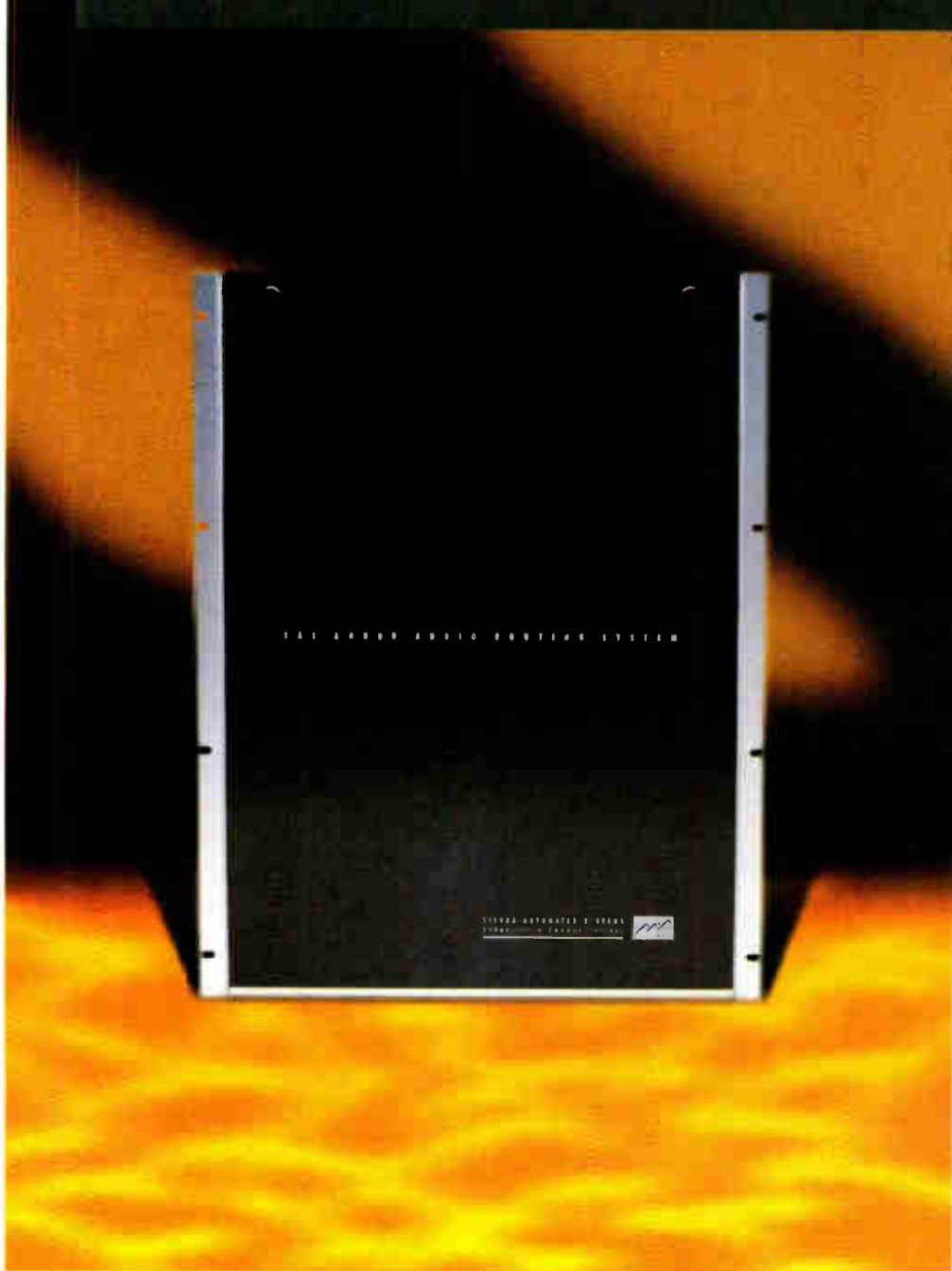
SAS64000 AUDIO ROUTING SYSTEM

Elegant  
Analog

Instant  
Digital



256 X 256 LARGE • MONO/STEREO • WIDE VARIETY OF CONTROL PANELS • 118DB ANALOG DYNAMIC RANGE • DISTRIBUTED MULTI-PROCESSOR ARCHITECTURE



If the migration to digital is in your future, then this is the route to take. Introducing the large size, big performance analog router that also speaks fluent digital. A true hybrid that allows you to scale the number of analog and digital ports as needed, now and in the future. And even better, the SAS64000 creates a forward path to AES/EBU digital audio without creating analog obsolescence.

This means you can mix your analog and digital I/O in the same router frame. Go direct analog to analog, or digital to digital. Or mix it up with 24 bit conversion analog to digital and vice versa. Either way, this unique architecture sports flawless signal integrity and non-blocking flexibility.

And it's wonderfully simple, just plug in our new digital port expander and that's it. Welcome to digital! -co-existing richly with analog in the same framework.

There's lots more to tell. Call us: 818 840 6749. Fax us: 818 840 6751. E-mail us: [sales@sasaudio.com](mailto:sales@sasaudio.com) Check the Web site: [sasaudio.com](http://sasaudio.com) And of course, snail mail: 2625 North San Fernando Blvd. Burbank, California 91504 USA







## Denon DN-F20R Portable IC Recorder

This portable recorder uses IC memory cards as the medium. Recordings are created as files in MPEG1/Layer2, MPEG2/Layer2 or linear PCM (WAV) formats.

Files can be transferred to a PC for editing. Two CompactFlash slots are standard. XLRs are used for L+R mic inputs.

Quality can be selected to suit the application, with highest audio fidelity



of 20 Hz to 20 kHz. Recording time is up to 1,600 minutes, depending on the card and the record mode, mono or

stereo, you select.

A PC with Digigram MPEG board and software can be used as an editing terminal.

The unit weighs approximately two pounds and runs on six AA batteries.

Wayne Dolnick models the winning device.

Price: \$1,299.

Available: Now.

For more information contact the company in New Jersey at (973) 396-0810 or visit the Web site at [www.del.denon.com](http://www.del.denon.com)

## Clearly above the rest with 40 kW of solid state FM power

The Nautel Quantum is quite simply the world's most powerful solid state FM transmitter. The Quantum 20 is a single rack, stand alone 20 kW transmitter.

The dual configuration Quantum 20/20 with up to 44,000 watt capability now offers a practical solid state solution for high power FM stations. Overall efficiency of 68% keeps operating costs and cooling requirements at a minimum.

The Quantum transmitter's built-in redundancy and duplication features contribute to exceptionally high on-air



Quantum 20/20

confidence. Broadband RF Power Modules and IPA Modules each have their own Switching Power Supply Module. Both amplifiers and power supplies can be removed and serviced while the transmitter remains on air.

Low Voltage Power Supplies are duplicated and facilities are also provided for duplication of the Digital Exciter, IPA and IPA Power Supply.

Invest in solid state excellence. Contact Nautel for more information about the new Quantum.



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Phone: (902) 823 2233 Fax: (902) 823 3183 Certified ISO 9001  
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Phone: (207) 947 8200 Fax: (207) 947 3693 Certified ISO 9002  
E-mail: [info@nautel.com](mailto:info@nautel.com) or visit us on the Web at [www.nautel.com](http://www.nautel.com)



#1 in the best of universal transmitters

## ATI Digital Matchmaker

The new Nanoamp DMM100 from ATI is for interfacing short-run fiber or unbalanced RCA digital outputs to balanced XLR or 75-ohm coax. It will also match your facility wiring to any RCA, BNC, XLR or TOSLINK optical fiber device input.



The unit accepts serial digital NRZ signals, such as AES digital audio, from either of a 110-ohm balanced XLR input, 75-ohm BNC or RCA input or TOSLINK. It provides reshaped outputs to simultaneously drive a 110-ohm balanced XLR line, 75-ohm BNC or RCA cables and TOSLINK. All ins and outs are transformer-coupled and floating.

Also new, the DM200 is a digital monitor that accommodates sample rates from 27 to 96 kHz.

And the HDA100 is a new stereo headphone amp capable of driving most 32- to 600-ohm phones to very high levels. A battery power option lets you take it in the field.

For information, contact ATI in Pennsylvania at (800) 959-0307 or visit [www.atiguys.com](http://www.atiguys.com)

## Litton Life Support Pressurization

Litton Life Support said it developed the DSN2 in response to demand for a small, inexpensive system to pressurize transmission lines with pure, dry gas.

The DSN2 uses the pressure



swing adsorption (PSA) method to concentrate nitrogen from the ambient air ensuring a ready supply of desiccated gas.

The DSN2 offers reliability with low maintenance and automated operation for unattended, continuous use for one or more lines. The small footprint of the DSN2 allows for a variety of mounting options.

For more information, call the company in Iowa at (800) 548-8662 or visit [www.littonls.com](http://www.littonls.com)



### AP Connects Vendors, Demos ENPS

The Associated Press linked 18 vendors at NAB2000 in a demonstration of MOS, a new Media Object Server protocol designed to connect a variety of production systems and devices.

Using wireless technology from Wi-LAN Inc., AP created a wireless high-speed network for the show. Using the special network, it showcased ENPS, its Electronic News Production System.

Booths including Dalet, IBM/Radioman, Management Data, Netia and Sony were connected.

MOS is a way to let radio and TV journalists see, use and control devices including media editors and servers, character generators and special-effects machines, even those by multiple vendors.

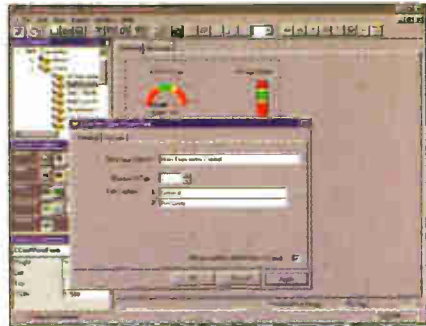
AP also said it has provided ENPS to 125 broadcasters, including Minnesota Public Radio, CBS News, National Public Radio and the Christian Broadcasting Network.

For information contact AP in Washington at (800) 821-4747 or send e-mail to Dave\_Polyard@enps.com

### Gentner Connects With Lynx

On display at Gentner was Lynx, a software package for use with the GSC-3000 remote control system. The Lynx software is an easy upgrade for existing GSC-3000 users and is Windows compatible.

"A great feature of the new software is the ability to build custom monitoring screens," said Jim Armstrong, East Coast broadcast



sales manager.

"Using drag and drop icons, it's easy to create a screen with only essential information, so the operators can understand it quickly and easily."

A firmware upgrade improves the communications on the G-bus architecture for better speed and reliability.

Gentner also introduced a new remote control unit, a replacement for the popular VRC-2000. The VRC-2500 is compatible with existing VRC-2000 accessories.

It features built-in voice response capability and is accessible via phone or computer. Windows 95/98/NT compatible software is included to assist with setup programming and control.

For more information contact Gentner in Utah at (801) 975-7200 or visit the company Web site at www.gentner.com

### Testing the Air With Precision

Audio Precision said the NAB2000 convention saw a record number of attendees register for information at two different company booths.

The company said its Portable One Dual Domain audio test set, with front-panel operation and in-built test and data storage, remains the highest-performance and lowest-cost audio tester that measures analog audio, digital audio and digital audio interface signals.

Its big brother, the System Two Cascade, was shown with new software enhancements, including Audio Precision applications software for measuring sound cards and sound card-based workstations and other production systems.

For more information contact the company in Oregon at (503) 627-0832 or visit www.audioprecision.com



# Overwhelmed?



## We make it simple.

Pristine RapidFire: the all-in-one digital broadcast system.



- NT file server compatible
- Live assist, walkaway and satellite
- Four on-air digital players with volume, fade and seque control
- Easy playlist editing capability
- Access your entire audio library
- RF edit on-air waveform editor
- Instant jock "audio drop box"
- Bulletproof reliability
- Satisfaction guaranteed

Access **TAPIDFIRE** on the web at [www.pristinesys.com](http://www.pristinesys.com) or call (310) 670-7500

Pristine Systems, 1400 S. Main Street, Suite 100, Fullerton, CA 92630







## Aztec Radiomedia NextFM 300 FM Radio Station in a Box

Even while NAB2000 was going on, Congress was debating the future of LPFM.

If low-power does come to pass, one supplier to watch is Aztec Radiomedia.



The NextFM300 includes a stand-alone MP3 audio player for automated broadcast and storage of up to 50 hours; an interface to allow the broadcast to come from a mixer or other external source; a transmitter with up to 10 watts output and digital stereo generator; RDS subcarrier generator; IP2 technology and Ethernet for control via local or Internet networks; and audio processing.

Price: \$6,000 approx. Available: Pending regulatory approval

Contact Aztec Radiomedia America at (703) 875-9100 or send e-mail to america@aztec-radiomedia.com

## Updates for Antex Cards

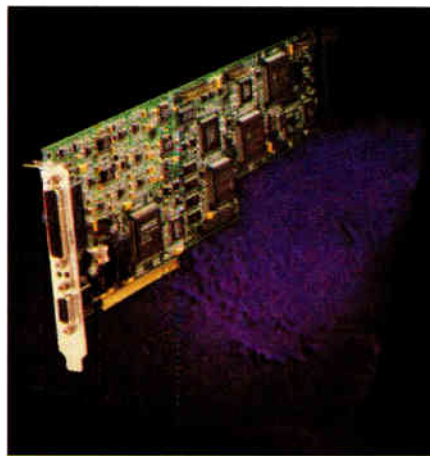
Antex brought several new and updated cards to the show. The company showed the BX-12e, an update to the BX-12. It now has the ability to play MPEG files with up to four independent sample rates.

It has four analog outputs and one stereo input, which can be upgraded to full AES/EBU digital. DSP software now can accept a word clock from a digital console.

Antex brought the improved LX-24M card with an 80 MHz DSP chip and analog feed-through capability for satellite-timed insertions.

The company showed its new "DMX Axis" hardware for DMX MUSIC multimedia delivery system.

For more information contact Antex in California at (800) 338-4321 or visit the Web site at [www.antex.com](http://www.antex.com)



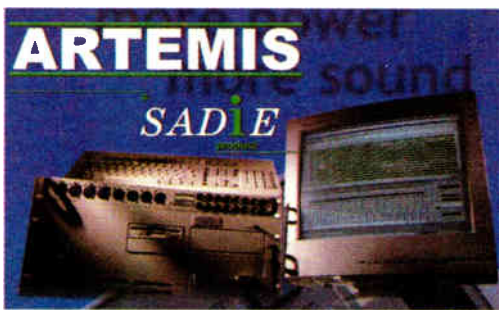
## Sadie Low-Cost DAW

SADiE introduced the RADiA digital audio workstation, the replacement for the SADiE Classic system.

With four I/Os, the system replays up to 24 tracks at a 24-bit 48 kHz sampling rate. It's available as a card with breakouts or as a turnkey system with removable SCSI storage in the \$4,000 to \$5,000 price range.

The company also showed its Edit Slate Integrated LCD work surface display. Users work on the touch-sensitive display with a pen controller. By flipping the pen, the user can erase sections.

For more information contact SADiE at (615) 327-1140 or visit [www.sadie.com](http://www.sadie.com)



## Akai Shows All-In-One Workstation

Akai showed the DPS16, a 16-track 24/96 digital personal studio that lists for \$2,695. The unit can record on 10 tracks while playing back on six.

The unit has a six-inch display with a graphic patch bay and an internal 10 GB hard drive. It has real-time fader and pan controls for each channel. The Q-link



navigation system gives access to aux sends, EQ and effects parameters.

Waveform editing can be done on each track including cut, copy, paste and time stretch. 100 locate points can be named and stored. An optional four bus EFX card with 56-bit processing is available.

For more information contact Akai in Texas at (817) 831-9203 or visit the Web site at [www.akaipro.com](http://www.akaipro.com)

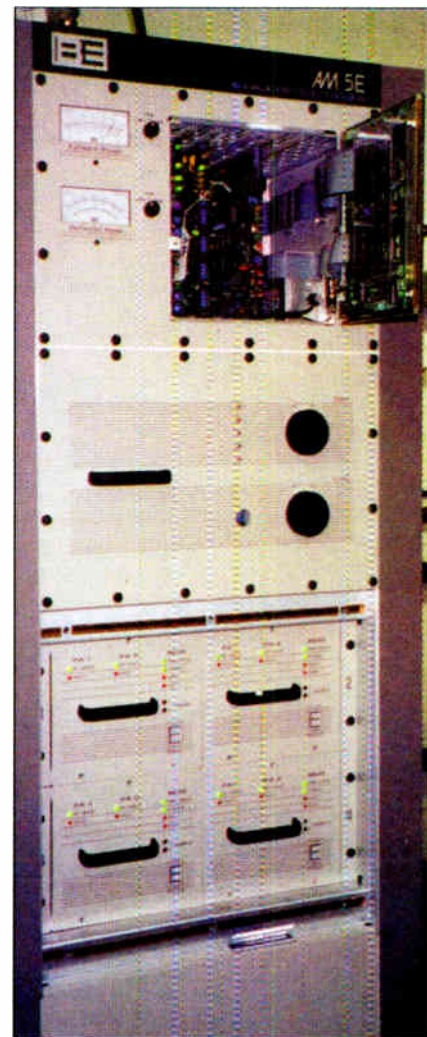
## "Hey, where's my product?"

Did we miss your company's new box? Let us know so we can let our readers know.

Send your press releases and artwork via e-mail to [radioworld@imaspub.com](mailto:radioworld@imaspub.com)

## BE Debuts New AM Line, E-Stream

Broadcast Electronics augmented its line of solid-state AM transmitters with two medium-power models, the 5 kW AM-5E and the 2.5 kW AM-2.5E.



Both feature BE's exclusive, patented "Class E" power modules, a redundant power supply, built-in matching network and five power levels to meet radio stations' PSRA/PSSA requirements.

BE's National RF Accounts Manager John Abdour said, "The AM-5E is the lowest-priced 5 kW on the market."

BE also offered a system called E-Stream that processes to overcome the degradation of the audio signal from encoders used for streaming over the Internet.



E-Stream achieves a high-quality signal from a PCI card that can process two mono or one stereo stream.

The company also rolled out a new member of its AudioVault line, aimed at small and medium-sized radio operations, called VaultXPress (RW, April 26, page 14).

For more information contact Broadcast Electronics in Illinois at (217) 224-9600 or visit the Web site at [www.bdcast.com](http://www.bdcast.com)

To listen to e-Stream compared to a standard Internet signal, go to [www.audiovault.com](http://www.audiovault.com)



## BIRTV 2000

### Expanding into China is as easy as 1, 2, 3.

when you join the IMAS International Gallery at BIRTV 2000.

- 1. BUY** your ticket to Beijing, China for the BIRTV 2000 Conference and Exhibition, August 23 - 26, 2000
- 2. JOIN** the IMAS International Gallery, a unique and valuable resource providing you the facilities and contacts at BIRTV 2000 to sell in China. As a member of the IMAS International Gallery, for the low all-inclusive price of US\$2,800, you'll have access to the following:

- A co-op booth (4m x 6m) in the Conference Hall to meet and talk with people
- Tours of major broadcasting facilities in Beijing: China Central Television (CCTV), National People's Radio (NPR) and Beijing TV Station (BTV)
- Introductions to key Chief Engineers and Technical Managers at the respective facilities
- A round-table meeting with Chinese distributors and dealers
- Access to an on-site interpreter
- Translation services at cost (US\$180 per 1000 words)
- One organized dinner, hosted by IMAS
- IMAS will act as a liaison and provide Visa application letters
- Signage in the booth (dimensions to be provided)
- Logo reference in the IMAS International Gallery Ads running in the August issue of Broadcast & Production and BIRTV Daily News.
- Five nights accommodations at the Jianguo Hotel
- And other logistic assistance

### 3. BRING your product literature to BIRTV 2000

For more information on the IMAS International Gallery, contact your sales manager.

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Email: [acarter@imaspub.com](mailto:acarter@imaspub.com)

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Email: [imashk@ctmail.com](mailto:imashk@ctmail.com)

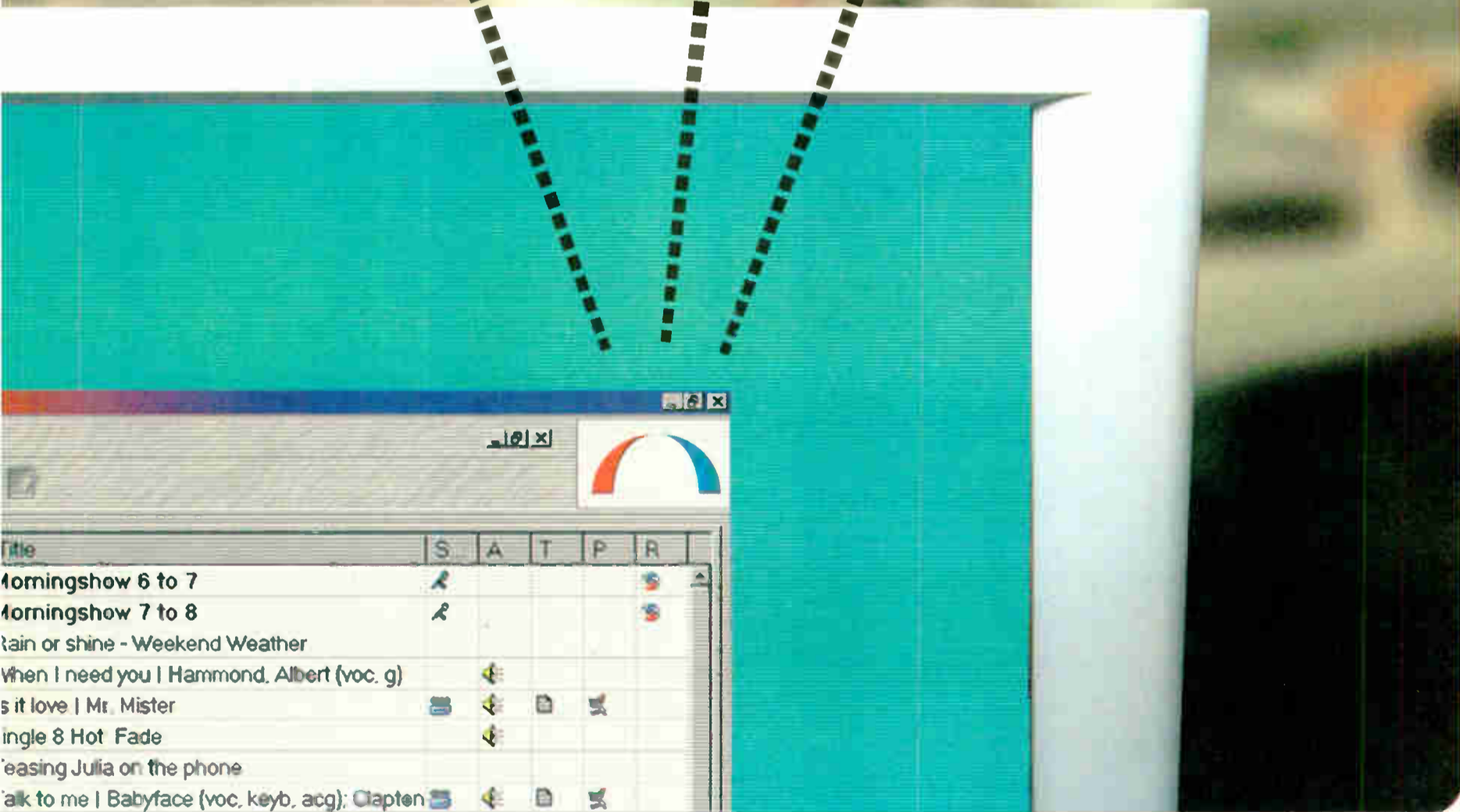


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World Radio History







## Sound Devices USBPre Interface

Its audio inputs allow direct connection to the computer for the most direct signal path. All A/D-D/A conversion is done outside of the computer in the USBPre for solid noise specs. Allows monitoring of both source and computer audio simultaneously.

Price: TBA. Expected street price

In addition to IP and LPFM, another popular acronym at the show was USB.

For instance, here's a portable device that interfaces mics, instruments, line sources and consumer gear with personal computers. It is designed for USB-equipped Mac OS9, Windows 98 and Windows 2000 systems.



\$500-\$600. Available summer.  
Contact Sound Devices at (608) 524-0625 or visit [www.sounddevices.com](http://www.sounddevices.com)

## CartWorks Adds Features

The CartWorks line of digital audio systems has added features and options. An upgrade of any system to Windows 2000 Professional is available.

CartWorks' new Audio Browser lets any workstation on the LAN listen to and view information about any audio file. The GM or PD can audition spots and promos without leaving their office.

CD Trax lets you copy tracks directly off a CD without dubbing. And DC8A DTMF Remote Control Option helps you automate remote broadcasts with no one at the studio.

Other new features and options include hard-drive mirroring, rack-mount

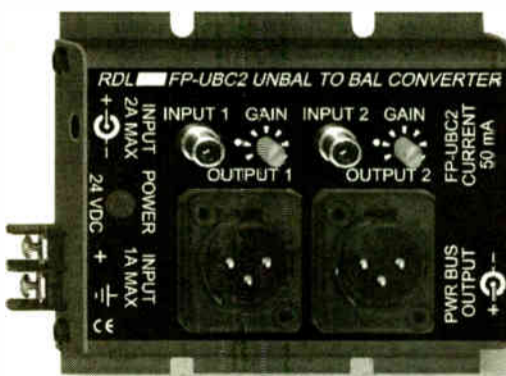
Time	Cart	Title	Artist	Length	Intro	End	Type
12:13:07	L012	Spot # 2		03:05			C
12:13:12	M1012	Photograph	Def Leppard	04:54	:22	F	MUS
12:18:06	M2174	Friends	Elton John	02:20	:05	C	MUS
12:20:26	M1732	Dance The Night	Van Halen	02:47	:13	F	MUS
12:23:13	V026	Voice Track 26		00:12			VTK
12:23:25	DALIVE	SPOT SET		03:00		I	COM
12:26:25	J011	Jingle / Fast		00:06			Jin
12:26:31	M0713	Listen To Her Heart	Tom Petty	02:48	:11	C	MUS
12:29:19	V027	Voice Track 27		00:15			VTK
12:29:34	M2214	Black Friday	Steely Dan	03:40	:12	F	MUS
12:33:14	M0015	All Day Music	War	04:04	:19	F	MUS
12:37:18	L015	Liner # 15		00:15			LC

AUTO STOP EDIT 00:03:23

chassis, satellite receiver remote control and, for larger operations, CartWorks Server, coming soon.

For more information, contact the company at (800) 795-RADIO or visit the Web site at [www.cartworks.com](http://www.cartworks.com)

7 NEW Flat-Pak™ products from Radio Design Labs® are the hit of the show!



Flat-Pak Series FF-UBC2

- ✓ Stereo Unbalanced to Balanced Audio Conversion
- ✓ Connectorized Audio Converter
- ✓ Low Noise and Distortion
- ✓ Front Panel Adjustments
- ✓ Cabinet, Shelf or Rack Mounting
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## AudioSonix Net-Based Content Delivery

AudioSonix provides Internet-based delivery services to radio, advertising agencies, production studios or other media company wishing to distribute media or other files.



Using a centralized server and AudioSonix client software, AudioSonix allows for the password-protected delivery of broadcast-quality audio or video to one station or 1,000 stations with a click of the mouse.

AudioSonix does not require a browser or other Net software, other than a basic dial-up connection to the Internet. Reception can be automated, allowing deliveries to be completed overnight when Net usage is at its lowest.

Possible applications include electronic delivery of new releases by record companies to radio stations or ad agencies distributing new spots.

For more information contact the company in Maryland at (802) 476-0625 or visit [www.audiosonix.com](http://www.audiosonix.com)

## Visit Radio World on the Web!



<http://www.rwonline.com>

## E-Z Up Pitches New Tent

International E-Z UP showed improvements to its "instant shelter" product.

"We're showing our brand-new 'Hut' series," said Chuck Tallman, corporate sales. "We've changed the roof a little bit, primarily from a peaked roof to a gable-type roof, like a roof on a house."

The increased roof area allows customers to have a larger area for signage or a logo. The Hut also features a powder coated, rustproof frame.

For more information contact E-Z UP in California at (800) 457-4233 or visit the Web site at [www.ezup.com](http://www.ezup.com)

## Energy-Onix Unveils Pulsar

Energy-Onix unveiled its Pulsar line of solid-state AM transmitters, available in power levels from 250 watt to 100 kW.

All transmitters in the Pulsar line use the same broadband power amplifier modules, which are interchangeable without tuning or component changes. Pulsar Series transmitters are designed for multiple preset power outputs.



The company also promoted its new Legend Series C line of medium-power solid-state FM transmitters.

This transmitter is American made and features broadband design, 1 kW "hot-pluggable" RF drawers. The design is centered on the Motorola MRF151G MOSFET, which incorporates integral thermal protection. Each 1 kW amplifier drawer also has its own VSWR foldback circuit.

A free spare parts kit is provided with each transmitter.

For more information call Energy-Onix in New York at (518) 758-1690 or visit [www.energy-onix.com](http://www.energy-onix.com)

## A-T Debuts AT4047 Cardioid

Audio-Technica introduced the AT4047/SV large-diaphragm cardioid capacitor mic at this year's NAB.

The microphone has a transformer-coupled output and uses dual, gold-plated and aged large diaphragms for extended frequency response of 20 Hz to 18,000 Hz.

It also features low self-noise of 9 dB SPL, a dynamic range of 140 dB at 1 kHz and ability to handle high SPLs up to 149 dB, 1kHz at 1-percent THD.

To ensure isolation from noise and vibration, the AT4047/SV features a floating-construction element. A new heavy-duty shock mount is included to provide mechanical isolation and secure mounting.

The AT4047/SV cardioid capacitor microphone has a suggested retail price of \$695.

For more information contact Audio-Technica in Ohio at (330) 686-2600 or visit [www.audio-technica.com](http://www.audio-technica.com)



## Here are three ways Eventide can help:

**C**onsolidation brings market efficiencies, but also big headaches and challenges. It's essential for management to keep track of multiple stations. And keeping a legal record of what was said and when commercials aired is also more important than ever. Several groups have standardized on **Eventide Digital Audio Loggers**. Our economical VR204 records up to 550 hours on a tiny palm-sized cassette. VR204 records up to 4 channels simultaneously so you can keep tabs on the competition's spot loads, play lists and talent while you record your own stations. New!! Now Eventide loggers let you record/play in Hi-Fi for full "broadcast quality." Ideal for show replays, time zone delays, etc.

**E**ventide's **BD500 Broadcast Delay** makes talk shows run smoother and sound better, for less. The BD500's multiple dump feature divides the delay time into several "slices" so you're still safely in delay even right after dumping an offensive remark. It's the hassle-free talk solution... even when air talent is working without a producer. No other delay offers Eventide's high quality patented catch-up technology for clean audio combined with fast catch-up. And it's the only delay with optional digital inputs and outputs for new all-digital studios. Yet the BD500 costs thousands less than our previous model. See how much easier talk shows can be with Eventide's 4th generation BD500 Broadcast Delay.

**W**ant to increase creativity without adding personnel? Add life to drive-time shows? Win new

advertisers with better station-produced spots? An **Eventide Ultra-Harmonizer**® brand effects processor really does all that. Designed specifically for radio and production, the new DSP4000B Ultra-Harmonizer features radio effects designed by production whiz Jay Rose. Hundreds of comic voices, sound effects, reverbs, pitch changers and more are instantly accessible at the touch of a button. Plus, the DSP4000B has superb Timesqueeze® time compression /expansion capability. Shorten a 60 second national spot to allow for a local tag. Squeeze or stretch a music bed to fit the spot. The DSP4000B has optional digital I/O to interface easily with digital editors and consoles. It's the radio effects box designed to bring stations more business and more listeners.

*The bottom line:* Eventide broadcast products are potent tools for today's radio. To learn more, talk to your broadcast distributor, call Eventide direct at 201-641-1200, or see our website, [www.eventide.com](http://www.eventide.com).

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# BOTTOM



# LINE



# BROADCASTING



**Better  
managed,  
better  
sounding  
radio yields  
better results.**





## Orban Optimod-FM 8400 Digital Audio Processor With Stereo Encoder

This summer will see the rollout of the next Optimod-FM, a much-anticipated event thanks to the innovations and success of Orban products in the past.

The 8400 has five times the power of its predecessor, using Motorola DSP engines for a "cleaner, brighter, punchier and noticeably louder" sound.

Features include two modes of stereo enhancement, one of which emulates the analog 222A, three bands of parametric EQ, sweepable bass shelf with selectable slopes, a neat rainbow display and other great stuff for dial twisters. Digital I/O is standard.

"Three years of focused Bob Orban brilliance pays off," a judge wrote.

Price: \$10,700. Available: Summer.

Contact Orban in California at (510) 351-3500 or visit [www.orban.com](http://www.orban.com)



## Ward-Beck: Making Clean Signals

We've come a long way from the twin T oscillator with the light bulb gain stabilization circuit. At NAB2000, Ward-Beck Systems Ltd. introduced the D8206 digital reference generator with a built-in sample rate converter.



This "audio generator" generates "tones" from 20 Hz to 20 kHz at continuously variable levels from silent to 0 dBFS. It can lock to an external AES reference. The unit features 20- or 24-bit resolution with sample rates from 22 kHz to 96 kHz.

For more information contact the company in Ontario at (416) 335-5999 or visit the Web site at [www.ward-beck.com](http://www.ward-beck.com)

## Webcasting? **WebCaster!**

**Internet Processor - \$1850**

**CONDITION PROGRAM AUDIO  
FOR OPTIMUM "STREAMING  
AUDIO" QUALITY**

"Broadcasting" in real-time over Internet implies unique technical issues. Most listeners use a dial-up connection with its aggressive data compression and coding techniques to yield quality that is acceptable, at best.

Your on-air audio chain was not designed to address Internet processing needs. Our *WebCaster* was specifically developed to cope with the limited bandwidth and throughput of current 'streaming' audio technology. It gives the listener best possible audio quality without overtaxing the delivery system.



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1305 Fair Ave. • Santa Cruz, CA 95060  
TEL: (831) 458-0552 • FAX: (831) 458-0554  
[www.inovon.com](http://www.inovon.com) • e-mail: [info@inovon.com](mailto:info@inovon.com)

## Nagra ARES-P and Digigram RCX220 Recorders

Nagra raised interest in its ARES-P palm-sized acquisition recorder.

It can hold three hours of recording time on PCMCIA media using MPEG II compression. The unit uses special mono or stereo mics and has an additional microphone or line input option.



Digigram showed its version based on the same platform, called the RCX220. This unit can connect to a PC by a USB link, which enables the use of Digigram-powered applications without purchasing extra hardware.

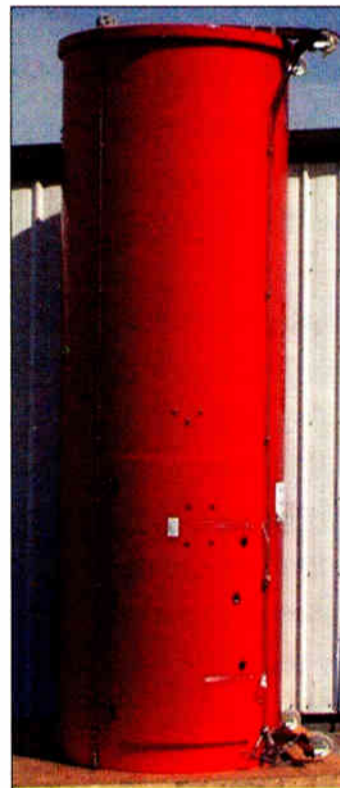
Contact Nagra in Tennessee at (615) 726-5191, or visit the Web site at [www.nagra.com](http://www.nagra.com)

Contact Digigram in Virginia at (703) 875-9100, or at [www.digigram.com](http://www.digigram.com)

## Two New Offerings From Shively

Shively Labs showed off two new pieces of technology at NAB2000.

Shively featured the IDAB Filter Injector, which is designed to inject a digital signal onto an analog signal for IBOC applications. Shively has supplied all of the filters employed by



USADR in its IBOC field-test sites.

It also showed the Radome, above, a full-sized cylinder radome designed to enclose multiple antennas, providing superior structural support.

For more information contact Shively in Maine at (888) 744-8359 or visit the Web site at [www.shively.com](http://www.shively.com)

## QuicPix 2: New From MediaTouch

MediaTouch released QuicPix 2, the second generation of its affordable cart replacement system, and redesigned its Web site to become a portal for radio software.

QuicPix 2 has a more robust automation engine and easier-to-use playlist and cartwall.

It supports multiple sound cards, and can play and record MPEG 2, MP3, and PCM (WAV) files on any audio card.

It comes with MediaDisk-32 production software, which records and edits files. It includes a CD-Ripper to convert music CDs to digital files faster than real time.

The company said the system is suitable as a starter cart replacement system, compatible with its OpLOG Enterprise Systems. It is targeted at small stations, Webcasters, college stations and LPFM.

QuicPix 2 will be priced at \$999, with an introductory price of \$699 until the end of May.

The Web site also offers SnoWatch, software that helps stations track storm closures.

In coming weeks, software that publishes radio newscasts to the Web will be added, along with a system to track public service announcements and community ascertainment.

For more information, contact Broadcasters General Store in Florida at (352) 622-7700 or visit the Web site at [www.omt.net](http://www.omt.net)

## Enco Implements Cart Chunk

Enco Systems unveiled the latest version of DAD<sub>PRO32</sub>.

The audio management system implements "Cart Chunk," or Cart/Audio Delivery Extension, a proposed standard based on the EBU Broadcast Extension WAVE format designed to facilitate interchange of audio data along with basic scheduling, continuity or traffic information.

The standard is intended to perform as a method by which digital delivery systems from different manufacturers, as well as DAWs and news systems, can exchange files.

Enco also introduced XML support, providing hooks and functionality to allow interconnection with third-party Web and e-commerce products.

And it now supports MP3 files, and includes a CD ripper and an enhanced library user interface.

For more information, contact the company in Michigan at (800) 362-6797 or visit [www.enco.com](http://www.enco.com)

## "Hey, where's my product?"

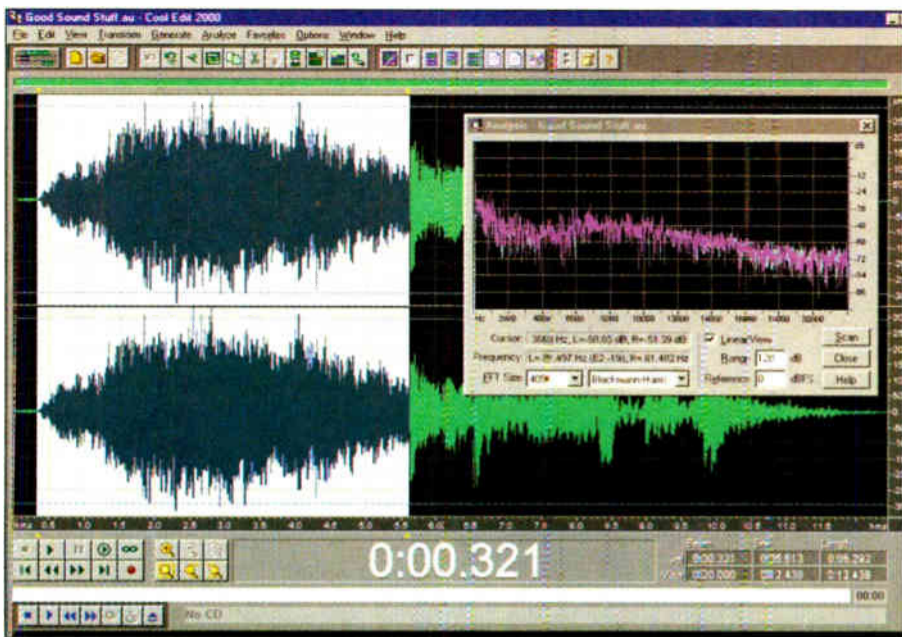
Did we miss your company's new box? Let us know so we can let our readers know.

Send your press releases and artwork via e-mail to [radioworld@imaspub.com](mailto:radioworld@imaspub.com)



### Look What It Does for \$69

Syntrillium announced Cool Edit 2000 (\$69), a powerful audio recorder, editor and effects processor for Windows 9X, Windows 2000 and Windows NT. Cool Edit 2000 offers more than 20 DSP effects, MP3 import/export in addition to 23 other file formats, and dozens of other features.



Syntrillium also showed two plug-ins for Cool Edit 2000: the Audio Cleanup Plug-In (\$49) adds advanced audio restoration features, including Click and Pop Elimination for cleaning up old vinyl recordings.

The Studio Plug-In (\$49) adds a four-track mixer to Cool Edit 2000 with features like Mute/Solo/Record switching on each track, and Punch-In capabilities with support for multiple takes.

For more information contact the company in Arizona at (888) 941-7100, or to download and purchase online go to the Web and visit [www.syntrillium.com/cooledit](http://www.syntrillium.com/cooledit)

### Telos, Omnia Break Ground

The Telos TWO and its big brother the Telos TWOx12 are digital talk show systems that connect to standard telephone lines and take advantage of ISDN lines for standard telephone calls used in talk shows and live interviews on air.

The Telos TWOx12 is a multi-line telephone system with the capacity for 12 lines and features icon-based visual call management and caller-ID support.



The Telos TWO is a dual hybrid in a single rack-mount unit. The company also showed an expanded line of digital audio processors in the Omnia family (RW, April 12, page 23).



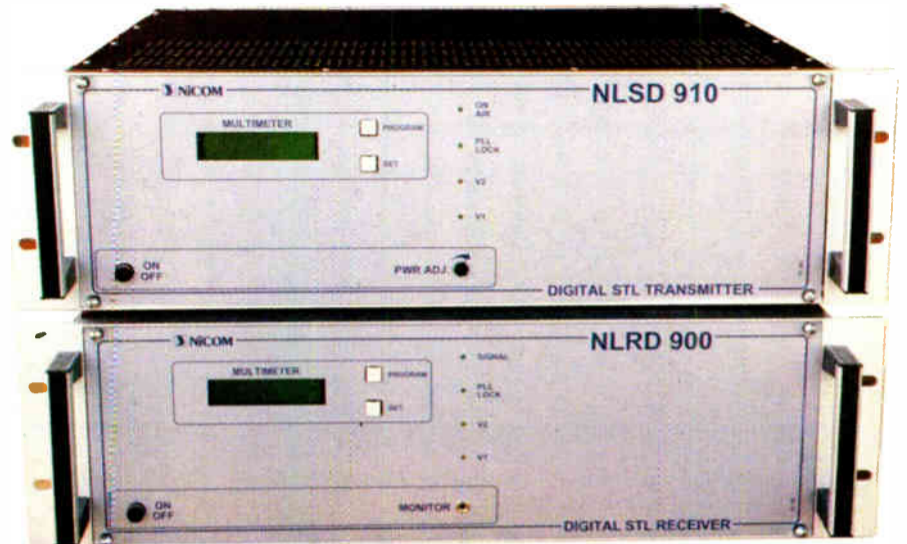
Omnia-3 is aimed at small and medium markets and is priced at \$3,580 retail, available now. Omnia-6 is for major-market power users and will ship in early summer. Both have significant new features and DSP speed and power.

For more information contact Telos Systems in Ohio at (216) 241-7225 or visit the Web sites at [www.telos-systems.com](http://www.telos-systems.com) and [www.nogrunge.com](http://www.nogrunge.com)

### Nicom Launches Composite Digital STL

Designed for use in the 950 MHz band, the Nicom NLSD 910/NLRD 900 Digital Composite Aural STL can convey stereo composite from studio to the transmitter. It will also support two SCA signals simultaneously.

"This approach allows you to put an integrated audio processor/stereo generator at the studio end for easy adjustment, while still enjoying the signal quality of a digital link," said Michelle DeFazio, southwestern sales representative for Nicom.



A fiber optic port is available on both units to allow dual-hop links without having to demodulate and remodulate the composite signal.

The supplier also displayed its new BKP-950 broadband STL antenna, made of stainless steel and features lightweight construction.

"The BKP-950 has been very well received by its customers," said Nicom Broadcast Sales Manager Mike Cruz.

For more information contact Nicom in California at (619) 477-6298 or visit the Web site at [www.NicomUSA.com](http://www.NicomUSA.com)

### EAS for the Home



TFT introduced the EAS 952 Home Alert Receiver at NAB2000. These factory-programmable fixed-tuned AM/FM receivers are programmed to monitor a local EAS station. On receiving an appropriate EAS datastream, the speaker is unmuted so users hear the EAS two-tone signal and emergency audio. The speaker mutes again on the EAS EOM data burst and a very loud beeper is activated.

The unit is powered by an external "wall-wart" supply and an internal backup battery.

For information contact the company in California at (800) 347-3383 or visit their Web site at [www.tflinc.com](http://www.tflinc.com)



Anyone can take a device and shove it in a rack. It takes something special to make the product more intelligent in the process. **Something special has arrived...**

**modem • parallel printer port • battery backup • surge suppression**

The **RAK-1 Intelligent Rack Adapter** provides data communications and printing capabilities, a battery backed power supply, telephone line surge suppression and front panel indicators. It's all combined in a sleek new aluminum rack-mountable chassis for one low price. And perhaps best of all, it protects your investment by using the RFC-1/B system that you already have!

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# RADIO **broadcast** products

## 1200 Console

- NEW - redesigned in 1999
- 5, 10, or 15 channel models
- Fully DC controlled for reliability
- Ultra high audio performance
- Easy connectorized installation
- Modular internal electronics
- Mix minus phone interface



A rugged design with heavy aluminum panels, solid oak trim, 5M operation On/Off switches and full DC control, the 1200 is ideal for On Air, Production, or News applications.

### Standard Configurations

1200 - 5S	5 channels	\$2,295
1200 - 10S	10 channels	\$3,495
1200 - 15S	15 channels	\$4,495

(call factory for options)

## DL4 System II

- NEW - On Air & Production System
- Live On Air, Hard Disk Automation, Satellite Automation, Production, Jingle Box, Segue Editor
- Complete - just add 2 PCs
- Only **\$7,995**

The NEW DL4 System II comes complete with 105 hours of audio storage, 7 input play software for On Air, and DL4-SCHED for Production. This studio system requires only 2 customer support

## 12,000 Console

- NEW - redesigned in 1999
- 8, 18, or 28 channel models
- Fully modular design
- 3 stereo output buses
- VCAs remove audio from faders
- Telephone talks how module option
- Monitor for control room & 2 studios



Modular, reliable, flexible, and powerful, the 12,000 is found around the world from Tokyo to Paris to New York. The 12,000 is perfect for any size market or any radio application.

### Standard Configurations

12K8 - 6	6 channels	\$4,350
12K18 - 12	12 channels	\$7,075
12K18 - 18	18 channels	\$8,755

(call factory for options)

## DL4 System III

- NEW - dual On Air & Production System
- Live On Air, Hard Disk Automation, Satellite Automation, Production, Jingle Box, Segue Editor
- Complete - just add 3 PCs
- Only **\$16,995**

The NEW DL4 System III comes complete with 210 hours of audio storage, two 7 input play software packages for On Air, and DL4-AUTO software packages for Production. This powerful 3 studio system requires only 2 customer support

## Digital Console

- NEW - Revolution Series
- Digital & Analog Radio Console
- Console, Touchscreen, or Mouse Control
- 3 Program & 2 Telephone Mix (-) outputs
- 12 CH, PC Control \$3,995
- 12 CH Console \$7,995
- 18 CH Console \$12,995



A breakthrough in features, performance, and price, this is a black box digital audio console controlled by a familiar Console -or- PC computer. Powerful, flexible, and designed for ease of use, installation, and service, the Revolution is a Colorado Digital Product.

Available April

## DL3 Workstation

- #1 selling Digital workstation
- Live On Air, Satellite Automation, Hard Disk Automation, & Production
- NEW - now includes:
  - Trak\*Star editing software
  - Network card and software
  - Large 78 hour drive

From the #1 selling Digital workstation family in the world, the NEWLY configured DL3 requires only 2 customer support for Production, then simply install the

DL3 - 78	78 H
DL3 - 150	150 H

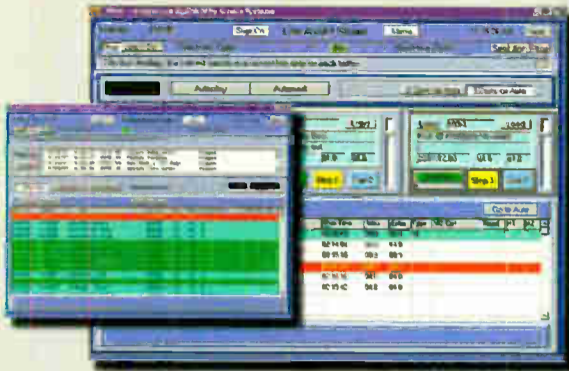


# Arrakis Systems inc.

## Condensed Catalog



### Instant 3-Play



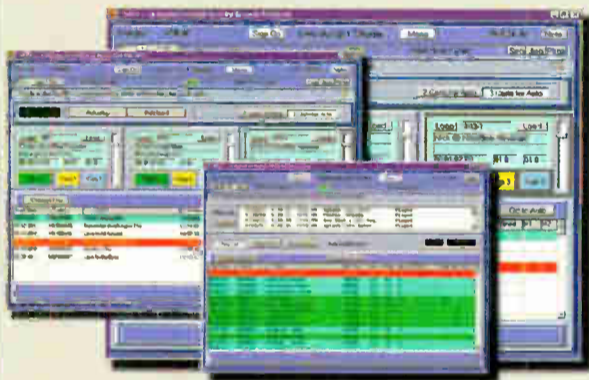
- NEW - Instant 3-Play
- Triple Play & Record Jingle Box
- Control from 1, 2, or 3 PCs
- One PC has triple play -or- three PCs have a single play
- Only **\$2,995**



with a triple play & record DL4 workstation, 7 input record switcher, DL4-AUTO Production and Scheduling. This powerful 2 PC workstation requires 2 customer supplied PCs and installation.

Just connect 1, 2, or 3 PCs running our INSTANT 3-PLAY software to our rack mounted digital workstation and you are ready to go. The workstation has 3 simultaneous plays with record. Software setup assigns play control to the PCs. 3 times the power of other Jingle Boxes, the Instant 3-Play provides access to the SAME jingle from 3 places.

### Studio Furniture



- NEW - Modulux FLEX-Studio
- One size fits ALL modular design
- Highest quality laminates & wood
- World famous Modulux cabinetry
- In stock, ready for delivery
- Only **\$4,995** list price (call for other configurations)



with a 6 play & dual record DL4 workstation, 7 input record switchers, two 7 input record switchers, (2) DL4-SCHED for Production and Scheduling. This workstation requires 3 customer supplied PCs and installation.

The Modulux Flex-Studio is a complete modular studio package that can be configured in dozens of different ways to meet nearly any studio design. It can be assembled left or right handed as well as in all of our standard configurations: 'Short L,' 'Long L,' and 'Unbalanced U.' Complete with racks, access doors, interview table, and much more.

### How to Buy

Domestic Dealers for Arrakis products are:

- BSW (Broadcast Supply Worldwide) (800) 426-8434
- CROUSE-KIMZEY (800) 433-2105
- BGS (Broadcasters General Store) (352) 622-7700
- SCMS (Southern Coastal Marketing Service) (800) 438-6040
- BRADLEY BROADCAST (800) 732-7665
- CONTINENTAL ELECTRONICS (800) 733-5011
- RF SPECIALTIES (contact their regional offices)

For more complete information on any Arrakis product, visit our website at: [www.arrakis-systems.com](http://www.arrakis-systems.com) or email: [sales@arrakis-systems.com](mailto:sales@arrakis-systems.com)

ARRAKIS SYSTEMS INC. FORT COLLINS, CO (970) 224-2248

prices effective Feb. 15, 2000



### Telecast Fiber Systems Unleashes Viper II

Designed for use with a fiber optic connection, the Viper II system features 24-bit digitized audio and a dynamic range of over 100 dB.



A modular system, it can support from two- to eight-channels of audio over one fiber optic cable in a rack-mounted frame. The frame can be configured with dual redundant power supplies that automatically sense input AC power in a range from 90 to 240 VAC, with 12 VDC or with optional 48 VDC supplies.

The Viper II uses either single or multimode fiber cable and has a range of up to 50 miles.

"Campus facilities pre-wired for fiber are an ideal application for the Viper II," said Steven Nelson, senior systems engineer at Telecast Fiber Systems.

For more information contact Telecast Fiber Systems in Massachusetts at (508) 754-4858 or visit the Web Site at [www.telecast-fiber.com](http://www.telecast-fiber.com)

### PMI Audio Secures Studio Projects

PMI Audio Group represented Studio Projects at NAB 2000 as its exclusive distributor.

Studio Projects featured three models of condenser recording microphones at the show, including the TB-998, a tube dual triode condenser microphone with variable pattern control.

Also on display from PMI was the VCIQ JoeMeek. The VCIQ is a multi-function device with a transformer preamplifier, compressor, EQ, enhancer and de-esser for audio and radio.

For more information contact PMI Audio in California at (877) 563-6335, fax (310) 373-4714 or visit the Web site at [www.pmiaudio.com](http://www.pmiaudio.com)

### Soundscape Creates Recorder Editor

Soundscape showed its R.Ed system, which stands for Recorder Editor. It is a 32-track standalone unit that starts at \$6,300.

The system has 24 channels of I/O available through three Tascam Digital Interface (TDIF) connections. A new line of TDIF hardware provides 24 XLRs as I/Os.



Soundscape also brought the new Mixtreme PCI card, which provides an expandable mixing engine. A bundle called Mixtreme PowerPAK 2000 includes Acid Style, Gigasampler and a Wave Mechanics reverb for less than \$1,000.

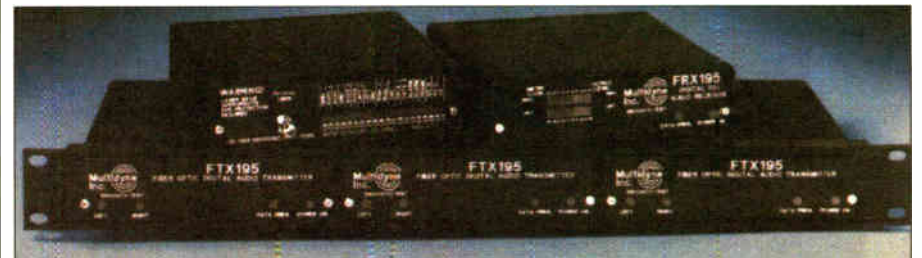
And it showed its model of a 3D audio system with 45 Genelec 2029s placed on all four walls and the ceiling and three kickers in the floor, creating a 45.3 mixing system.

For more information, contact the company in California at (805) 658-7375 or check out the Web site at [www.soundscape-digital.com](http://www.soundscape-digital.com)

### Multidyne Shows Fiber STL

Featuring 20-bit digital accuracy, the Multidyne FTX-195/FRX-195 audio system operates on fiber optic cable to deliver either analog or AES/EBU stereo audio from studio to transmitter. With single mode, fiber distances of up to 62.5 miles can be supported.

The standard system will support two additional data channels for RS-232 control of remote equipment or one 5 kHz bandwidth auxiliary audio channel. An



optional wave division multiplexer allows two stereo audio streams and either four data channels or two auxiliary audio channels on a single fiber cable.

For more information contact Multidyne in New York at (800) 488-8378, fax (516) 671-3362 or visit their Web site at [www.multidyne.com](http://www.multidyne.com)

### CBSI Serves Universe

CBSI's Digital Universe is an automation system with music stored on hard drive. The software allows air talent to voice-track while on the air, hearing the selected songs and voice in context.



"With the LiveServer (audio routing) feature of Digital Universe, you can bring all your networks and other audio sources into a dedicated server and access them from any computer on the network," said Bob Leighton, programming manager for CBSI Custom Business.

For information contact the company at (541) 271-3681 or visit [www.cbsi.org](http://www.cbsi.org)

# THE SOUNDELUX R-1

HELP YOUR TALENT  
CUT THROUGH  
THE CLUTTER

From the acclaimed high-end studio condenser mic specialists, Soundelux Microphones brings studio quality to on-air:

- Powerful, deep, rich; clear & articulated.
- Rock solid reliable 1" diaphragm transformerless FET.
- Low priced metal shockmount locks the mic in place.
- Made in USA.
- Quality craftsmanship & durability.
- 5 year unconditional warranty to broadcasters.
- Half the price of the closest competitor.
- The perfect mic to precede today's complex digital processing chains.

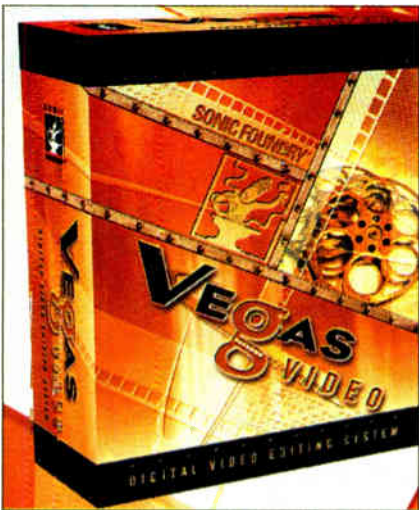
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phone: 323.464.9601 fax: 323.463.2881 [www.soundelux.com/mics](http://www.soundelux.com/mics)



### Sonic Foundry Moves Into Video

Sonic Foundry introduced its new Vegas Video software. It hosts all the processing found in the Vegas Pro audio editing software with digital editing capabilities.



It is designed to work with digital video and other visual file types to create edited video and audio for Internet and multimedia applications. Upgrades will be available for Vegas Pro owners.

Vegas Pro 2.0 will be available in late spring. Updates include XFX 1, 2 and 3 plug-ins, a metronome function and envelope lock-to-events capability.

For more information, contact the company in Wisconsin at (608) 256-3133 or visit the Web site at [www.sonicfoundry.com](http://www.sonicfoundry.com)

### Courier Carries Sonifex Into NAB

Independent Audio housed Sonifex wares at NAB2000. Included among the Sonifex products was the Courier digital portable hard disk recorder, which has been upgraded to Version 2.5 software.

It uses a PCMCIA hard disk or card as its recording media to record MPEG, broadcast or linear BWF, AIFF or WAV audio data files. It uses a scrub-wheel for graphical editing.

"The PCMCIA card can be inserted directly into a



PC for instant editing," said Marcus H. Brooke, managing director for Sonifex.

V2.5 software for the Courier enables the unit to be used as a portable ISDN codec to provide live audio using MPEG-2 compression to send mono 11 kHz bandwidth audio using an ISDN line.

The Courier lists for \$2,675, or \$3,750 with the ISDN feature.

For more information contact Independent Audio in Maine at (207) 773-2424, or check out the Web site at [www.independentaudio.com](http://www.independentaudio.com)

### Furniture From the City of Brotherly Love

Studio Technology designs, manufactures, delivers and installs custom furniture to the broadcast industry.

Broad-based design and construction expertise enables the company to provide a range of custom furniture to clients.

The company can provide a simple custom configuration at modular furniture pricing, or higher-end furniture using alternative materials such as solid surface material.

Based in the suburbs of Philadelphia, Studio

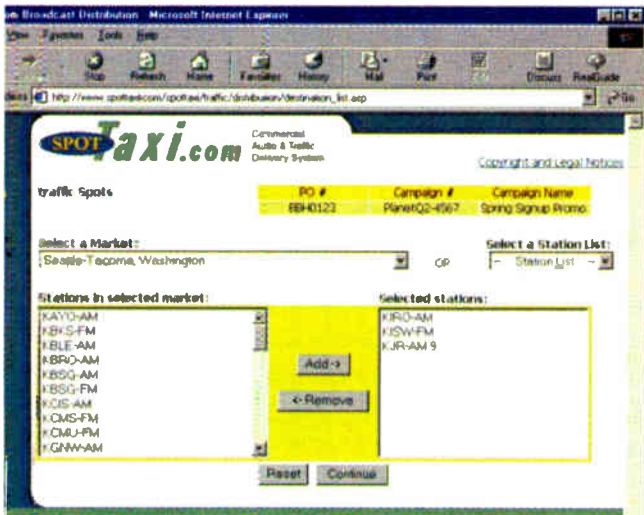


Technology will provide delivery and installation of furniture nationwide.

For more information, contact the company in Pennsylvania at (610) 640-1229 or visit the Web site at [www.studiotechnology.com](http://www.studiotechnology.com)

### Taxi for Hire

Central Media Inc. introduced SpotTaxi.com, an integrated, Web-based system for the management of ad media and traffic information.



Peter Barnes, president of SpotTaxi.com, said, "This product facilitates the workflow between the creative people involved in producing radio commercials and then distributes them to radio stations."

"It's also a repository for spots so that agencies can log-on and pull up spots."

Also, SpotTaxi has a patent-pend-

ing process for transcoding spots into streamable copies. Then anyone who has access and ownership to a particular spot, anywhere in the process, can hear it.

For more information contact the company in Washington at (206) 903-3400, or visit the Web at [www.spottaxi.com](http://www.spottaxi.com)

### Automated Field-Strength Readings

Potomac Instruments showed off new software at NAB2000 that works with its VHF field-strength meters and GPS receivers to automate the gathering of field-strength data.

The product was inspired by the needs of

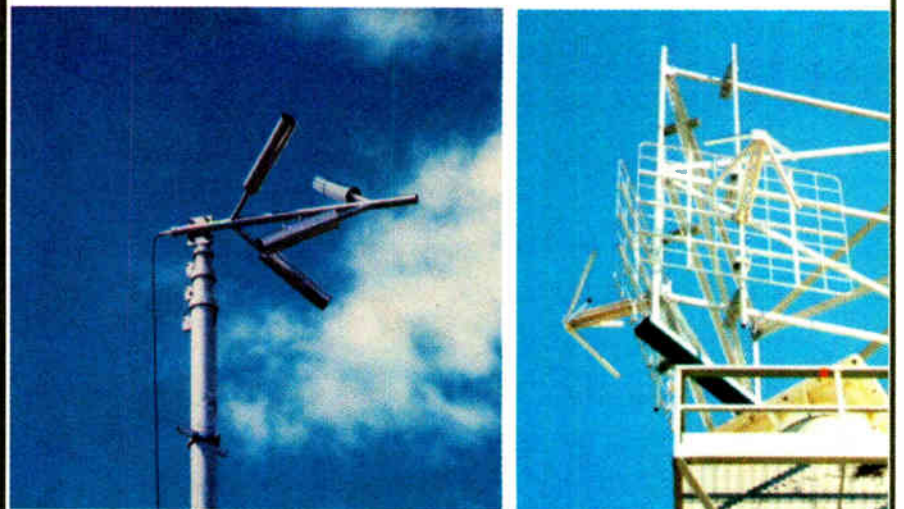
**Potomac Instruments, inc.**

DTV stations, but can be used by FM stations. An AM version is in the works.

For more information contact the company in Maryland at (301) 589-2662 or visit the Web site at [www.pi-usa.com](http://www.pi-usa.com)



### RADIO FREQUENCY SYSTEMS RFS Broadcast



### Total Systems Solutions for FM Radio

- Complete RF Systems for FM Radio
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North Haven CT, 06473

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fax +1 203 239 9260  
info@rfsbroadcast.com





### AEQ Brings Portable TLE-02D

Remote broadcasting meets versatility with the TLE-02D portable Digital Communications Unit by AEQ.

Combining a three-input mixer, digital telephone hybrid and ISDN capability, the unit lists for \$1,500.

Also shown was the MPAC-02, shown, with provision for two ISDN lines, a digital hybrid with frequency extender and a four-channel mixer.

For information contact AEQ at +34 (91) 686-1300 or visit [www.aeq.es](http://www.aeq.es)



### APT Presents Two Codex

The BCF256 Broadcast Communication Frame is designed to deliver audio over ISDN, direct-dial circuits or permanent links such as T1, E1 satellite and microwave.

The NXL384 is offered as cost-effective solution for broadcast networks. Auxiliary data at baud rates up to 9600 offers the user additional control and data transmission features.

Both products utilize APT-X technology, which provides a combination of quality audio with negligible coding delay. The 4:1 bit-rate reduction system offers

resistance to the errors created by psycho-acoustic based algorithms.

"The real advantage is our Core APT-X technology, which provides outstanding audio quality through multiple coding cycles," said Emma Wickens marketing manager for APT.

For more information contact Audio Processing Technology Ltd. at +44 (0) 28-9037-1110 or visit the Web site at [www.aptx.com](http://www.aptx.com)



### Silicon Valley Fills Solid-State FM Gap

Silicon Valley Power, a long-time supplier of solid-state FM power amplifier components to major U.S. transmitter manufacturers, brought its own line of solid-state FM power amps to NAB2000.

This line includes the 10/1000, B-2000 and 10/3000 models. The 10/1000 produces 1 kW output; the B-2000 produces 2 kW output and the 10/3000 is a 3 kW amplifier.

For more information, call Silicon Valley Power in California at (408) 986-9700 or e-mail to [sales@svpa.com](mailto:sales@svpa.com)

### M&K: Twice the Amplification

Miller & Kreisel featured its MPS-1610P internally bi-amplified main monitor at NAB2000. The monitor is designed for broadcast, film and music applications.

Also on display was the MPS-1625P, which is an internally bi-amplified tripole surround monitor, designed for broadcast, film and music applications.

For more information contact Miller & Kreisel in California at (310) 204-2854, fax (310) 202-8782 or visit the Web site at [www.mkssound.com](http://www.mkssound.com)

## The Wizard™ has gone STEREO!

The new DIGITAL FMSA-1 gives The Wizard System unmatched stereo monitoring capabilities. . .



Superlative stereo performance. Linear-phase filters that reveal the true performance of your audio processing. The stability of digital stereo demodulation. The sophisticated graphical presentation of The Wizard. And—with the RS-232 port—operation on site or off.

Contact Belar today for more details on what should be your next modulation monitor



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Call, write or FAX for more information on Belar AM, FM, Stereo, SCA, and TV monitors.

[www.belar.com](http://www.belar.com)

### Scott Helps You Stream — Video!

Scott Studios announced a low-cost video-on-hard-drive system for unattended spot insertion at TV stations and cable systems, plus music video programming for LPTV and streaming video (synchronized with Scott digital audio) for radio.

Scott also introduced its Automated School Closing Reporter, a telephone voice mail system to

convert calls from school officials into lists of closed/delayed schools. Lists print for announcers or display on Web sites, or are pre-recorded voice for automation.

AXS 3 is a new affordable music-on-hard-drive and satellite system.

Scott also introduced SS Enterprise, a control point for 12 unattended stations over the Internet.

For information contact the company in Texas at (800) SCOTT-77 or visit [www.scottstudios.com](http://www.scottstudios.com)

### Broadcast Solutions Cracks LPFM Market

Broadcast Solutions S.A., based in Cape Town, South Africa, brought its EX1-25 FM low-power FM transmitter and several other LPFM products to NAB2000.

The EX1-25 is a self-contained unit with digital VU meter, optional stereo generator/audio limiter and optional RS485 control. The company also brought its EX2-100 and EX2-250 transmitters, which produce 100 and 250 watts respectively.

According to Tony Milla of Broadcast Solutions, its FM products feature integral low-pass filters and meet all FCC technical requirements.

For more information contact Broadcast Solutions in Cape Town, South Africa at +27-21-7055092 or via the Website at [www.bselec.com](http://www.bselec.com)

### Moseley Promotes STL, Expedio

Moseley told NAB visitors about its work with USA Digital radio, providing a four-channel Starlink SL9003Q STL as part of the live IBOC DAB demonstration.

In order to get the four-channel linear STL to operate without bit-errors, Moseley said it used one of its new Starlink Bandpass Cavities on the front end of the receiver. The bandpass cavity kept a 938 MHz paging transmitter with an omni antenna located 30 feet from the STL receiver dish from interfering with this important broadcast.

Moseley also introduced Expedio, an ENG link for the television industry.

For information, contact the company in California at (805) 968-9621 or visit [www.moseleysb.com](http://www.moseleysb.com)



**BIRTV 2000**

August 23-26, 2000 • Beijing

## Go Prospecting In China!

**N**early 90% of the television and radio equipment purchased in China is imported. Tap into this gold mine at BIRTV 2000, the largest broadcast equipment trade show in China.

Let IMAS Publishing show you how, with a program designed to exponentially increase your exposure:

1. Advertise in the August pre-show issue of **Broadcast & Production-China**. Reach a targeted circulation of audio and video professionals with purchasing influence.
2. Reserve booth space at BIRTV and gain face-to-face exposure to 10,000+ attendees.
3. Reinforce your presence at the show by placing your ad in the pre-printed tabloid edition of the **BIRTV Daily News**, available to attendees throughout the show. Or run an ad in the BIRTV 2000 show update, produced on site daily. Or do both.

### Expand your reach into China!

Call Michele Inderrieden today at +1-703-998-7600, ext. 151, or email: [minderrieden@imaspub.com](mailto:minderrieden@imaspub.com) for more information.



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BROADCAST SUPPLY WORLDWIDE

## Advantage

### Audio Equipment for Broadcasters

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- Same Day Shipping\*
- Extended Hours
- Knowledgeable Sales Staff
- Flexible Terms

# COMREX

# We've Got Your Remotes Covered

Comrex has unique products to handle any dial-up situation you find yourself in. Whether you choose the popular HotLine POTS codec for standard dial-up lines, the advanced Vector, a complete 15 kHz remote solution for POTS lines, or the low-delay Nexus or Envoy 15 kHz codec for ISDN applications, you're assured of Comrex's renowned digital quality and bullet-proof reliability. Right now, BSW is offering special pricing on Comrex codecs. Plus, BSW doubles the warranty to two years! So relax and give us a call - we've got your remotes covered.

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**The BSW / Comrex Advantage**  
 1-year extended warranty!  
 Extensive on-site inventory  
 Factory-certified sales representatives



**To Order Call BSW 1-800-426-8434 or Visit [www.bswusa.com](http://www.bswusa.com)**

BSW sales professionals have real-world broadcast and studio engineering experience to offer expert help with your equipment purchase.



**NEW**

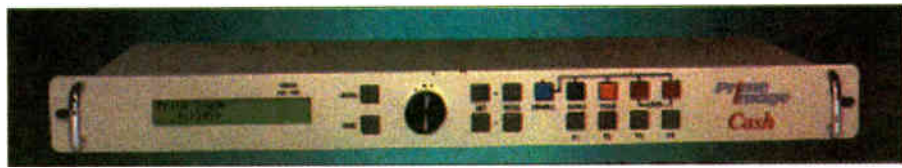
Call or Visit Online for Your Free 176-page BSW 2000 Catalog

\* Call or see [www.bswusa.com](http://www.bswusa.com) for details.



### Prime Image Time Machine

Ever find a dime or a quarter on the street? Found money is the best kind and that is the hook behind Cash by Prime Image. It gives seconds of additional airtime by collecting pauses and spaces.



"The unit uses a sophisticated audio detection circuitry; it intelligently micro-edits the audio stream," said Jim Aldrich, VP of operations. "It allows the broadcaster to generate a tremendous amount of revenue."

Cash works in real time and does not employ audio compression. (See *RW*, Feb. 2, page 24.)

For more information call Prime Image in California at (408) 926-5177 or visit the Web at [www.primeimageinc.com](http://www.primeimageinc.com)

### Easy-to-Maintain Strobe Light

Honeywell Obstruction Lighting introduced the StrobeGuard high-intensity strobe-lighting system.

Designed for towers exceeding 500 feet in height, the StrobeGuard is user-friendly in maintenance.

According to Thad E. Fink, sales manager for the southeast region, "The StrobeGuard requires minimal tools to service. The strobe tube is internally triggered, resulting in no corrosion due to gas emission. Another benefit is increased life. The StrobeGuard is microprocessor controlled, thus requiring less wiring and smaller size conduit on the tower."

The StrobeGuard is FAA approved.

For more information contact Honeywell in California at (805) 581-5591 or visit the Web site at [www.cas.honeywell.com/ob\\_lighting](http://www.cas.honeywell.com/ob_lighting)



### Dielectric Improves Antenna Design

Dielectric Communications introduced the DCR-RFR Series of FM antennas, which uses an N-1/N design to minimize downward radiation.

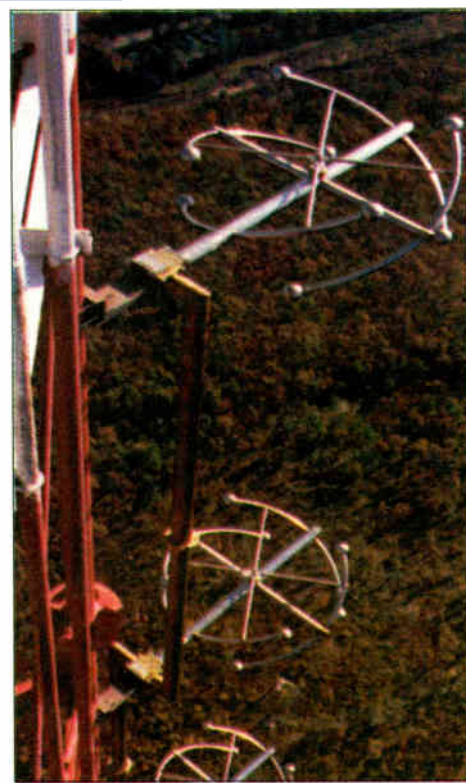
This design allows a higher gain than that available with customary one-half wavelength spaced arrays.

The N-1/N design provides nearly the same gain as a full wavelength-spaced array while causing a phase cancellation of the downward component.

The resulting decrease in downward radiation also produces a lesser value of RFR radiation.

Dielectric also announced at NAB2000 that it will manufacture Harris CBR Cavity-Backed Radiator antennas.

For more information contact Dielectric Communications in Maine at (800) 341-9678 or visit the Web site at [www.dielectric.com](http://www.dielectric.com)

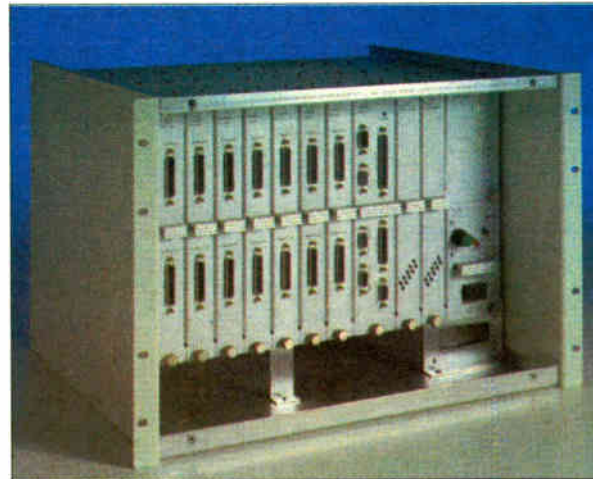


### Logitek Beefs Up Engine

Logitek Electronic Systems introduced an enhancement to the Audio Engine-based Digital Audio Console line.

The AE-NETA optical Engine Network Card allows interconnecting up to 32 Audio Engines to enable the creation of large, integrated installations. Sixty-four studios can be connected, with all having access to any source on the 32 mainframes.

Up to 500 stereo channels can be shared simultaneously, with the crossover between Engines transparent to the operator.



Logitek also announced Supervisor, an optional software application that organizes and manages the audio resources and functionality of multi-Audio Engine installations.

Supervisor adds features such as timed audio switching, timed console configuration changes, quick changes of which studio is on-air and manual audio routing control.

Also introduced was the IO8D Digital Audio input and output card,

which provides eight digital stereo inputs and outputs, twice as many as the IO4D card. The new IO8D is also capable of 24bit/96 KHz operation for compatibility with future digital components.

For more information contact Logitek at (800) 231-5870 or visit the Web site at [www.logitekaudio.com](http://www.logitekaudio.com)

### Portable MiniDisc Has On-Board Editing

Marantz presented its long-awaited PMD650 portable MiniDisc recorder in the booths of several dealers.



Based on the same footprint as its PMD cassette series and offering the recording and editing advantages of the MD format, the 650 has editing capability and a 40-second buffer. It has XLR and RCA digital and analog outputs, phantom power and monitor speaker.

For more information contact the company in Illinois at (847) 820-4800, or check out the Web site at [www.superscope-marantzpro.com](http://www.superscope-marantzpro.com)

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# The Rules of Smart Lighting

Charles S. Fitch

This is one in a series of articles about the National Electrical Code. The previous story appeared April 26. The series can be found online at [www.rwonline.com](http://www.rwonline.com)

Last time we reviewed the types of light sources that are available, and some of the meager NEC mandates that affect stations in regard to lighting.

Let us get specific about lighting in the station environment and make some suggestions that might make our work areas more pleasant and productive.

The ubiquitous fluorescent fixture: In businesses across the country, it is probably the most used, and misused, lighting device.

We use two categories of lighting in our stations: ambient and task. Because no sharp line of demarcation exists between the two, and the light from each flows together in a space, we can view the difference with the concepts of "general" and "specific."

Although fluorescents often are used in both, the most prevalent applications of the ceiling-mounted fluorescent is ambient lighting.

Fixtures can vary in style and cost, from bare-bulb, surface-mounted or suspended units, to elegant recessed units with cellular dispersal baffles or lensed covers.

Each does the job with varying amounts of success, capturing the light released from the bulb, reflecting it in the direction needed (down, in most cases) and dispersing the light into the human space.

The best fixtures have reflective enclo-

tures that gather and focus the majority of the light and direct it through a dispersal system that distributes the light output evenly across the field of interest.

Much light is lost from the reflector by collision with the bulb, so the smaller the bulb's diameter, the more efficient the fixture.

This is why we replace fixtures or retrofit fixtures that use T-12 bulbs with thinner T-8 bulbs. Most electric utility lighting incentive programs that help pay for the installation of more efficiency lighting are

Now that we have the ambient light on and properly dispersed for the work performed underneath it, let's return to two aspects of lighting we addressed in the last installment. These are light levels and color temperature.

Many stations use their ceiling lights for both ambient and task, flooding the room with high levels, thus getting up to the required light levels for detailed work (see chart for values).

This may be acceptable where people come and go, such as the desk used by out-

**Within moments of entering a new space, the mind/eye combo will take the whitest object in that space and make it 'reference white.'**

predicated on the use of T-8 lamps.

Bare bulbs with a reflector are most efficient in gross terms; no light is lost in the diffuser. However, more complicated fixture designs with detailed diffusers are most even in light dispersal.

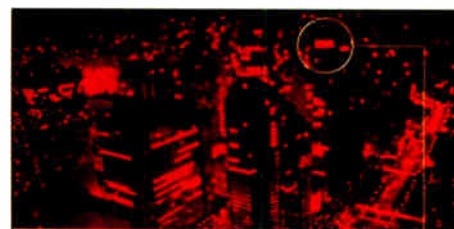
In the back room at the transmitter, a simple set of bare-bones hanging fixtures probably is adequate.

In the business office, where detailed accounts (like your paycheck) are generated, use nice, highly diffused, perfectly placed units to make your station book-keeper remember you with generosity.

side salespeople who share the space and use it for one or two hours. But in assigned work areas or places where lengthy tasks are done, this approach is visually fatiguing.

The emphasis in this case should be on task lighting. Position desk lights or specifically located downlights right over the work surfaces. Desk task lighting is preferred, because it allows adjustment. It is more direct and the source is closer, so the intensity level of the source light can be lower.

Seventy percent or more of the lighting



**NEC 1999**

National Electrical Code  
Updated through 1999

power you send into a space never becomes light, but does make it into heat. This is great in winter but expensive in summer, when you have to get rid of this heat through air conditioning.

The prudent manager makes a design tradeoff between ambient and task lighting to make the best use of every watt.

Because most offices are lighted with fluorescent lights, color temperature comes into play.

In a quest for raw efficiency, most basic fixtures use "cool white" fluorescent tubes. You have seen and used inexpensive, two-tube "shop lights" with T-12 bulbs. I've personally specified and/or installed thousands of these in situations where the light is used just a few hours a week, such as the transmitter site.

Because the T-12 bulb from its own mass blocks much of the reflected light from being projected from the fixture, shop light fixtures are not efficient. Further,

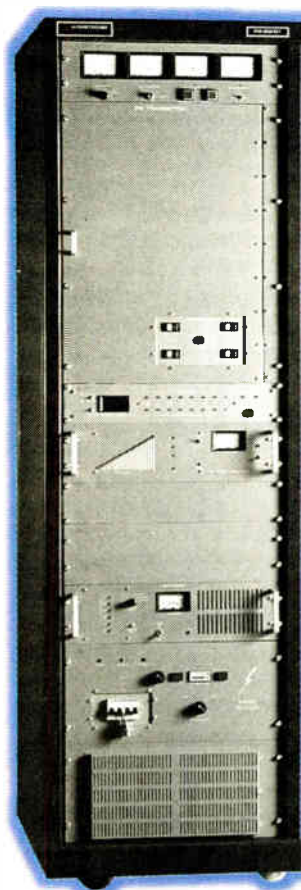
See NEC, page 64 ▶

## Illuminating Engineering Society Recommended Light Levels

Activity	Level (FC=Footcandles)	Application Examples
Amour	< 2 FC	No-Tell Motel
Public areas, dark surroundings	2-5 FC	Unoccupied storage areas, night lighting of hallways
Simple orientation, short occupancy	5-10 FC	Restaurant dining areas, secondary hallways
Nonchallenging task environment	10-20 FC	Lobbies, auditoriums, hallways, corridors
Non-detail work area	20-50 FC	High-turnover warehouse, conference room, large-part benchwork
Standard 2000	30 FC	Office light level
Medium-detail work area	50-100 FC	Discrete-component benchwork, long-term, medium- to large-print reading
Standard 20	50 FC	Design studio
Standard 2000	75 FC	Accounting
High-detail work area	100-200 FC*	Micro-component bench work, very detailed inspection, reading tiny schematics
Long-term high-detail work area	200-500 FC*	Ultra-difficult, long-term work such as high-density punchdown strips
Sustained, hyper-detail work area	500-2,000 FC*	Micro-surgery such as SMC repairs, finding the boss's heart

\* Light level most efficiently achieved via close-in task lighting.

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WIRED FOR SOUND

# Conduit? Plenum? Both? Neither?

**Steve Lampen**

In our previous installment in the April 26 issue, we bemoaned the need for plenum-rated cable. Why not just put everything in conduit?

Why not, indeed? If you are working in Chicago or Las Vegas, in fact, all wiring is *required* to be in conduit.

Here are some simple reasons you may want to avoid conduit:

**Cost** — Conduit is expensive, particularly if you specify large sizes. Much of that cost is labor. Conduit installers are not \$5 per hour! Sure, plenum cables are expensive, often two or three times the cost of lower-rated cables. But the cost of those "standard grade" cables with conduit is usually a lot more than just plenum cables alone.

**Can you put unrated mic cable or any other cable in a conduit?**

**Time** — You will have to add significant time to your construction timeline for the installation of conduit.

**Versatility** — Sure, you can add conduit later, if you change your mind, or add more studios, but installing conduit in an occupied building is an Experiment in Terror, because you're installing in the middle of a working office. This often means no daytime changes; that would be "disruptive" to the office. Be prepared for long overnight hours.

Of course, conduits have some advantages. You want shielding for your cables? Is your installation in a high EMI/RFI area? There is nothing to equal solid steel conduit for noise reduction.

In fact, conduit is better than any shield ever put on any cable. The long-wavelength frequencies (i.e. 60 Hz) are the hardest to keep out. No cable has an internal shield effective at 60 Hz. But conduit, thick and properly installed, can give you up to 27 dB of isolation at 60 Hz.

Note I said solid steel, not plastic, not aluminum, not flex.

**Protection**

Conduit can also protect your cable from damage while other parts of the building are being installed or modified. Once conduits are installed, you can be pulling cables. Often you can pull cables while other work is going on. The conduit protects the cables from all those other contractors.

Just be sure you install conduit big enough to take what you want. I once worked on a job in which the architect was told, at the last minute, to "save money." So he downsized the conduit

from 2-1/2 inches to 2 inches — and didn't think to tell the system designer.

Since the number and size of cables were already determined, it was, shall we say, an interesting day pulling cable.

I vividly remember counting up the bodies hanging off one load of cables. The human flesh totaled 700 pounds. I am sure we exceeded the recommended pull strength of the cables. I was quite amazed when the cables still worked.

Luckily, these were analog audio, where the final cable dimensions are not critical as long as you have continuity. I am sure these cables had considerably different gage sizes and jacket thick-

nesses than before they were pulled.

Of course, you analog audio installers don't know how lucky you are. If these had been digital audio cables, it might have been one heck of a disaster.

**Impedance-specific**

AES/EBU digital cables are impedance-specific. They're supposed to be 110 ohms +/- 20 percent. That means they can have a characteristic impedance anywhere from 88 to 132 ohms and still work.

This wide range also means that AES/EBU cable probably could take a

good deal of strain during installation and still work. Digital can't take as much "installation abuse" as analog, but you still have some leeway.

On the other hand, one of our future columns will deal with new AES sampling rates and bandwidths. Did you know that AES signals now go up to almost 25 MHz? That's right, digital audio at 25 MHz bandwidth. That's some serious frequency on a twisted pair, so you need to be aware of this when you're installing it.

The other key to using conduit is the cables you choose to put them in.

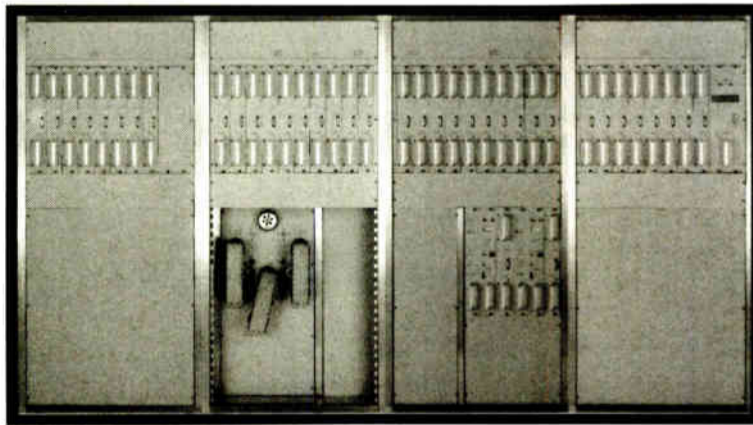
If you are mixing plenum and non-plenum cables into one bundle, and putting them in a plenum space, the whole bundle must be in conduit.

The lowest fire rating is the one that  
See LAMPEN, page 60 ▶

## You wouldn't go to the family doctor for a heart transplant. You want somebody who specializes in hearts.

Bext handles the RF needs—and only the RF needs—of hundreds of stations around the world.

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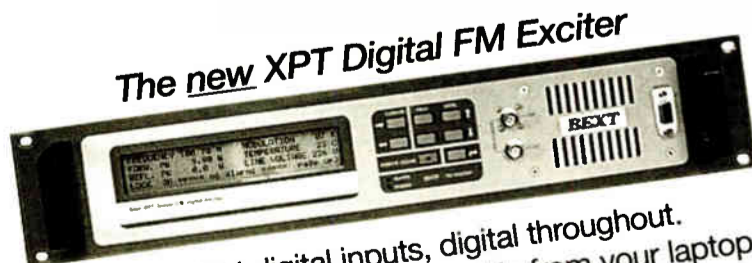


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Another: "Processing in the integrated domain of FFT is classic thinking out of the box. And the display tools are ultra user-friendly."

We'll be eager to hear what the first field users have to say. Price: \$8,149. Available: Now.

Contact the company in France at (33) 472-181920 or visit the Web site at [www.idt-fr.com](http://www.idt-fr.com)



## Industry Changes

Aphex Systems has announced the appointment of broadcast industry veteran **Steve Gordoni**. Gordoni will serve as sales and marketing manager.

Wireworks has a new employee. **Richard Chilvers** has joined the company as systems account specialist.



Nick Cook

**Nick Cook** is the new guy on board at Amek. He's been hired as the new sales and marketing director.

Comedy World Network has a new director of engineering.

**Barry Thomas** is supervising the creation of the network's new 50,000-square-foot facility.

**John Abdnour** has been appointed to the position of national accounts manager, RF products, for Broadcast Electronics.



Rick Young

Yamaha Corp. of America has appointed **Rick Young** to general manager of the Pro Audio & Combo division.

**Dalet Digital Media Systems** is expanding.

**William Hopkins** has been hired as the West coast regional sales manager.

**Michael S. Miller** has been named general manager of Salem Music Network.

**Christopher M. Pelzar** has been promoted to VP, Eastern region, at Euphonix.



Michael S. Miller

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# The Low-Power FM Debate Rages

Readers continue to send us e-mails and letters regarding the FCC's creation of a new class of low-power radio.

RW welcomes opinions and guest commentaries from those involved in the debate. Write us at [radioworld@imaspub.com](mailto:radioworld@imaspub.com) or use the address on the inside last page.

Dear RW,

One area not addressed in the LPFM discussion is the loss of reception to listeners beyond the protected grade-B contour.

These listeners derive benefit from the airwaves under the old FCC station-spacing criteria. Unfortunately, these listeners often do not affect the ratings book of a distant station, so they have no clout; but dedicated listeners they are. Is it fair to steamroller their listening diversity into the ground via LPFM with its potential of being a flop?

TV Channel 6 will open up after 2006. That is 6 MHz of bandwidth that would even accommodate LPFMs in the big cities.

Ron Brey  
Rockford, Ill.

Dear RW,

In regards to Bruce Reese's guest commentary "LPFM: A Bum Deal for Listeners" (RW, March 15):

It does not surprise me that Mr. Reese and some of his partners at the NAB would do virtually anything in their power to delay or stop the implementation of LPFM.

And now we hear that National Public Radio is totally opposed to LPFM. No surprise there. After all, NPR and the Corporation for Public Broadcasting were the instigators who originally pressed for the infamous legislation in 1978 that effectively "banned" the 10-watt Class D college FM stations in the first place, calling these stations "electric sandboxes."

Over the years, many of these so-called "sandboxes" have provided more public service than any 100 kW station has ever done. During an emergency, where would you be able to turn to for news and local info? It is

highly unlikely that your local NPR station would notice your plight, while they are satellite-feeding "All Things Considered."

Only your local LPFM station would be able to get you the news that matters to you.

Here in the Boston area during the "Storm of '78" blizzard, many of these 10-watt college and high-school stations were the *only* links to the local community.

One 10-watter I was proud to be associated with is WBIM-FM, (now 180-W), the radio voice of Bridgewater State College in Bridgewater, Mass.

During the brunt of that storm, we provided the *only* local coverage for the Bridgewater community for closings, vital information as to what stores were open for food, clothes and essential items, plus information on where to find shelter for those

ing at KBOO or KMHD(FM) or KBVM(FM) and see how much work it takes to do good community radio. For LPFM to be an effective training ground, there has to be people working in it who have some training themselves.

Why would professional people flock to a medium that will make *zero* money? Who will take care of these stations that cannot afford to pay an engineer to maintain a legal signal? Though its mission is well-meaning, LPFM is a poorly thought-out ruling.

The FCC doesn't have the resources to help hundreds of LPFM stations. There are huge problems in the way the media is run in this country, but LPFM (as it is proposed now) is not the answer.

Suzanne White  
General Manager

**Mr. Reese, how can you say that there is 'more diversity on the air now than ever before?'**

— Peter Q. George

without heat or electricity.

College students manned the station for 72 straight hours to provide continuous coverage to the community. This was no 100-kW CPB-funded station that asked for pledges. This was a 10-watt station, the kind of "pledge-free" station that NPR and CPB wanted to ban outright in 1978.

Mr. Reese, seriously, how can you say that there is "more diversity on the air now than ever before" when more times than not, your average morning-drive guy is coming from a studio hundreds of miles away with local "liners" being inserted automatically from cue tones via satellite?

LPFM is the last, best hope for getting the forgotten voices a chance to be heard.

Peter Q. George  
Whitman, Massachusetts

Dear RW,

Having read Andrea Vargas' article, "Churches Prepare for Low-Power" (RW, April 12), it seems that she is totally unaware of what is already in her own community. The Russian community is now served by a 24-hour-per-day Russian station carried by KBPS-AM-FM on our subcarrier.

There is already an all-Spanish language station in our area — plus KBOO(FM) does Spanish-language programming. Vargas seems to have absolutely no idea what it takes to run a community radio station.

I suggest she spend a few months work-

KBPS-AM-FM  
Portland, Ore.

Dear RW,

Contrary to what certain people would have you believe, I cannot see how an LPFM could cause any harm to any station.

Let's take the lower of the classes. Class A is three times the height and 60 times the power of an LP-100. How could the LPFM cause interference being three channels away?

And since when does the NAB take precedence over the FCC and its engineers, who are the best in the world?

This interference matter is a tool the NAB is using to keep LPFM from becoming a reality, when in fact what the NAB is concerned about is the loss of revenue that commercial stations may face due to LPFM.

The FCC took that into consideration when the rule was passed to make an LPFM strictly noncommercial.

I firmly believe that there is a big need for other voices to be heard other than corporate entities that automate their stations and serve no one but themselves.

I believe LPFM will bring back the friendliness of radio that once was.

Frank Vela  
Chief Engineer  
WTBH(FM)  
Crystal River, Fla.

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# Conduit vs. Plenum

► NEC, continued from page 57 calls the shots.

And that leads us to an interesting point. If, at any time, your cables leave a conduit and go unprotected through a plenum area, then the whole cable must be plenum.

I know some people are surprised to find plenum cables in conduit. That's because, somewhere down the line, they leave the conduit but are still in a plenum area. So be sure that the conduit you have traverses the entire plenum space.

## Wiring

I have seen this in the wiring of speakers. You have power amps in a rack with a conduit leading up into the drop ceiling. There the conduit ends and the cable must continue in the plenum until it drops out of the ceiling to attach to the speaker that is usually hung from the ceiling or the upper wall.

In that case, the speaker cable must be a plenum cable, which is readily available. And you could have saved money by simply fishing that plenum cable up the wall without any conduit at all.

In this case, the only advantage to conduit was easily fishing the wire from floor to ceiling.

Then we have the issue of unrated cable. Of course, there was a time when every cable was unrated. And more than

a few of those cables are still available.

Most microphone cables, for instance, are unrated. After all, they're out on the floor or stage. Microphone cables are made to operate while being flexed. They're much too expensive to use as an install cable.

But many less educated installers do

**If your cables leave a conduit and go unprotected through a plenum area, then the whole cable must be plenum.**

precisely that. They don't realize that there are install versions of that cable, often with better performance, and smaller size, and much lower cost.

What do you do with an unrated cable? Well, you can't use it anywhere that a rated cable is required.

I used to say, "Put it in conduit." But one of my NEC gurus told me that he is now interpreting the 1999 NEC code to say that anything which is installed *must be a rated cable* — that is, anything installed must have an NEC rating printed on the jacket.

If he is correct, then you cannot put

in an unrated mic cable, or any other unrated cable, even in a conduit! It's not rated.

This is definitely something to discuss with your installer, integrator, architect or building inspector before you try it. Again, the NEC code is a voluntary code, and therefore open to interpretation.

Just what does the word "install" mean, anyway? Is a snake cable running on the grass at a rock concert an

installed cable? Are those hanging mic cables that hold the choir mics in your church installed cables? See my point?

And what if you mix different size cables? How do you know what size conduit to put in? And what is fill ratio? We'll answer those next time.

■ ■ ■

Steve Lampen is technology specialist, multimedia products for Belden Electronics Division in San Francisco. His book "Wire, Cable, and Fiber Optics for Video and Audio Engineers" is published by McGraw-Hill. Reach him at [shlampen@aol.com](mailto:shlampen@aol.com)

## MARKET PLACE

### Whitaker Updates 'Short Course'

Here's a handy text for anyone looking to learn many of the basics of radio engineering.

Recently updated, "Practical Radio Communications: A Short Course in Radio Station Maintenance" is by

George Whitaker, who decided he wanted to be a radio engineer in 1957 — during junior high school.

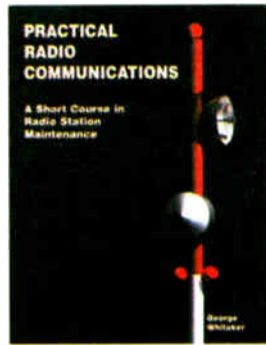
He covers useful topics such as soldering, mix-

minus, cigarettes in the studio, modulation monitors, satellite dish alignment, basics of FM transmitters, tower inspections, wireless mics, tubes, even how to find a stud — and a host of other things that a radio technical person may come across any day of the year.

The book has plenty o' pix and schematics. It costs \$45 including shipping, and comes with a money-back guarantee.

Whitaker also provides custom mic flags.

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## NEWS MAKER

# Group Reaches Out to Gays

Bob Rusk

Lyle Henry, CPBE, is a founder of the National Association of Gay & Lesbian Broadcasters (NAGLB).

Henry makes a point of mentioning his orientation to all prospective employers so it won't become an issue. He said there has never been a problem with his being gay on the job.

"I feel good about me," Henry said, "and gays have learned that when we feel good about who we are, so do other people."

## Statement

On its Web site at <http://idt.net/~rncinti9/naglb/naglb.html> the NAGLB states, "We are broadcasters. We are engineers, programmers, technicians. We work in radio and television stations. We work for manufacturers of broadcast equipment. We are friends of lesbian and gay broadcasters."

Henry, 58, a Los Angeles-based "consultant and independent contractor" and well-known engineer within the radio industry, said the usual image of an engineer is that of a conservative, heterosexual individual.

He said, "There are a lot of very conservative engineers. We're sometimes viewed as being nerdy — but the reality is that a tremendous number of

broadcast engineers are gay. I don't know of a (station) manager who has ever complained about it; they may even get more dedication from gay people, and that's just what a manager or owner would want."

For example, Henry said, because many gays "don't usually have family obligations, they have the time" to devote to their profession.

Henry agreed that there is not an exact nationwide count of how many broadcast engineers are gay, but estimated that "it's

10 percent or so."

"In Los Angeles," he said, "it's higher than that."

Henry, who goes by the moniker "The Radio Doctor," has been an engineer for 38 years. His first job was as chief engineer at WDOR(AM) in Sturgeon Bay, Wis.

More recently, Henry, who has also written for RW, has been director of engineering for the University of Southern California radio stations. He was chief engineer for 12 years at KIQQ(FM), now



Lyle Henry as a young ham radio enthusiast.



Lyle Henry advocates for gays in radio.

An NAGLB press release stated, "All Lesbigaytrs (an abbreviation for lesbians, bisexuals, gays, and transgendered people), plus not-gay-yet and gay-friendly types (are) welcome ... previous attendees have represented all areas of broadcasting and related fields, including ownership, management, production, programming, engineering and manufacturing."

## Support

The NAGLB is an informal group that does not have officers or dues — and has no other activities throughout the year. Support is available, however, when a sexual minority needs help.

Henry, who also is a founder of Parents, Families and Friends of Lesbians and Gays, said, "Before there was e-mail, we got some of the most touching letters from people who didn't know another gay person in the world. It was a lifesaver to them to know that there were other gay people in broadcasting. The world is so different now. I hope no one feels too isolated anymore."

He said the NAGLB is "primarily a social organization. We're not trying to change the world and aren't a group of gay activists. It's just really a chance for people to associate with other gays and

KCMG(FM), in Los Angeles.

The NAGLB is little-known. Henry wants people to know it exists.

"The group is here to be social and supportive."

Its main annual event is a dinner — averaging 40 to 50 attendees — at a Las Vegas restaurant, timed to coincide with the spring NAB convention. The NAGLB has no connection with the NAB itself.

Dinners are sometimes arranged at other industry conventions as well.

**We are broadcasters ... engineers, programmers, technicians. We work in radio and television ... (and) for broadcast equipment manufacturers.**

— NAGLB Web Site

"Remember that time is money."

— Benjamin Franklin

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"There will surely be one at the fall Radio Show in San Francisco."

The NAGLB, formed eight years ago, is an outgrowth of informal gatherings that have been held annually since 1980.

"A lot of people go to the NAB convention and are dragged from session to session," said Henry. Often, he said, they are expected to attend "girlie shows" in their free time.

"Gay guys aren't interested in that."

Henry said, "Not that we are all guys. We have a number of lesbians who also come to our dinner. We have different interests and a different focus in life."

Henry said straight people are welcome to take part in the NAGLB and several regularly attend the dinners.

lesbians with a common interest — and the common interest is broadcasting."

As an example, Henry remembered a radio station owner who attended an NAGLB dinner.

"He was so thrilled to meet other gay people in the industry and let his hair down," said Henry. "He had never come 'out' — and that's the issue. What's another dinner to a gay person who is 'out'?"

"But for people who are not 'out,' or maybe are even married and feel repressed, it is a chance to talk with other gay and lesbian people. We feel that we give people a chance to breathe."

For information about NAGLB, write to Henry via e-mail at [lyleh@usc.edu](mailto:lyleh@usc.edu)



# Workbench

Radio World, May 24, 2000

## Generator, Monitor and Light Tips

John Bisset

John Foote is a senior consultant with Booz, Allen & Hamilton Inc. During his stint with the ABC-owned stations, he picked up a tip for owners of generators.

Testing a generator for only an hour or so weekly or monthly may not disclose problems such as a loose fan belt.



Figure 1: A high/low thermometer keeps tabs on transmitter building cooling.

Many stations depend on generators to keep them on the air during severe storms. Last year, when a hurricane came through the Louisiana and Texas Gulf Coast, some stations saw their generators come up when the power failed, only to go down a few hours later. The problem is further complicated by the inability to get to the site during severe weather.

Getting back to our loose fan belt problem, the generator will overheat, and may quit long before it runs out of fuel.

So what's the solution? If you are not testing the generator under full load, you're taking a gamble. John suggests testing under load for a full day. During this time, monitor and log the coolant temperature,

the output voltage, voltage regulation and fuel consumption.

Each parameter tells part of the whole story, a tale that can make the engineer a hero when the normal routine disappears.

\*\*\*

Speaking of monitoring, you might want to pick up a "high-low" thermometer, as seen in Figure 1.

The mercury pushes a metal finger, which indicates the high temperature in one tube and the lowest temperature in the second. The metal fingers are reset using the removable magnet at the top of the assembly.

By keeping an eye on the transmitter site temperature extremes, you can avoid temperature-induced failures.

Want to go a step further? Purchase Gentner temperature probes or equivalents, and wire them into your remote control, along with upper and lower limits.

Hang one of these at the air intake, and another at the exhaust air port. You might be pleasantly surprised at the warning you get prior to a mid-summer meltdown.

\*\*\*

Out on the left coast — San Francisco to be exact — comes a tip from Bill Ruck about drop lights. Bill has been replacing his trouble lamps with the new fluorescent versions, readily available from Home Depot for about \$15.

In addition to the low cost, there are some other advantages to using fluorescent drop lamps. They are brighter than incandescent types. They won't get hot and either burn your hand or wire insula-

tion. Because they are constructed of a plastic housing, they can't short something out (unlike the metal reflector); they will still work when dropped "hot" and their compact size makes for easy use inside transmitters.

Like all of us, Bill has had those nights where he burned his hand on the metal reflector, shorted something out by dropping the light, and finally run out of bulbs after dropping the "drop" lamp several times.

Bill now keeps one in his truck that will work off 12 VDC or 110 VAC.

By the way, Bill says the term "drop light" has no relationship to its functional-



Figure 2: Note the supports for a tabletop console layout.

ty once it has been dropped on the floor. However, having dropped quite a few myself, I think the name is appropriate.

\*\*\*

It's always fun to see how stations tackle the furniture aspect of a new studio. With low-priced, yet good-looking knock-down furniture, a customized look is within reach

of most everyone. For instance, PR&E, a division of Harris, my employer, showed a line of furniture at NAB2000 that is shipped flat, and you assemble it on site.

There are times when local construction is necessary, and in the case of Figure 2, there was a baseboard heater that got in the way of traditional furniture designs.

MTS Broadcasting's WTDK(FM) was moved with two other stations to Cambridge, Md. The angled supporting 2-by-4s withstand weight on the console table top, but allows leg room underneath.

Figure 3 shows the frame that was assembled for the station's hard-drive system. A ventilation fan underneath prevents heat from building up.

Although for unique studio settings,

something custom may be the best solution.

Check with your distributor for low-cost pre-fab solutions, too. Unless the carpenter is reasonable, or you can strike a trade deal, building it yourself is not always the least-expensive solution.

Thanks to Gary Crouch at MTS Broadcasting, for sharing the construction techniques.

See WORKBENCH, page 64 ▶

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Shown in the photo (left to right): Ken McMahon, Monica Romero, Tom Spadea and John Devecka.

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Contact LPB in Pennsylvania at (610) 644-1123 or visit the updated company Web site at [www.lpbinc.com](http://www.lpbinc.com)

## Have You Seen the Light?

► NEC, continued from page 55  
although it has a high lumen output (see chart, page 55), the "cool white" tube is high in blue light output.

Long daily exposure to this light produces fatigue that can translate into negative feelings such as headaches and huffiness and the like.

The eye/mind combo has a tendency to set the eye's iris opening on a panchromatic average. If a light source is monochromatic, the iris tends to open wider and the brain makes the adjustment further downstream. The mind makes its own gain adjustment and precipitates secondary adjustments elsewhere, such as scringing your eyelids down.

Recognizing this, lamp manufacturers have given us a plethora of choices in color temperature and a panchromatic comparative reference (CRI). The light from an incandescent bulb and sunlight on a nice, clear day is close to the 3,000-degree reference and has a CRI of a reference 100. The closer you get to those numbers, the "better" the light will be.

Your standard should be the industry moniker of "warm, warm white" fluorescents with a 3,000-degree temperature and

a CRI of 85 or better. This will allow you to mix incandescents and fluorescents from various fixtures without a notable visual difference in color.

It also will mix better with normal daylight coming in the windows or diffused by curtains.

Do not mix fluorescent tubes of different temperatures.

The mind/eye combination is amazing. Within moments of entering a new space illuminated only by the lights, the mind/eye will take the whitest object in that space and make it reference white. It will appear as white, no matter what it really is.

### 'Real' white

Once this is set, a visual sweep of the room will identify which tubes are of different colors, with one set being "white" while other different type tubes will have a "tint."

Because color changes somewhat as bulbs age, it is wise to rebulb all tubes when a noticeable number show aging artifacts such as blackening at the ends, pulsing/flaring or slow starting.

When you do this, turn off the power to these fixtures and take the time to clean the reflector, the diffusion cells or the lens

(both sides) completely and carefully. This can increase the efficiency of your fixtures by 50 percent!

As you install the bulbs, wipe the dust and dirt off them to squeeze every lumen that you can.

If you wash the lenses in the slop sink, be ready for how dirty the water will become after just a few have had their ablu-tions. Small 2-by-2-foot lenses can be sent through the dishwasher (warm water only).

Size and locate task lighting on desks according to the desires of the users. But service those fixtures or replace any fluorescents at the same time, as described above. Small fluorescent desk fixture bulbs are available in a range of temperatures and CRIs so it should be no trouble to get these installed to match the ceiling units.

Given the increasing cost of power, consider using motion detectors to control the on/off function of permanent lighting. Many utilities have substantial incentive programs to do this, with the added bonus that these notable calories can be removed automatically from your air conditioning load when no one is around.

Ceiling-mounted motion detectors can be located such that even people in high-walled cubicles won't have to move much to keep on the lights. The delay-off time can be set to match the rhythm of your business from a few seconds to half a day.

## 'Low-Cost' Repairs — Are They?

► WORKBENCH, continued from page 63

★ ★ ★

As will happen with use and age, a couple of Bill Weisinger's out-of-date and expensive "learning" handheld IR remote controls put up a fight every time Bill tried to change channels or adjust the volume.

The conductive coating on the rubber keypad buttons wore off with use.

When this occurred the first time, Bill purchased a "Rubber Keypad Repair Kit," sold by MCM Electronics. The paint-on conductive coating worked for another few years, but eventually, that too wore off.

Frustrated, Bill tried a "what the heck" move. He unearthed a roll of alarm foil tape, and cut up little square pads from the foil. These foil squares were applied carefully to the worn rubber pads (after cleaning the pads and the circuit traces). The hope was that the foil pads would stick and hold, and actually make the switches functional again. That was a couple of months



Figure 3: A 2x4 support frame was designed for the computer hard drive.

ago, and the controls are working fine.

It only takes an inch or two of the alarm tape to re-do a remote control. Don't want to buy a whole roll of tape? Bill will send a couple of inches of the alarm tape to *Workbench* readers for free — you just need to supply an SASE.

Mail your request to Bill Weisinger Engineering Services, 9028-E Portage Point Drive, Streetsboro, OH 44241.

John Bisset has worked as a chief engineer and contract engineer for over 30 years. He is a district sales manager for Harris Corp. Reach him at (703) 323-8011.

Submissions for this column are encouraged, and qualify for SBE recertification credit.

Fax your submission to (703) 323-8044, or send e-mail to [jbisset@harris.com](mailto:jbisset@harris.com)

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## GreaterGood Makes Classical Cash

Carl Lindemann  
and Laura Dely

A new partnership between WCLV/Seaway Productions and GreaterGood.com may turn classical station Web sites into major moneymakers, for the stations and designated charities.

Their performance-based marketing could prove resistant to the deflation of "dot-com" dollars that could follow the evaporating "dot-com" IPO mania, and the radio revenues that come from them.

WCLV/Seaway Productions is a station-based classical music producer/distributor. Cleveland's WCLV(FM) is the core of operations and a key "beta" test site for the new venture.

### Relationships

GreaterGood.com is a for-profit business that arranges relationships like the new venture with WCLV for high-profile charitable organizations such as the World Wildlife Fund and the Nature Conservancy.

GreaterGood.com custom designs the "shopping village" to integrate with the station's site design. Listeners are encouraged to pass through the site on their way to shopping elsewhere.

Stations earn commissions on sales from every sale made through the site. Early results are more than promising.

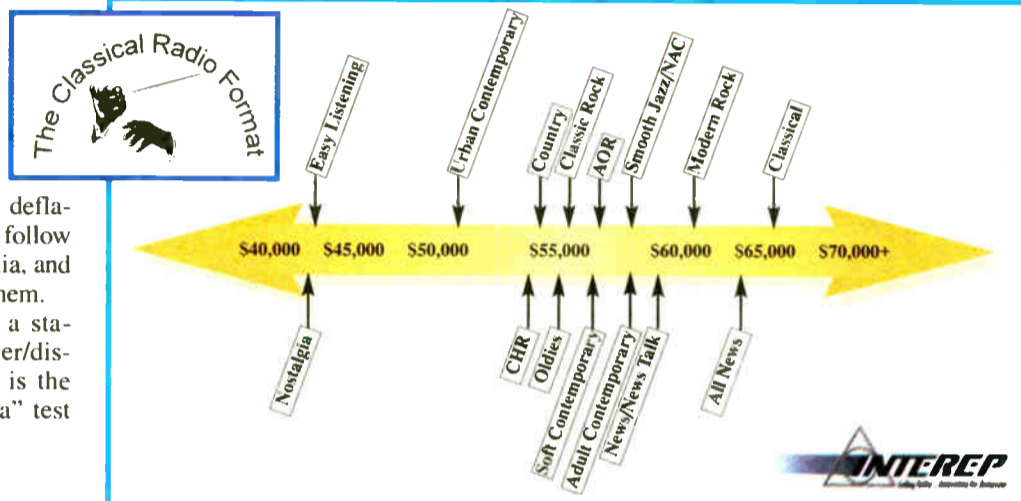
"We have had this up on WCLV since October. In the fourth quarter before Christmas, our listeners grossed \$100,000 (in sales) through our Web site," said Conrad. According to BIA Financial Network, WCLV's 1999 station revenue was \$3.1 million.

Well-educated and affluent, classical

listeners are an attractive demographic.

A recent study from Interep reported that classical listeners are heavy users of

ner relations director, came to appreciate the power of connecting charity with commerce as the corporate relations



Classical fans have the highest income among radio listeners.

both the Net and radio and have the highest income of all formats. (See chart.)

Rich Marschner, WCLV's general manager, said that after being in the commercial classical radio business for almost 40 years, WCLV knows what these listeners buy. GreaterGood had always worked with the same vendors that WCLV and its listeners preferred.

"What appealed to us about what GreaterGood was doing was what a close match between their selection of vendors and our kind of audience, both high income and high education. What they respond to are activities, products and services that increase their quality of life. They're quality-of-life-conscious shoppers."

Scott Garrepy, GreaterGood.com part-

recording outputs. A timer, clock, direct digital metering, opto-isolated logic ports — the list is lengthy. V-DIP software simplifies installation.

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Jay Tyler poses at the booth.  
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manager for the Seattle Opera.

"We negotiate sales commissions with these online retailers — typically 5 to 15 percent. We split the money raised 50/50 with the not-for-profit," said Garrepy. "Now, listeners buying from existing brand name online retailers like Amazon.com, Pets.com, Lands' End, and Neiman Marcus can benefit stations at no cost to consumers," he said.

"A study on cause-related commerce showed that 66 percent of Americans surveyed said that, all things being equal, they would rather shop at a business that gave something back to an organization they care about," Garrepy said.

According to GM Bob Conrad, more than 500 classical music stations — both commercial and public — carry one or more WCLV programs weekly, including performances from the Cleveland Orchestra, the Detroit Symphony and the Vienna Philharmonic. These stations will now be offered GreaterGood.com "shopping villages" that link station Web sites to prominent Web retailers.

"We're offering the same radio stations we talk to on a daily basis an opportunity  
See CLASSICAL, page 76

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Wheatstone Corp.  
Audioarts D-70 Digital Console

Among the seven new consoles from Wheatstone this year is the D-70, part of its Audioarts lineup.

There is a benefit to buying a board like this from a company that also makes high-end mixers. The feature set and quality are impressive. This is a modular console aimed at smaller and medium-sized markets.

Input modules feature A/B switching; digital inputs have sample rate conversion. There are A and D outputs for all four stereo mix busses. Serial communication mates with your automation. Control room and studio monitor modules include source select and talkback.

A dual-caller phone section offers a DSP-generated mix-minus and its own



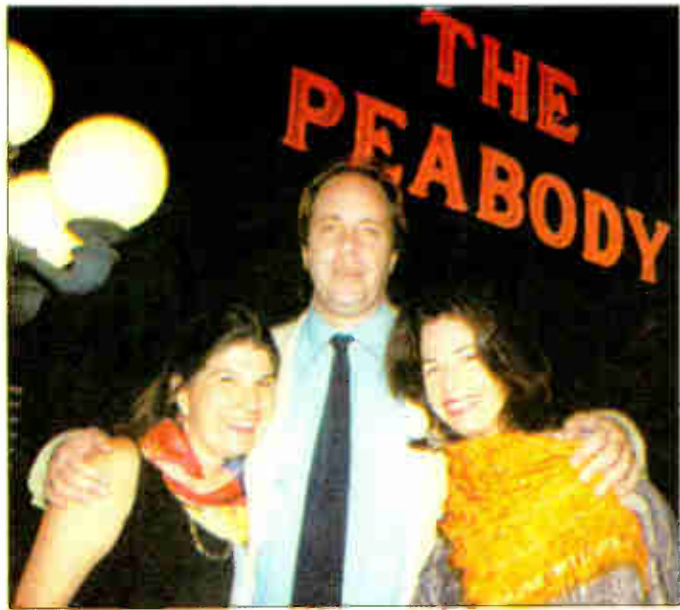
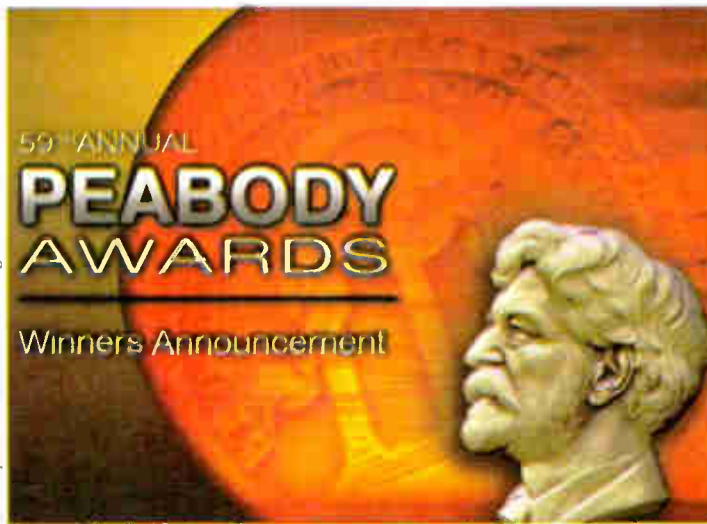


photo credit: Laura Folger

The Kitchen Sisters, Davia Nelson (left) and Nikki Silva, pose with sound curator Jay Allison in front of the Peabody Hotel (no relation to the award — just a coincidence, said the Sisters) in Memphis, Tenn. The executive producers of 'Lost and Found Sound,' the Kitchen Sisters worked with Allison to produce the weekly feature that ran on NPR's 'All Things Considered.'

# The Best of Broadcasting



The George Foster Peabody Awards are granted by the University of Georgia's Henry W. Grady College of Journalism and Mass Communication, which has administered the awards since their inception in 1941.

Marge Ostroushko, a veteran public radio producer, won a Peabody for her Smithsonian production, 'The Mississippi: River of Song.' The seven-part public radio program, hosted by independent folk-rock musician Ani DiFranco, won praise from the Peabody judges for the series' 'ambitious and extremely novel approach to radio presentation of song.'

## Three Radio Programs Win

This year's Peabody winners were to gather for an Awards ceremony May 22 at the Waldorf-Astoria Hotel in New York City.

The Peabody Committee received more than 1,200 entries this year, and of the record 36 awards to members of the broadcast industry, only three were granted to radio shows — all public radio programs. The annual Peabody Awards are granted on merit only, independent of category.

Shown are the George Foster Peabody Award winners for radio.

— Laura Dely



NPR's 'Morning Edition' host Bob Edwards had been getting up in the middle of the night for many years before his Peabody award was announced. The show marked its 20th year on the air in 1999, and Edwards has been host for all of them.



'The Mississippi: River of Song' host, Ani DiFranco, was one of many who contributed to the production of the Peabody Award-winning program.



## Maycom Audio Systems Professional Handheld Recorder

Ergonomically delicious, this stereo solid-state recorder from Maycom offers MPEG Layer II encoding, built-in microphone, removable CompactFlash cards, illuminated display, balanced inputs for external mics, and a speaker and headphone jack.

A separate docking station operates as a battery charger. It has stereo line inputs and outputs plus a USB connector to hook up to a PC.

With sampling rates of 16 kHz to 48 kHz, it is suitable as a voice recorder for news work.

Depending on the selected compres-

sion, the audio capacity on a single 128MB card is 46 minutes stereo up to nine hours mono.

And there is just something about this one that makes you want to pick the thing up.

"This will put mini-DATS out of their misery," a judge said.

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Available: Fall.

For more information, or details on purchase in the United States, contact Bradley Broadcast Sales in Maryland at (800) 732-7665 or visit the Maycom Web site at [www.maycom.nl](http://www.maycom.nl)



## TWR Lighting Inc. Dual Red/White FAA Type L-864/L-856 High-Intensity Strobe Beacon

"For unpainted taller towers over 500 feet, this will eliminate the need to operate and maintain two discrete obstruction marking systems where local zoning demands red lights at night," one judge wrote.

TWR will use advanced switchmode power supply techniques instead of conventional ferroresonant transformer technology. The company says this will improve efficiency significantly and reduce electrical losses in the power supply. In turn this will eliminate a lot of heat, the primary cause of failures in high-intensity strobe systems.

TWR also uses a unique optical concept employing dual parabolic-cylindrical reflectors, "paracyls," producing a dual light occupying essentially the space of a single conventional light.

Modular design makes installation and service easier. A patent is pending on this light system.



Price: Application-specific, call for quote. Available: January 2001

Contact the company in Texas at (713) 973-6904 or visit the Web site at [www.cleargroup-sw.com](http://www.cleargroup-sw.com)



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\*Source: Duncan's Radio Market Guide, 1999 edition

\*\*Source: *The American Radio* by Duncan's American Radio; based on Arbitron Spring 1999 12+ TSA Cume, Mon-Sun, 6:00am-12 midnight

\*\*\*Source: Arbitron Fall 1999 12+ TSA Cume, Mon-Sun, 6:00am-12 midnight



## COLE'S LAW

# The FCC: The Noncoms Will Bid

Harry Cole

The death throes of the comparative hearing process are just about over: In April, the FCC abandoned that process with respect to mutually exclusive applications for noncommercial construction permits.

With that action, the last vestige of comparative hearings has gone the way of the dinosaur and the Edsel.

In place of the old hearing process for commercial applicants, the FCC has implemented an auction system. But on the noncommercial side, the FCC has decided to use a streamlined "point" system.

Under this system, an applicant is awarded "points" for certain attributes.

For example, if the applicant's proposed city-grade contour does not overlap the city-grade contour of any other noncommercial or commercial station that might otherwise be attributed to the applicant, then the applicant gets two points for "local diversity."

Points also are available for "technical parameters;" (one point), for being an "established local applicant," (three) and for being part of an existing education plan of a state government (two).

The new system also includes new attribution standards and a tiebreaker

mechanism.

Should the tiebreaker fail and two or more parties still be tied in points, those parties will be subject to mandatory time-sharing.

## Commercial consequences

The idea is to provide for a quick and easy way to resolve mutually exclusive situations and initiate new noncommercial service. The new system seems reasonably designed to accomplish that result.

What, though, does this new system have to do with commercial broadcasters?

For the most part, not much. But the commission's decision does contain a couple of interesting points in which the commercial side of the universe will definitely be interested.

First, the commission has concluded that noncommercial applicants for commercial channels will have to participate in the auction processes to which all commercial applicants have been subject since last summer.

That decision should be welcomed by any commercial applicant whose application has been stuck on the back burner because of the pendency of one or more noncommercial applications for the same frequency.

You may recall that, when Congress authorized the use of auctions for broadcast permits in 1997, it specifically provided that such auctions "shall not apply to licenses or construction permits issued for" noncommercial stations.

While commercial applicants cannot apply for stations in the "reserved" portion of the FM band that has been set aside to be used exclusively for noncommercial operation, noncommercial applicants *can* apply for stations in the non-reserved, or "commercial," portion of the band.

**The last vestige of comparative hearings has gone the way of the dinosaur.**

And a number of noncommercial applicants did, in fact, file for such "commercial" channels.

That created a problem. The commission wanted to dump all mutually exclusive applicants for commercial channels — many of which had been pending for years — into the auction process.

But Congress had specifically said that applicants for noncommercial stations would *not* be subject to the auction process. And in so doing, Congress had

See COLE'S LAW, page 72 ▶

## What You Should Do Right Now

All U.S. radio stations with five or more employees must file two copies of the FCC "Broadcast and Cable Initial Election Statement" with the commission by **June 2**.

The "Initial Election Statement" is a broadcaster's declaration to use either the "Supplemental Recruitment Measures" (Option A) or the "Alternative Recruitment Option" (Option B) in compliance with the commission's new EEO rules. ("A Primer on the New EEO Rules," *RW*, March 29).

The FCC mailed the forms to all broadcasters May 2. If you did not receive an "Initial Election Statement" via the mail, they are available by calling the FCC's toll-free number (800) 418-FORM (-3676) or online at <http://www.fcc.gov/formpage.html>

Broadcasters must also place copies of the form in their public files.

# Radio World

## CONGRATULATES THE 2000 COOL STUFF AWARD WINNERS

Receiving the "Cool Stuff" award is a significant accomplishment. It means a product was selected by Radio World's panel of broadcast engineers and industry journalists as notable for its design, features, cost efficiency and performance in serving radio users. It also means the product caused our judges to stop in the aisles and say, "Oh, cool!"

Only 24 winners were chosen for "Cool Stuff" Awards at the NAB2000 convention in Las Vegas, from among more than 250 radio and audio exhibitors and many hundreds of new products.

## Hats off to the winners!

**Audemat by Auditem**  
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**Aztec Radiomedia/  
Groupe Digigram**  
IP2port System

**Aztec Radiomedia/  
Groupe Digigram**  
NextFM 300 FM Radio Station in a Box

**Comrex**  
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**Harris Intraplex**  
IntraLink-IP IP Audio Multiplexer

**HHB**  
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**LPB**  
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**Maycom Audio Systems**  
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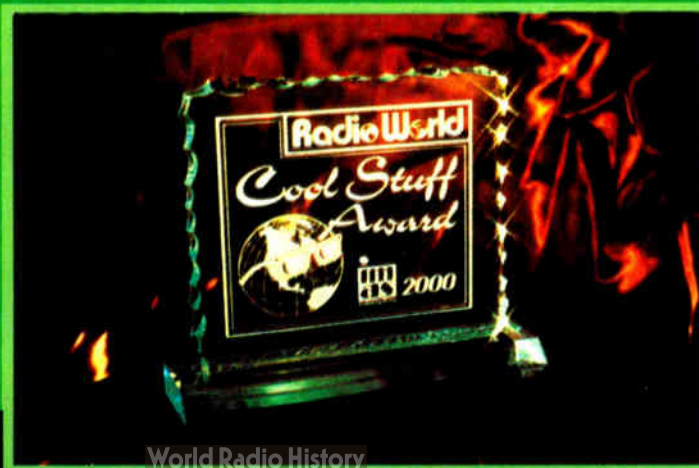
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**The wiring solution from Radio Systems**



# Auction Exclusion

► **COLE'S LAW**, continued from page 70 said nothing to suggest that the prohibition was limited to noncommercial stations operating on channels reserved for non-commercial use.

As a result, a number of commercial applicants have had to cool their heels because their competitors included one or more noncommercial applicants.

In its April decision, the FCC resolved this conundrum by concluding that Congress had been ambiguous and that, therefore, the FCC had discretion to construe Congress' language.

What is the construction that the commission came up with?

Noncommercial applicants for commercial channels must participate in the auction process, just like their commercial counterparts.

## Banish the bad

This is good news for any commercial applicant who has been stalled out because of some pesky, mutually exclusive noncommercial applicant.

But note that the vote was, and it is possible, if not likely, that petitions for reconsideration or appeals will try to get the decision reversed.

The vote on this particular point was as close as they come — 3 to 2 — and Commissioners Harold Furchtgott-Roth and

Gloria Tristani issued a dissenting opinion.

In their dissent, they argued that, contrary to the commission's assertion, there is no ambiguity in the statute, and non-commercial applicants clearly were exempted from any auction processes.

## Interpretation, imprecision

While the interpretation of statutes often seems, in its imprecision, akin to reading tea leaves or discerning familiar shapes in cloud formations, the dis-

senters do provide a strong argument, based on the statute's language, to support their position.

So it cannot be said at this point that the war on this point is over.

But let's think about the practical aspect of this. Presumably, the commission will forge ahead with auctions for the various commercial channels that have been on hold because one or more

applicants for those channels propose(s) noncommercial operation.

It is a safe bet that those auctions can be announced, conducted and concluded before the commission issues any decisions on reconsideration of its latest decision authorizing such auctions.

So unless those auctions are stayed (whether by the commission or a court), it is at least possible, if not likely, that the auctions will be over and done with before any reversal could occur.

Of course, pushing for quick auctions at this point could lead to chaos in those proceedings if, somewhere down the line, a court were to conclude that, con-

trary to the commission's thinking, Congress really did exempt noncommercial applicants from the auction process with respect to commercial channels.

If that were to happen, the commission could be forced to unwind the results of the affected auctions, even if permits had been awarded, auction fees paid, and stations built in the meantime. So unless Congress acts in the meantime to resolve this uncertainty, a cloud will remain over these hybrid commercial/noncommercial proceedings for the foreseeable future.

On another angle in the new point system, the commission specifically declined to award extra points for promises to provide locally originated programming.

The FCC reasoned that the fact that such programming has been encouraged in the low-power FM and Class-A television services is immaterial with respect to full-service noncommercial stations because full-service stations, according to the commission, "have

broader goals, and a wider signal range." Commissioner Tristani dissented on that point, too. She reviewed the emphasis that the commission, Congress and even the Supreme Court historically have placed on local programming.

She also observed that the commission's recent decision to award incentives to LPFM applicants who propose local service was based on the service requirements for full-service stations. According to Commissioner Tristani, to award such credit to LPFM applicants would be based not on the localized or low-power nature of the LPFM service, but rather on the obligation of full-service stations to maintain the ability to produce local programming.

## Too big for local

With the demise of the comparative renewal process, for the last four years or so, existing licensees have had virtually nothing to fear from the FCC if they chose simply not to broadcast any locally originated programming at all.

In that light, the commission's seeming non-interest in such programming may not be surprising. But Commissioner Tristani is correct that locally originated, locally oriented programming has often been deemed an essential element of our broadcasting industry.

It is, to say the least, somewhat jarring for the commission suddenly to suggest that local programming is appropriate for little old low-power stations, but not for full-service stations.

If this aspect of the commission's recent decision ever finds its way to court, it will be interesting to hear how the commission explains its new position.

As always, if you have any questions about these matters, you should contact your communications counsel.

■ ■ ■

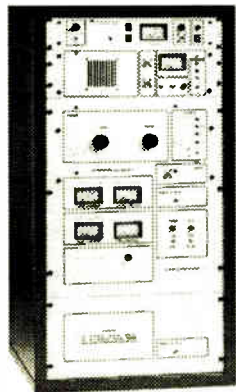
*Harry Cole is a principal in the Washington-based law firm of Bechtel & Cole Chartered.*

*Barry Umansky's "Broadcast Law Review" column, also scheduled to appear in this issue, will resume in July.*

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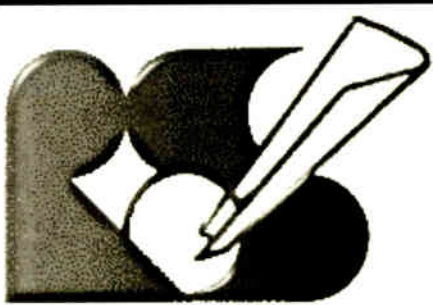
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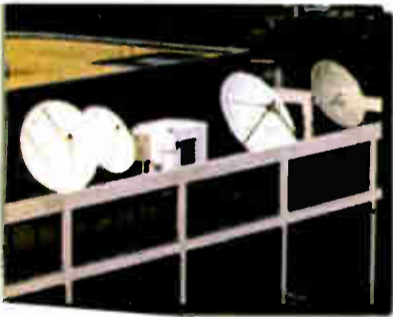


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MANAGEMENT CORNER

# Radio Today Defies Convention

Vincent Ditingo

"Who's on first? What's on second? I don't know.

"Third base!"

Those opening lines from Abbott and Costello's classic baseball routine could easily apply to today's radio business arena.

While station ownership deregulation positively affected the marketing and economic fundamentals of the industry, it unequivocally presented new challenges to conventional management and programming practices.

Meanwhile, online Web audio services and banner advertising further exacerbate the new challenges presented by deregulation — not to mention the digital satellite services coming soon to cars across America.

### Cluster management

The day-to-day decision processes and strategies of station management are shifting quickly from a central and/or regional operation model to one of local station clusters.

That means that management relationship between corporate headquarters and the local radio station outpost

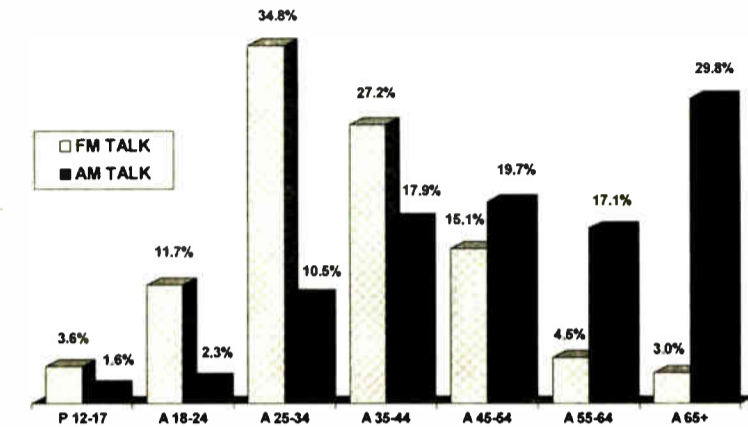
is in the process of reinvention.

Gradually disappearing is the practice of traveling thousands of miles for

structure in which program directors and general sales managers of individual properties also report to a design-

### AM versus FM Talk Comparison: FM Talk Skews Younger Than AM Talk

FM Talk targets a 25-44 audience, while AM Talk listeners are primarily 35 years or older.



Source: Interep Analysis of Arbitron W98/Sp98/Su98 Average, Cume, P12+, M-Sun 6a-12m Based on AM and FM Talk Stations in the Top 50 Metros.

key meetings.

New radio-managing philosophies entail a localized, line-management

nated local cluster market manager or team manager.

These local cluster groups have, in effect, become local profit centers or subsidiaries contributing to the parent.

The move created new industry jargon such as "cluster management" and "cluster marketing."

The structure is being refined so station groups can operate in an optimum fashion. With quick advertising sales, program decisions and turn-

The key difference between AM and FM talk programming is that the latter will attract the younger audiences that advertisers covet. And therein lies its potential.

According to a 1999 Interep study of FM talk radio stations in the top 50 metro markets, almost 35 percent of the FM talk audience is composed of adults 18-24 years of age compared to 10.5 percent for the same demographic on AM.

And FM talk attracts 27.2 percent of adults 35-44 compared to 17.9 percent for AM talk programming. (See chart, above.)

According to the report, AM talk stations "serve more as a platform for information and debate while FM talk seeks more to entertain. Subjects discussed on AM talk stations usually center around news and political issues while FM talk subjects lean more toward humorous contemporary issues, personality banter and pop-culture musings."

### Talk has arrived

Some evidence that FM talk programming has arrived can be seen at CBS/Infinity's KLSX(FM) Los Angeles talker.

According to BIA Research, the station was the 10th overall billing station in the country in 1999.

Let's not forget in this discussion that there will be increased competition to conventional radio broadcasting from new online streaming music portals such as Kerbango (RW, March 15, Web Watch).

While these services are becoming more commonplace in the media mix, radio executives should embrace online technology for their own inter-

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## Commissions from ad agencies tend to be higher for Internet advertising today than for conventional radio-spot sales.

around, clusters see quicker results than they did in the old central authority model.

A top objective is for local sales management and staff to think in terms of cluster (station) marketing, whenever feasible, and convey that sales approach to all customers.

### Blueprint for management

With a new, evolving blueprint for managing comes the search for new ways for radio to grow its audience base so it remains a primary advertising medium.

The most efficient way to accomplish this is to create new format concepts for FM, where the vast majority of radio listening still resides.

So what is the next great format for the musically dominant FM band — classic rock music of the mid-1980s through early '90s? Not yet. The answer is talk radio — what else?

Talk radio, the proven, interactive format that had been the domain of the AM band for years, slowly is infiltrating the FM dial.

active sites by aggressively selling banner ads. That means selling banners not only in conjunction with over-the-air spot ads, but also separately.

The reason relates to perception and economics.

Advertisers will view radio as an integral part of the new media landscape when plotting campaigns and promotions.

Financially, commissions from ad agencies tend to be higher for Internet advertising today than for conventional radio spot sales. This should help offset the initial investment incurred by radio groups who venture into Web technology.

At the same time as conventional radio broadcasters attempt to reinvent their industry to compete in a growing multimedia environment, the medium's audience may be fragmented further with the advent of two new digital audio satellite services, Sirius and XM.

At present, plans call for each national service to offer up to 100 channels of non-commercial programming in select

See MANAGEMENT, page 75 ►



► **MANAGEMENT**, continued from page 74  
2001 model year cars for a \$9.95 monthly fee. The CD-quality, satellite-to-automotive services should be operational during the first half of next year.

Concurrently, the Digital Audio Broadcasting Subcommittee of National Radio Systems Committee, which is co-sponsored jointly by the NAB and the Consumer Electronics Association, is developing an in-band, on-channel (IBOC) digital technology standard for existing FM stations to capitalize on digital audio broadcasting while improving the fidelity of the AM band.

The bottom line is that both technologies likely will co-exist in the marketplace within the next 24 months. For conventional radio operators, IBOC technology should lead eventually to a host of new audience and sales promotion ideas, including DAB receiver tie-in campaigns.

**Regulatory warnings**

Radio's consolidated landscape combined with the easy availability of cash for many publicly traded radio companies have made the medium's economic fundamentals much stronger than anytime in the past. Most radio companies of any consequence have

commercial stations. In addition, the move may further fragment radio's time-spent-listening levels.

(this includes the oil, telephone and railroad industries).

A pattern of behavior emerges that

30 years.

In fact, the U.S. government just hit the railroad industry with a 15-month moratorium on all mergers and acquisitions because deals were moving too quickly and rail consolidations would limit competition.

As the regulation pendulum keeps swinging, broadcasters should remember that radio has not yet been totally deregulated, as some operators like to believe.

While the Telecommunications Act of 1996 went a long way to deregulate station ownership constraints, it retained many FCC regulations and policies governing license renewal and programming content.

However, in general, it is still safe to say that the commission tends to operate in a highly deregulatory mode.

**So what is the next great format for the musically dominant FM band?**

**Talk radio — what else?**

It is interesting to study the history of governmental regulation of private industry during the past 100 years

shows the oversight pendulum swinging from regulation to deregulation and then back to regulation every 20 to

**Do More, Spend Less**  
**"Scott Studios Saves My Stations \$45,000 per Year"**

Doug Lane, owner and GM of WWDL (FM), WICK (AM) and WYCK (AM), Scranton and Wilkes Barre, PA says he "saves more than \$45,000 per year with Scott Studios' Voice Trax automation. While the investment was major for a small family company like ours, *the pay back was fast and real.* And the savings are year after year after year.

"Unless we are running evening baseball or Friday night high school football, we close the building at 6PM and operate unattended until 5:30 the next morning.

"We use several independent announcers to record Voice Trax for us, along with our regular staff. Even me! We operate both live assist and automation."

Normally, each announcer records a fresh show every day. Scott's exclusive Voice/Music Synchronizer guarantees every song plays only with the correct voice track. If a jock gets too busy and doesn't do their show in time, Scott's unique Voice Trax System automatically airs evergreen standbys that sound right! Doug says, "No one but Scott Studios has this great fail-safe feature. Scott Studios' System provides a separate specific generic Voice Trax for every track for every hour and every day of the week in case someone can't track their show in time."

Scott's Voice Trax recorder is the industry's easiest to use: most tasks are done with just one button. The mouse and keyboard are seldom touched. Voice Trax take only seconds per cut to record. Scott's AutoPost makes announcers sound better and minimizes Voice Trax re-cuts. Experienced jocks don't waste time checking their work because they hear their voice and surrounding music and spots in context while recording.



Doug Lane, Owner and GM, WWDL, WICK and WYCK, Wilkes-Barre and Scranton, PA  
Doug's stations have used Scott Studios' Voice Trax systems for many years.

**Talk radio is slowly infiltrating the FM dial.**

turned to the public markets for capitalization.

But the government is posting some re-regulatory warning signs, if recent actions are any indication.

For instance, the FCC recently revised its Equal Employment Opportunity (EEO) program, suspended in 1998, that imposes new reporting requirements and new recruitment obligations. ("A Primer on the New EEO Rules." RW, March 29)

And, as of this writing, the FCC was still battling the NAB and some members of Congress over the launch of a nationwide low-power FM service to provide alternative service for local communities.

Broadcasters are concerned that these new facilities will cause adjacent channel interference with existing



*The Scott System is radio's most user-friendly. You get instant airplay or audition of any song simply by spelling a few letters of its title or artist. You see when songs played last and when they'll play next. You also get voice tracking while listening to music in context, hot keys, automatic recording and graphic waveform editing and scrub of phone calls, all in one computer!*

Stations can lock the door and go home with confidence. Scott has exclusive watchdog circuits that make our systems more self-healing and reliable than others. Scott predicts many problems before they occur, usually as soon as logs are done. Scott also pages people who can make last minute adjustments off-site by modem (if needed).

After a year of trouble-free operation, Doug Lane says, "It was fun to get five calls at the studio over the Holidays from out of town PD's and GM's wanting to speak with me because they heard me 'on the air'. Guess what? I wasn't even there! They were amazed at our Voice Trax and Scott's accurate Time Checks too. Actually, they were very impressed!"

Doug is now installing Scott's automated temperature announcer. He says, "Scott's features are great. The savings are even better! I wouldn't want to run my stations without Scott Systems!"

Scott Systems are delivered with your music library pre-dubbed, plus time-saving CD rippers that digitally transfer music to hard drive in seconds, no-dub instant LAN spot uploads from Sonic Foundry multi-track production, MPEG and uncompressed digital audio (at a compressed price) and a week of Scott School training of your whole staff at your station. You get Cart Walls for instant requests, a phone recorder with waveform and audible scrub editing, the ability to record Voice Trax in your air studio while listening to your music in context in headphones, title and artist displays for your website, time announce and Cat. 5 audio wiring for fast installation. Scott's SS32 System can feed different spots to webcasts or second stations, run satellite formats and ABC's LocalMax. Scott Studios offers optional auto-transfers of spots and Voice Trax to distant stations over Internet or WAN, wire capture and newsroom editors, unattended school closing reports and 24/7 live support via toll-free cell phones.

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# Commercial Stations Were First

► CLASSICAL, continued from page 67

to make some more money — and it doesn't cost them a nickel. Everything is supplied to them free of charge. All they have to do is promote it," he said.

WCLV's Conrad is confident about opening the relationship with station clientele to GreaterGood.com because of the company's reputation in the not-for-profit industry and its concepts that open fund-raising avenues.

"We felt this was the proper organization for us to go to mostly public radio stations. Establishing 'shopping villages' on their Web sites gives an additional source of income.

"It also gives audiences another reason

to visit the station sites. Public stations are seeing this as a very easy way to gain new revenues from people they're not getting any revenues from," Conrad said.

Public stations aren't the only ones to sign on. Commercial stations are coming on-board. Though commercial classical stations compose only 15 percent of WCLV/Seaway Productions affiliates, they have been the first to act on the opportunity.

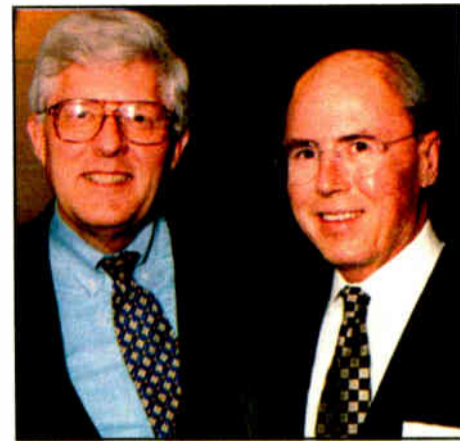
Major-market classical powerhouses like WQXR-FM in New York (\$16 million in '99 revenues, according to BIA) and WRR(FM) in Dallas (station revenue of \$4.2 million) have GreaterGood.com "shopping villages." Dennis Miller,

WCLV/Seaway Productions senior vice president, is not surprised that commercial stations were the first to respond.

"We've discovered the commercial classical stations in the major markets move a lot quicker than a public radio station that's licensed to a university. There's a great amount of paperwork that has to be handled by the executive director or general manager at a public station. So it takes longer for them to make a decision.

"Our first success was with the major-market commercial stations. The owners were there. They could sign the contract," said Miller.

Tom Bartunek, president/general manager of WQXR-FM, said his "listeners



Robert Conrad and Dennis Miller

are active Web users and we are happy to have them participate in a shopping village that so closely mirrors the tone, stature and quality of our station."

The commercial stations' addition marks a shift for GreaterGood.com.

"Because of our relationship with WCLV, we felt it was appropriate to offer it up to the commercial stations. We felt that of all the radio formats out there, commercial classical is probably the most not-for-profit of them all," said Garrepy.

Obviously, commercial stations cannot claim that the monies raised go to charity. Conrad has found that, if handled tactful-

**A majority of those surveyed said they would rather shop at a business that gave to charity.**

— Scott Garrepy  
GreaterGood.com

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A separate docking station (not pictured) operates as a battery charger, has stereo line inputs and outputs plus a USB connector to hook up to a PC. With sampling rates of 16kHz up to 48kHz, it is suitable as a voice recorder for news work. Depending on the selected compression, the audio capacity on a single 128MB compact flash card (not included) is 46 minutes (stereo) up to 9 hours (mono).

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ly, this does not take away from the feel-good aspects.

"What we say on our station is, 'You can help support classical music on the radio by shopping at the WCLV shopping village.' We're drawing on the loyalties of our listeners, just the same as the public radio station will draw on the loyalty of its listeners by saying, 'Help support public radio in your town by shopping at the WXXX shopping village.'"

However, unlike public stations, links to commercial stations are not included on the GreaterGood.com site. According to Garrepy, this preserves its purely not-for-profit character.

As the viability of many "e-tailers" comes into question, there is uncertainty about all "dot-com" ventures. Will "e-tailers" be able to continue to offer discount prices and pay out commissions to GreaterGood.com and its partners?

While radio managers brace themselves for a likely decline in "dot-com" advertising dollars, Garrepy believes they will be insulated from such a retrenchment.

"What's so beautiful about this is we're a performance-based marketing partner. They only pay us when somebody buys something. So if I'm Lands' End, I can create an ad campaign and run it on various media outlets and hope that it works. Or I can spend my money more efficiently by only paying if somebody buys something. Retailers are willing to do that all day long," Garrepy said.



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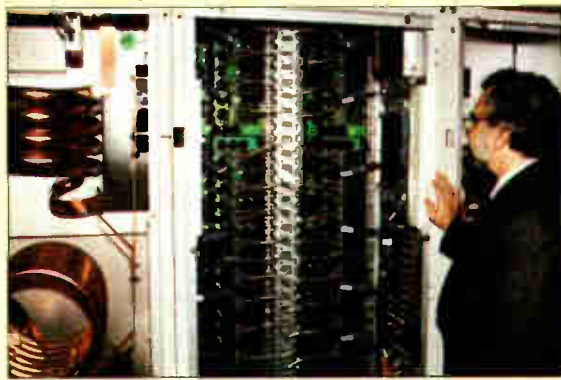
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The 3DX-50 is the next of the successful DX series transmitters, which introduced digital amplitude modulation.

New Direct Digital Drive technology offers greater signal accuracy, high efficiency and IBOC preparedness. The transmitter monitors each serial modulation encoder and RF power amp module and makes reassignments if problems crop up. A power or binary amp can be

removed without taking the transmitter down.

"The greatly simplified drive ladder eliminates hundreds of possible failure points which were possible in its predecessor," one judge said. "The PA modules



have all the gain blocks on board, allowing simplified exciter-to-PA module circuitry. The designers added a fully redundant control system as an option in addition to the redundant exciter.

"For unmanned sites, this is nice since a maintenance engineer might not be available for some time."

"Making the best in solid-state AM transmitters a bit better," another wrote.

Harris staffers pose, while Frank Grundstein peers into his Destiny.



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## Neutrik MiniLyzer ML1 Audio Analyzer

Another palm-sized solution from Neutrik. This analyzer is a nice complement to the Minirator signal generator.

Analysis functions include level, as RMS or peak values in absolute or relative units; frequency measurements; THD+N in dB and percent; polarity test functions for speakers and systems; and common mode measurements.

Balanced XLR and unbalanced RCA connectors are available to input the test signal. Built-in mic for polarity testing and headphone output are standard. Battery operated.



"The Minilyzer will do 95 percent of my daily measurements and will fit in my tool case along with the Fluke 8060 instead of requiring a tool case of its own," one judge said. "The graphical spectral display is good for identifying IM products which may not be readily evident."

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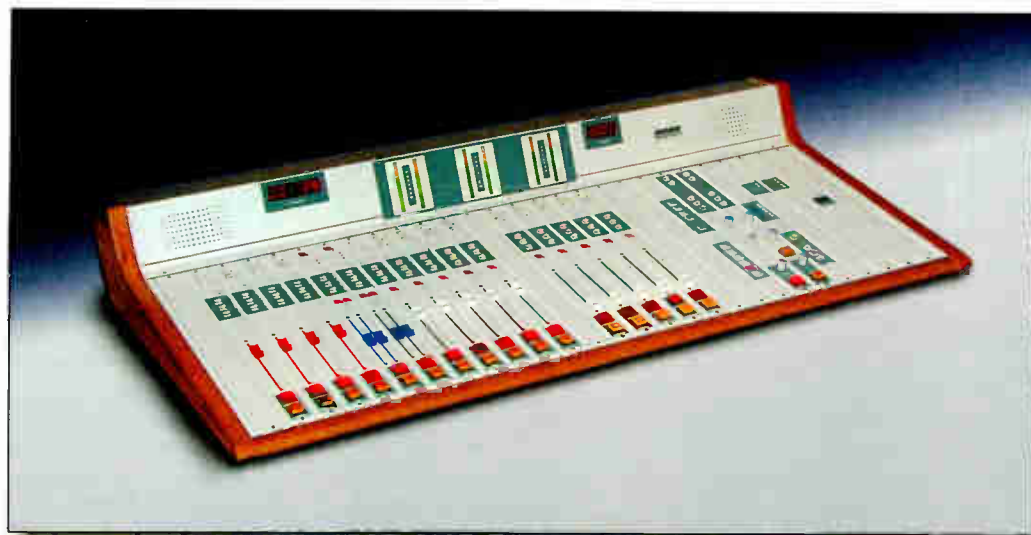
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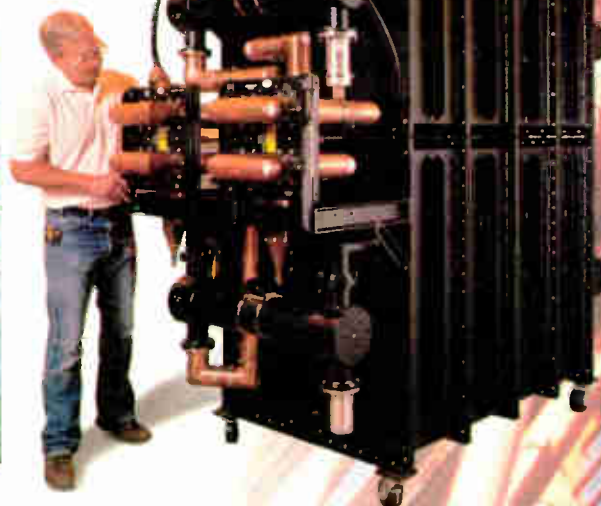
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# Studio Sessions

1960s ENG



See Page 84

Radio World

Resource for Radio Production and Recording

May 24, 2000

## From Razor Blades to Hard Drives

Ken R.

In 1962, the Beatles had not yet hit U.S. shores, John F. Kennedy was president and state-of-the-art radio production involved turntables, monaural reel-to-reel decks, cart machines and vinyl music libraries.

It was a simpler time.

"The tools have changed a great deal since then, but the important point is still providing a service to the client," said Dirk Freeman, president of SteeleBoy Productions in Denver.

He made the comments during an NAB2000 session. Freeman suggested that his audience of professionals

embrace the technology.

"If you're not afraid of it, your job will be easier," Freeman said.

Since the 1960s, audio production style has been influenced by factors including television and film editing techniques, popular music trends and the steady advance of technology.

### Signs of the times

"In the 1990s, digital work stations, software effects, ISDN, DAT, MiniDisc, CD-R and the Internet all played a part," said Freeman. "Now we have more portable devices for electronic newsgathering and sound cards for computers."

Ron Richards, research and develop-

ment at Scott Studios, said, "You used to have to plan your time in the production room carefully because seven guys were



Chris Crump of Symetrix

days, audio production was more difficult. Customized retailer jingles usually were available only to large national clients.

Station ID jingles were pressed to disk and rapidly became scratchy from use. Music beds for commercials came on vinyl too, issued by now-defunct pioneers such as Pepper Tanner, CRC and Richard H. Ullman.

Production was often done "on-the-fly" direct to cart by the production director. This process would involve preparing appropriate sound effects and stingers onto reel or cart, slip-cueing a production album and reading the copy in one continuous take. If any element of this one-man-band operation failed, the production director bulk-erased the cart and began again.

A good-sounding spot depended on the machines being properly aligned, all levels being correct and the ability to know instinctively when the 60-second mark was approaching. And, if the recording cart stopped before the commercial was over, the spot was too long.

waiting to get in. Now computers allow spots to be created anywhere. In the future we may all be free-lancers, when all the audio is networked."

Richards added that almost all his radio production is done on desktop except voice tracking.

"With all the new toys in the radio production room, I worry that sometimes I'm just trying to impress myself with bells and whistles, which can be distracting," said Freeman. "We need to remember that it's the writing that is still important."

"I think we're eventually going to get away from storing audio on hard drives and head towards laser-etched crystal and optical RAM," said Chris Crump, director of sales and marketing for broadcast at Symetrix Inc.

"Through the Web, we should be able

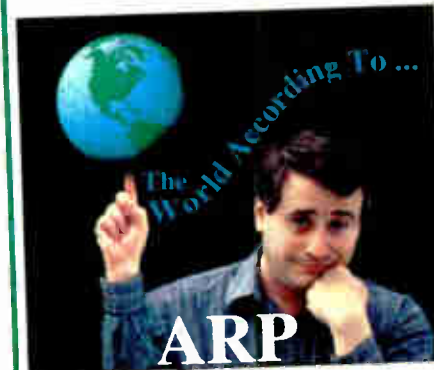
See RAZOR, page 83 ▶

## Shecky Peterson Is Back

Alan R. Peterson

Another NAB spring show in Las Vegas has come and gone. And that means another visit from my alter ego, Shecky Peterson.

Imagine the best and worst cliché qualities common to all Vegas comics and emcees, roll them all together, lean the resulting heap up against a piano with a martini in one hand and an Electro-Voice RE-20 in the other. That is Shecky. Always quick with a joke, good or bad, with an engineering or radio slant.



Shecky sort of popped out of my psyche three years ago, following the 1998 NAB convention. At that show, there were numerous opportunities for cheap jokes to write themselves. After the convention, dozens of joke topics came sliding down the strike zone. Shecky stepped in to knock

See ARP, page 86 ▶

### Radio Production, Circa 1960

Top-40 newscasts featured distinctive electronic separators between stories and jocks, who were known for their incongruous comedy "drop-ins" appearing out of nowhere. How did they do that?

In the early 1960s, the MacKenzie Repeater was one of the few studio tools available to the broadcaster. It used 1/4-inch tape in a unique self-cueing format that allowed up to 10 different sound bites to be accessed. Later made obsolete by the cart machine, these dinosaurs ruled the top-40 domain for several years.

To learn more about the MacKenzie Repeater and hear actual airchecks from the early days, visit [www.reelradio.com](http://www.reelradio.com)

Site host Uncle Ricky offers a treasure vault of radio clips from WQAM, WFIL, WLS and other giants of the era, which illustrate some typical techniques.

In those distant, pre-Sgt. Pepper

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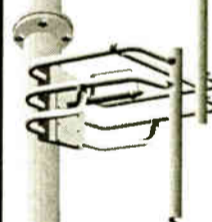
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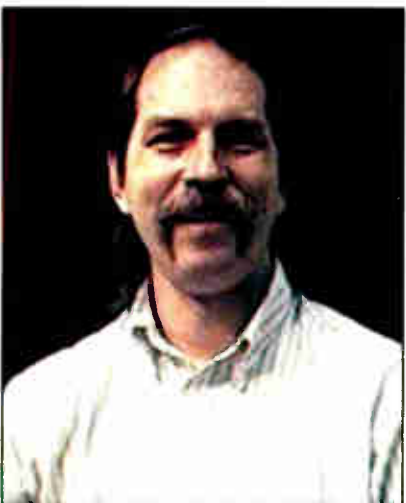
# Possibilities In Future Studios

► RAZOR, continued from page 81 to listen to the current show plus a library of any previous shows we like. We'll have multi-lingual and multi-cultural programs as the number of available satellite channels increases."



Dirk Freeman, SteeleBoy Productions

Other suggestions by audience members for surviving the future included becoming a "niche expert" in one specific area of production, becoming Microsoft certified and learning to diagnose basic computer problems.



Ron Richards, Scott Studios

"Computers will soon offer Gigabyte processor speeds," said Crump. "People are already working on ways to push information faster and faster and this will change the way we approach production."

Alan Clarke of KSAU(FM) in Nacogdoches, Texas, talked about adding visuals on the Net. "Those music breaks in 'All Things Considered' would be a good place to start."

Another member of the audience wondered if radio stations were suddenly going to have to learn to become TV stations and newspapers on its Web pages.

"With text and images in addition to our audio, that's where it's headed," said the audience member.



## HHB PortaDisc MDP500 Professional Portable MiniDisc



HHB debuted the PortaDisc, a MiniDisc portable with balanced mic inputs, switchable phantom power and limiting that can be stereo linked.

A USB interface for transfer of files to laptop editors lets you produce news pieces in the field.

Eighty minutes of stereo is possible on an HHB MD80 disc, or 160 minutes in mono. Power is by AA alkaline batteries or the rechargeable AA nickel metal hydride batteries.

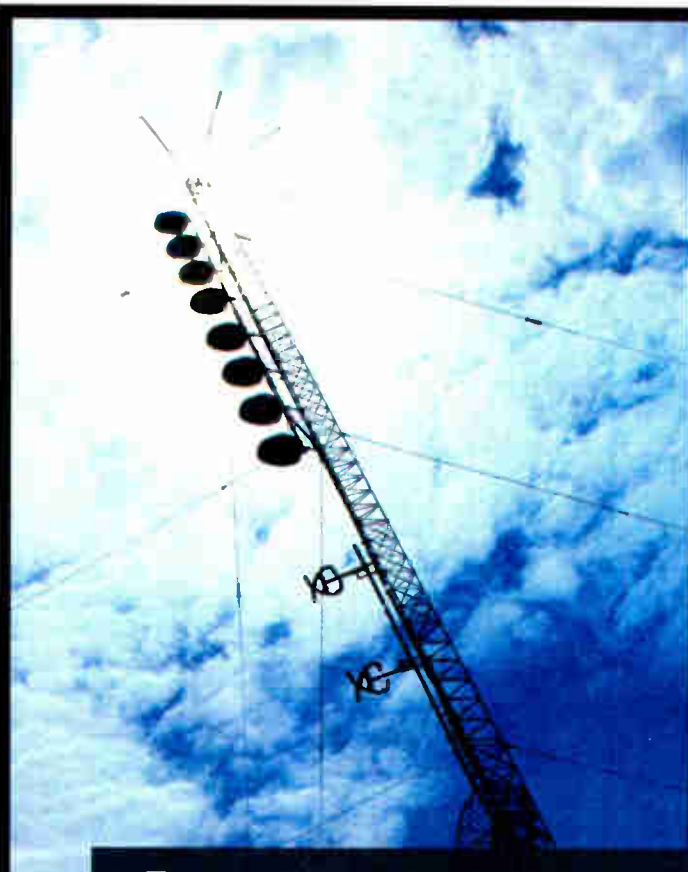
HHB says three hours are possible before recharging. A universal charger is supplied.

Connectors include balanced XLR mic/line inputs, RCA line outputs, headphone jack and coaxial and optical S/PDIF digital I/Os.

Also: Time/date stamp, auto gain control, one-touch recording, lockable record level and key hold.

Price: \$1,545. Available: September.

Contact HHB in California at (310) 319-1111 or visit [www.hhb.co.uk](http://www.hhb.co.uk)



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For more information on the new GSC3000 software, please call us at 800.723.4075 - 801.975.7200 Or visit us on the Web at [www.gentner.com](http://www.gentner.com).

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● **Start Menu Enabled:** All segments of Lynx can be selected to start whenever your PC is booted. The default or custom views are automatically displayed.



# Uher: 1960s ENG on Analog Tape

Tom Vernon

For as long as portable recording equipment has been around, electronic newsgathering has been a vital part of radio news operations.

Many reporters currently use battery-powered cassette recorders or MiniDisc machines. But small, open-reel machines were being hauled into the field to gather sound and actualities long before cassette machines were available.

The gold standard for portable open-reel machines was the Uher 4000 Report series. These tape machines, manufactured in what then was called West Germany, had the same design philosophy as Leitz cameras and Panzer tanks: Failure was not an option.

Many correspondents covering the Vietnam War used Uher 4000 decks. Stories are plentiful of the machines surviving monsoon rains and near-misses by VC mortar fire.

The high cost of Uher machines tended to limit their use to large-market stations and news organizations like AP and UPI. Nevertheless, they have a place in the history of ENG technology.

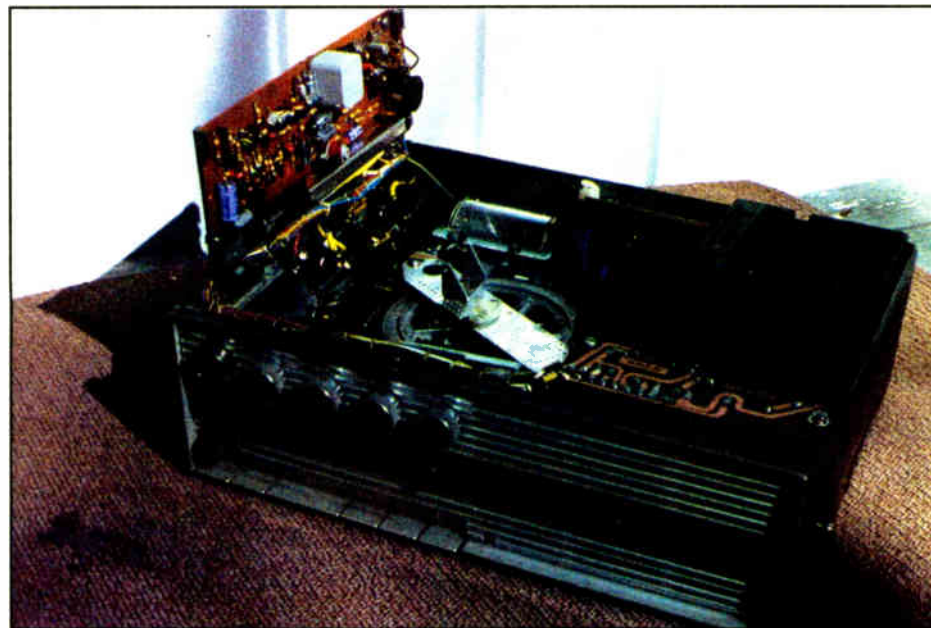
The small size made Uher decks popular with album bootleggers. "Live'r Than You'll Ever Be," an unauthorized recording of a 1969 Rolling Stones concert was made with an Uher 4000 L.

While the sound quality of the album was not up to professional standards, it was

considered very good for a bootleg release.

These machines were also found in university biology departments, often for

machines were made with a light but rugged non-warping die-cast aluminum frame. Except for the reel tables and the



Electronics for the Report-L hinged out for easy adjustment and service.

field recording of songbirds. Court reporters use them at a slow speed for backup transcripts of the proceedings.

The later models had a sync option for movie cameras, which made the recorders popular with filmmakers.

The reputation Uher established for quality and durability was the result of meticulous German engineering. All

viewing window in the top cover, little plastic was used for the parts in these machines.

Record/play electronics were mounted on a single printed circuit board that

transports of Uher machines manufactured today, more than 30 years after the original design was conceived.

There were several machines in the 4000 Report series, including the original Report manufactured in 1962, followed by the L, S and IC models. The Report-L is the subject of my restoration. This series is still manufactured with the current models: Report Monitor 4000AV, 4200 Report Stereo and 4400 recorders.

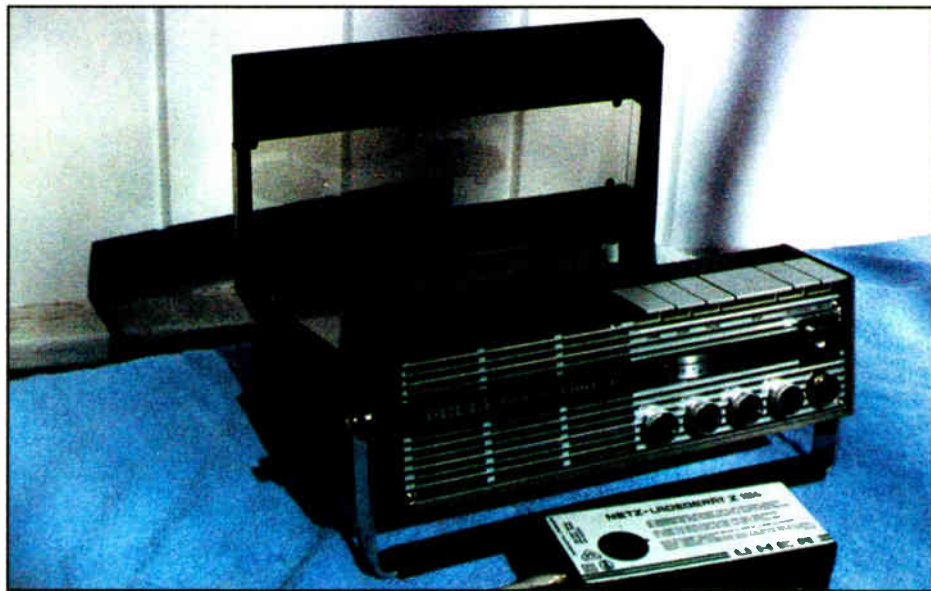
Uher estimates that approximately 800,000 Report machines are used worldwide. A surprising number of older machines are still around. They turn up in used hi-fi stores, flea markets and on the Internet auction site eBay.

## My machine

I purchased my Uher 4000 Report-L from a UPI correspondent who had used it while covering the war in Vietnam. Despite being lugged all over Southeast Asia and used on the front lines, the unit looked to be in good condition. I suspect the leather carrying case had absorbed most of the wear and tear.

An operational check revealed that all of the functions worked, although the fast-forward and rewind were a bit sluggish. Once cosmetic cleanup was complete, I set out to do a mechanical and electronic alignment.

I was able to purchase the original Uher service manuals from a hi-fi dealer that was



Once used to cover the war in Vietnam, this Uher 4000 Report-L is shown with its AC power supply

hinged away from the chassis for easy access to tweakers and components. DIN connectors were used for all audio and power connections to the machine.

If the optional Uher dynamic microphone with the 5-pin locking DIN connector was purchased, the built-in start/stop switch on the mic could be used for one-button operation of the recorder.

An electronically regulated high-revolution motor, connected to a flywheel by a belt, powered the transport.

The flywheel sat upon a pendulum bearing and had four different diameters machined onto its surface. Each diameter corresponded to each of the four speeds of the deck.

The motor spun at a constant speed regardless of the selected tape speed. The 10-mm capstan was driven by a frictional connection between the flywheel and driving wheel.

Varying the ratio between the flywheel and the driving wheel changed the speed. This resulted in a smooth-running transport that could take considerable punishment without frequent adjustments.

A similar arrangement is used in the

going out of business. Fortunately, Sam's Photofacts also put out manuals on the Uher machines. For the Report-L, it is number TR 36 and can be purchased for \$19.95.

As I explored the inside of my Uher, one of the first things that I noticed were badly worn and stretched belts, explaining the slow fast-forward and rewind I had noticed earlier. While I could have ordered replacement belts from Uher, a faster and economical alternative was to use the PRB cross-reference book to purchase replacement belts locally.

Anyone working with older recording equipment should become familiar with this reference. It lists nearly every open reel and cassette machine, both consumer-grade and professional-, along with the correct PRB replacement belts. For the Uher, one VR 4.6, VR 9.0 and OX 11.2 was required. PRB belts are available from many electronics parts distributors.

While ordering belts, I also purchased the special microphone connector used on this machine. It is a locking 5-pin DIN connector, commonly found in Europe, but seldom used in the U.S. Fortunately,

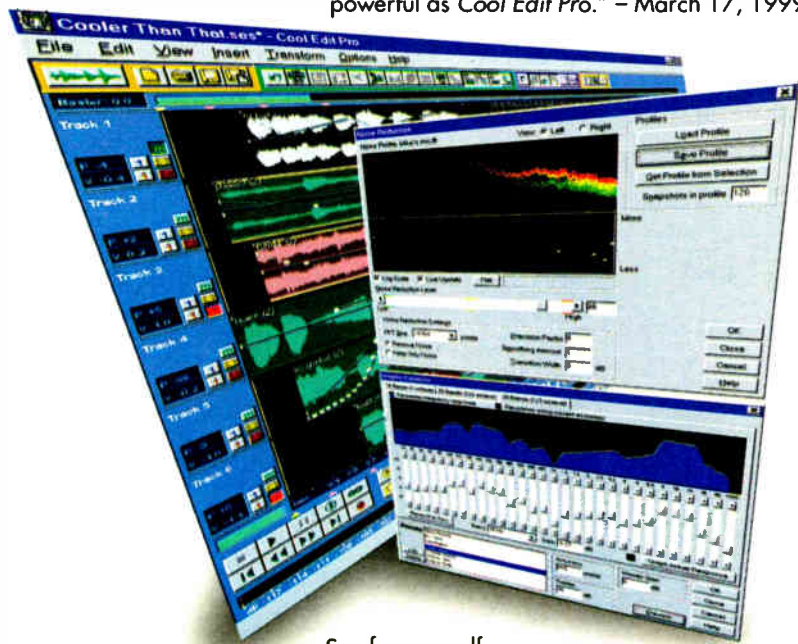
See UHER, page 85 ▶

**Cool EDIT PRO**

Perhaps you've heard the buzz around Cool Edit Pro, the complete software multitrack recording studio. Why is it so popular?

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As one user said in Radio World, "When it comes to broadcast production, it is doubtful you will find an easier interface that is as inexpensive yet as powerful as Cool Edit Pro." — March 17, 1999



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► UHER, continued from page 84  
it is available from Switchcraft under part number OSCL5M.

Having cleaned and lubricated the reel spindles and replaced the belts, the next step was a good cleaning of the heads and guides tape path.

I did the drill with cotton swabs and alcohol, with the added warning not to disturb the tape guide. Uher makes all of the guides adjustable and seals them with lacquer. Unless someone before you has disturbed them, it is best to leave them alone.

**Cleaning a path**

While I was cleaning the tape path, I also checked the felt pressure pads that press the tape against the heads. This unit looked OK, so there was no need to make replacements.

Before beginning an electronic alignment on anything this old, it is best to replace all of the electrolytic capacitors. This usually will eliminate quirky problems with motorboating, as well as poor low-end response and distortion. Do not forget caps that might be hidden beneath the battery compartment.

A careful cleaning of the sliding contacts on the record/play and equalization switches with Caig DeOxit was also in order.

Next I followed the procedures in the Uher manual to adjust all the tweakers: bias, record-level indication, tape speed and battery-life indication. There are other adjustments for amplifier feedback and balancing the output stage,

but they only need to be changed if components are replaced.

After demagnetizing the heads and tape guides, the head was aligned in the usual way by using a 10 kHz tone on an alignment tape.

However, playback equalization is verified without the tape. An oscillator is connected to the tape head via a voltage divider and a VTVM is connected to the phono jack. As the oscillator is swept through the specified frequencies, the output level is observed and compared with the equalization table in the manual. My machine was within the ±1.5 dB tolerance.

Finally, I recorded and played back tones to check overall response. My machine was about 2 dB short of making specified high-frequency response.

Adjusting the bias made an improvement, but also humped the response around 5 kHz, indicating the head was worn beyond the point where bias adjustments alone could compensate.

If I wanted to restore the machine to



Two generations of Uher 4000s: the Report-S (left) and Report-L.

like-new specifications, I could have removed the head and sent it to a specialty shop to be relapped. Since this was more for show, I opted to live with the slight response deficiency.

As I listened to some field recordings that I made with a Uher I used to

own, my mind wandered back to the mid-to-late '60s with actualities I was listening to about Vietnam and other events that were part of the hourly newscasts. I wondered how many of them were recorded on similar machines — or possibly this one.

**Uher Resources**

[www.uher.com/english](http://www.uher.com/english) — Descriptions of current Uher products

[www.prblinc.com](http://www.prblinc.com) or (800) 533-9654 — Source for replacement belts

[www.hwsams.com/photofacts.html](http://www.hwsams.com/photofacts.html) — Source for Uher service manuals

**Uher 4000 Report-L Specifications**

**Tape speeds:** 15/16, 1-7/8, 3-3/4 and 7-1/2 ips

**Maximum reel size:** 5 inches

**Frequency response:**

40 - 5,000 Hz @ 15/16 ips

40 - 10,000 Hz @ 1-7/8 ips

40 - 17,000 Hz @ 3-3/4 ips

40 - 20,000 Hz @ 7-1/2 ips

**Signal-to-noise ratio:** 55 dB

**Wow and flutter:** ±0.15 percent rms @ 7-1/2 ips

**Heads:** standard half-track erase and record/play

**Outputs:** external speaker, radio/phono unbalanced

**Inputs:** remote control start/stop, microphone, power and radio/phono unbalanced

**Power supply:** rechargeable drylift storage battery or five Ni-Cad D cells, or power unit and battery charger

**Power output:** 1 W

**Size:** 10-1/2 x 8-1/2 x 3-3/4 inches

**Weight:** 7 lbs., 6 oz. (less battery)

**Price:** (1970 Gates catalog) \$299.95



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# Peterson's Alter Ego Runs Amok

► ARP, continued from page 81  
them out of the park.

Shecky is also a convenient shield to hide behind when the tomatoes and rotten fruit get thrown following a particularly bad radio-related joke.

But seeing how the last round of Shecky Peterson material surfaced on radio-related newsgroup discussions (credited to *no one*, thank you very much), it seems safe to assume not a lot of produce will be pitched his way tonight. But there are no guarantees in life, are there?

So without further ado, ladies and gentlemen, complete with his own rim-shots, heeeeeeeere's Shecky!

(SFX: Music, polite lounge applause) Heyyy, how ya doing, folks? Good to see you, good to see you. Just flew in from the NAB convention in Las Vegas and boy, what a trip. You know the real definition of "convergence?" *Sitting in coach between two fat engineers.*

You know which Las Vegas hotel was occupied the most by engineers? *Circuits Circuits.*

Heyyy, speaking of engineers, why did the engineer hose down the walls of conference room N-205? *He was told to dampen the echoes.*

Why did the same engineer pour vodka all over his Windows radio automation screen? *He heard the drivers weren't loaded.*

What do you get when you connect a psychic to a phasing network? *A directional array that predicts its own pattern.*

What do you get when you connect a lawyer to a phasing network? *A DA, naturally (ba da bump).*

Oh, don't even get me started about LPFM! So where did they get those letters from? "Little Pity From Majors?" "Laudable Proposal, Fatally Mangled?"

**What causes puddles of chocolate milk to collect under Mac computers? Nestle's QuikTime, of course.**

"Lotta Players, Foul Moods?"

Heyyy, don't get me wrong! It's a good idea, but even Congress says it needs more work. I mean, you know the definition of "10 watts," don't you? *Ten people yelling "what?" out their windows.*

Why did the masochist connect 4,000 LPFM transmitters directly to his tongue? *It tickled.*

What song should you never request from an LPFM? *Tommy Can You Hear Me.*

Did you hear about the LPFM station that had its antenna vandalized? *Someone stole the coat hanger.*

Now the one that will make it around

the world via the Internet in less than an hour: What's the difference between UFOs and an LPFM station? *UFOs exist.*

*Ba-da-bump!*

What's only 1.5 MB in size and says "Shaddap you nitwit, woo-woo-woo?" *The MP3 Stooges.*

What do you get when you wire up your console with fishing line? *ReelAudio.*

What causes puddles of water to collect under station servers? *Streaming media.*

What causes puddles of chocolate milk to collect under Mac computers? *Nestle's QuikTime.*

What causes puddles of water to collect under electret mics? *The condenser, of course.*

What do you get when you pull five cats through a keyhole? *Cat 5 cable.*

What do you trap in an Ethernet? *The Ether Bunny, thilly (ba-da-bump).*

You radar endorsement guys are gonna love these: What do you get when you feed a bunch of antennas too much chili? *An end-fire array.*

What do you get when you stuff a feedhorn into a gator's mouth? *A propa-gator.*

Heyyy, I wish I understood Doppler shift ... but then again, I never Doppled.

Nice to see you radar guys here tonight. Have a drink on me. Bartender here is an old FM guy and he serves up a strong one called the "Six-Bay Directional" ... guaranteed to make you "ERP."

Now for the rest of you nice people ...

What should you suspect when maple syrup drips out of a parametric EQ? *It uses Butterworth filters.*

How about when cheap wine drips out of the same EQ? *There is some ripple in the passband.*

Why did they stick a power transistor in the tollbooth on the highway? *He was the collector.*

How can you tell when the weekend DJ on an AM daytimer dies suddenly during a shift? *The screen says, "This has performed an illegal operation and will be shut down."*

And finally, why is a cheap Las Vegas hotel like an overstuffed tennis bag? *No ballroom. Ba-da-bump!*

Thank you, you're a wunnerful audience. See you at the 10 o'clock show.

## PRODUCT GUIDE

### Denon Digital Turntable

Denon has a new turntable, the DP-DJ150, that is equipped with a 44.1 kHz/16-bit S/PDIF digital output and a line-level output.

It also has a DSP chip with "key adjust" algorithm that maintains a constant key even when the rotation speed is altered. The turntable lists for \$600.



Denon also has the DP-DJ100 turntable without digital I/O and key adjust that lists for \$500.

Both turntables have a start-up torque of 12.25 pounds-per-inch, pitch adjustments of 12 percent and can play 33s, 45s and 78s.

For more information contact Denon in New Jersey at (973) 396-0810 or check out the Web site at [www.del.denon.com](http://www.del.denon.com)

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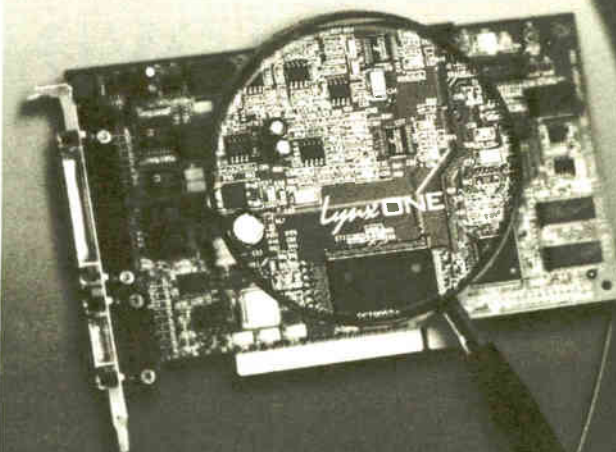
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- Pro Audio Review  
April 2000

"It's extremely clean, very clear, and amazingly accurate. Rock solid with a wide range of programs."

-Recording Magazine  
February 2000

"The LynxONE is an excellent mastering card in terms of sound quality and flexibility. Suitable for today's professional studio."

AUDIO QUALITY: 5 [out of 5]!  
-Electronic Musician  
August 1999



**PRODUCT GUIDE**

**Crown Digital Mixer And Processor**

The Crown IQ-USM 810 is an eight-input, 10-output digital mixer in a 2RU chassis. It provides dual input processing paths that allow the unit to

EQ, compression and auto mixing. The signals are fed to an eight-by-eight matrix. The main and aux output add additional processing of delay, EQ, ambient-leveler and output limiter. The unit is controllable by free "IQ for Windows" software through Crown's two-wire IQ bus, RS-232 or over Ethernet. Parameters are backed



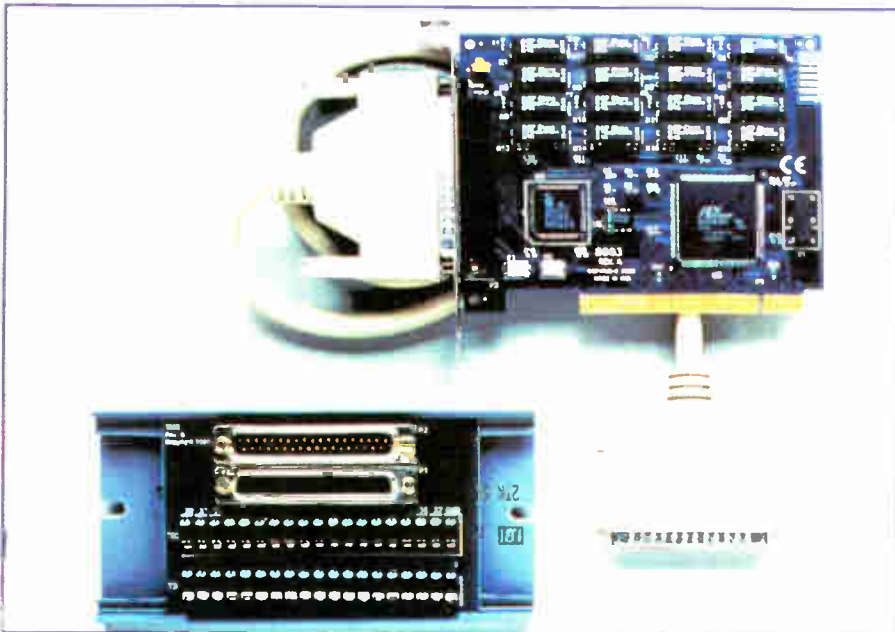
become a pair of eight-channel mixers. The inputs can be at mic level, with or without phantom power, or line level. The unit includes delay and algorithms for gating, auto-leveling,

up on flash memory. For more information contact Crown in Indiana at (800) 342-6939 or check out the Web site at [www.crownaudio.com](http://www.crownaudio.com)

**Relay at Sealevel**

Sealevel Systems features the REL-16.PCI digital I/O interface that provides 16 reed-relay outputs for a list price of \$259.

The card can be used for PC-based control and automation of equipment. Writing a "1" to the proper port can energize each relay.



The KT-101 kit for \$49 consists of a six-foot cable and screw terminal block to connect wiring in the field.

The block provides both male and female DB-37 connectors. The card and kit bundle lists for \$299.

Systems ship with the Seal/O suite of Windows 95/98/NT/2000 drivers, along with Seal/O TST to exercise the input and relays.

It also comes with Seal/O VB, a 32-bit Visual Basic sample with GUI for control of individual and groups of relays and timed relay activation.

For more information contact the company in South Carolina at (864) 843-4343 or check out the Web site at [www.sealevel.com](http://www.sealevel.com)

**Harris Carts CD**

Harris offers the third generation of its CD Cart machines, the CD 2001.

The deck plate is made of cast aluminum. Circuit boards are heavy-duty printed to make the unit extra-durable. Users cannot accidentally remove the CD cart until it stops playing.

For more information contact Harris in Illinois at (800) 622-0022 or visit the Web site at [www.harris.com](http://www.harris.com)



**Sony DRE-S777 Sampling Digital Reverberator**

The DRE-S777 captures the unique sound of real acoustic spaces: concert halls, churches, theaters and other venues. Sampling was a recording project that



required loudspeakers to emit the test signal and mics arrayed in the position corre-

sponding to each mode. "One of the best-sounding boxes I've heard. The trails sound totally natural," said one jurist. "Soon, the box will be able to create your own reverb based on actual rooms."

The data Sony collected on the acoustic blueprint of each room sampled is contained on a CD-ROM: each CD holds about seven spaces. Sony soon will have three CD-ROMs available: European Halls and Churches, U.S. Halls and Sound Stages, and a new Japan disc.

Not for everyone, the reverb lists for \$7,300 to \$12,600, depending on configuration. Available: Now

Contact Sony at (800) 686-7669 or for literature and a videotape, call (800) 472-SONY.



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# Radio World

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#### WANT TO SELL

**Marantz 17 amp 7T pre-amp**, gd cond, sell pair only, \$1500. J Deering, Creative Communications, 1206 Cartwright Circle N, Goodlettsville TN 37072. 615-855-1068.

**Ramko XL AS-10**; ATI distribution amps (3), BO for each. Steve, WXTK, West Yarmouth MA. 800-696-9505 ext 212.

### ANTENNAS/ TOWERS/CABLES

#### WANT TO SELL



**S.W.R. FM Antennas**  
Great Antenna Great Price!  
**HE HALL Electronics** (804) 984-4255

**Dielectric 4 port 3-1/8"** motorized coax switch, \$1000. T Toenjes, KJTY, 6120 Riley Circle, St Marys KS 66536. 785-437-6549.

**ERI FM2A 2 bay FM antenna** on 99.1 w/drivers; 2 bay FM on 102.3, \$1200 ea. T Hodgins, KUJ AM/FM, Rt 5 Box 513, Walla Walla WA 99362. 509-520-3000.

**Jampro JSCP-2R**, 2 bay w/radomes, phasing harness & side mount hardware, tuned to 101.7 MHz, \$2300; Dielectric/RCA BFC, new 1 bay w/heater, never used, tuned to 107.9, stainless steel, \$1000. D Nuechterlein, 517-686-9341.

**6 Bay CP**, low power, 1 kW, 95.7 MHz, \$600. Tom Toenjes, KJTY, 6120 Riley Creek, St Marys KS 66536. 785-437-6549.

**ERI G5CPM-7C 7 bay antenna** on 99.3 mHz, \$3000; Cablewave 150' of 3" heliack w/connectors, \$1000. B Campbell, Dove Media Inc, 1740 No First St, Abilene TX 79603. 915-673-5289.

**Harris/ERI 4 bay hor w/deicers** on 102.3 FM, \$1200; Mark STL antennas (3) 6', (1) 4', 50% off new list; Scala directional FM on 97.5 translator or receive antenna 50% off new list; Dielectric radomes (4), \$250 per bay. Brian, WNGN, Box 36 The Kings Road, Buskirk NY 12028.

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**ROHN 340 Foot Model SSV** Three legged self support tower. Excellent condition w/drawings. Circa 1971. Located in Arlington Hts, IL. Formerly used by WYLL. Soon to be dismantled. Make an offer. Salem Comm Antenna Site Management office 610-260-9881.

**Coax patch panel**, 3-1/8" - 7 pole, 3 U-clips. Continental Communications, 800-664-4497.

#### WANT TO BUY

**3 Bay antenna** for 104.3 MHz. John Andrist, KOMW, POB 151, Omak WA 98841. 509-826-0100.

### AUDIO PRODUCTION

#### WANT TO SELL

**Aphex 250 Type 3 oral exciter**, new, in box w/manual, \$425; Boss VT1 voice transformer, new, in box, \$200. Michael Tait, Tait Recording Services, 1347 S Capitol St, SW, Washington DC 20003. 202-488-3905.

**Roland DM-800** multi track recorder w/Dif-800 digital interface, BO. David Fisher, WGOW, 821 Pineville Rd, Chattanooga TN 37405. 423-756-6141.

**Urei 565 Little Dipper EQ**, \$700; ADC Propatch 1/4" punchblock patchbays, new, \$600 (many); 1.4" TRS patch cords like new, \$15; ADC TT 144 point patch bays, recond, \$149-229. W Gunn, 760-320-0728.

#### WANT TO BUY

**Yamaha BP-2** bass synthesizer pedals. Prefer electronics but will be happy w/schematic. B Meuse, Muse Audio Arts, 191 E El Camino Real, #209, Mtn View CA 94040. 650-969-2433.

### AUTOMATION EQUIPMENT

#### WANT TO SELL

**Arrakis Digilink III DL3-600** automation system, complete w/7 channel switcher extender, excel cond, \$3000/BO. Jay Wintermeyer, KPLW, 509-665-6641.

**Videoquip SS-2 (2)** audio switchers for Prophet systems Wizard for windows, \$800 ea; Prophet Systems (2) old style satellite switchers for Prophet Systems Wizard, \$250 ea. G Hornung, KRGI, Grand Island NE 68802. 308-381-1430.

#### WANT TO BUY

**Arrakis DL-SW-7EX-DL-PS-1** switcher w/power supply. W Borneman, WBYN, 280 Mill St, Boyertown PA 19512. 610-369-7777.

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**ITC Delta 3** deck stereo PB, \$350. T Toenjes, KJTY, 6120 Riley Circle, St Marys KS 66536. 785-437-6549.

**BE 5404C** triple deck, clean, well maintained, like new cond, includes all cue tones & output cabling, \$1500. Eva Reynolds, KEPC, 5675 S Academy Blvd, Colorado Springs CO 80906-5422. 719-540-7633.

**Fidelipac Dynamax CTR112** stereo, single play cart machines (5), \$800 ea, plus shipping, has fast forward, in almost new cond. Brian Lord, Lord Bdctg Co, 3824 SW Myrtle St, Seattle WA 98126.

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**Harris Executive**, 10 ch stereo, gd cond, \$950. T Toenjes, KJTY, 6120 Riley Circle, St Marys KS 66536. 785-437-6549.

**Ampex AM-10**, 6 in 2 out stereo mixer w/meter panel & remote cases, gd cond, \$325. Michael Tait, Tait Recording Services, 1347 S Capitol St, SW, Washington DC 20003. 202-488-3905.

**Autogram AC-6** 6 channel w/rotary pots, \$1000. KKS/KRKN, 416 East Main St, Ottumwa IA 52501. 515-684-5563.

**McCurdy SS7500 (2)** 10 channel w/tons of inputs, Penny & Giles slide pots from classical station, \$2500 ea; Gates Executives (2) solid state, 10 channel, \$1300 ea/\$2000 for both; Gates stereo Statesman-solid state 5 channel, \$550. Brian, WNGN, Box 36 The Kings Road, Buskirk NY 12028.

**Autogram 20** mixer stereo console. Continental Communications. 800-664-4497.

**Soundcraft 600**, 24x8, \$3900; JL Cooper 16 trk automation, \$1200. W Gunn, 760-320-0728.

### LIMITERS

#### WANT TO SELL

**Optimod 9100B**, gd cond, still in service, \$2500. Rene Munoz, KAPR, 3434 Washington Ave, Douglas AZ 85607. 520-364-4495.

**Orban Optimod 8000**; CRL MBL 100 AM processor; CBS Audimax 3; Tapco 2200 EQ, BO for each. Steve, WXTK, West Yarmouth MA. 800-696-9505 ext 212.

**CBS Volumax**, \$400/ea; mint Urei 1176LNs, black, \$2300; 1176LN silver, \$1800; 1176 original blue/silver transformer l/o, \$2300. W Gunn, 760-320-0728.

#### WANT TO BUY

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**Teletronix LA-2A's**, UREI LA-3A's & LA-4's, Fairchild 660's & 670's, any Pultec EQ's & any other old tube compressor/limiters, call after 3PM CST, 972-271-7625.



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### WANT TO BUY

**RCA 4-A** box style mics. Will pay 1500 for 4-A mic & \$300 for 4-A On-Air lights. L Drago, WELI-AM, PO Box 85, New Haven CT 06501. 203-230-5255

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**360 Systems AM-16B & AM-16D** audio crosspoint switcher & expander, \$1000/pr. G Hornung, KRGI, Grand Island NE 68802. 308-381-1430.

**CD25S** tone encoders (2); TFT 753 Am mod monitor; CBS Radio Net Alert decoder; ADC patch panel; 360 Systems AM-16 audio crosspoint expander; Arrakis 5 pot mono console, BO for each. Steve, WXTK, West Yarmouth MA. 800-696-9505 ext 212.

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**Yamaha NS10Ms**, \$295. W Gunn, 760-320-0728.

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**Otari DTR-85**, very low hrs, excel DAT rcd, complete w/manuals & remote control, \$650 +shpg. J Libynski, KRXS-FM, POB 251, Globe AZ 85502. 520-402-9222.

**Revox B-77**, needs switch or relay, \$150; Yamaha KX-380 cassette deck, Dolby B/C, like new, \$80. E Ribner, Sounds That Matter, 3532-A Wyoming St, St Louis MO 63118. 314-771-2155.

**Ampex AG 350** mono rack mount, gd cond, \$350; Ampex AG 600 mono (2), portable cases, gd cond, \$150 ea. Michael Tail, Tait Recording Services, 1347 S Capitol St, SW, Washington DC 20003. 202-488-3905.

**Ampex ATR102**, 2 trk 1.5, 15 & 30 ips, 1/4" & 1/2" heads, excel cond, \$5000; Ampex 440B 15 & 30 ips w/remote, \$750/BO. Art Polhemus, Excalibur Recording Studio, 750 8<sup>th</sup> Ave, NNY 10036. 212-302-9010.

**Magneorders**, old pt6 etc., 4 mixers, 7 transports mounted in an 82" rack, plus one cannabilized transport unit for parts, buyer must pick up, \$700. JB Crawley, WLBW/WLSK, POB 185, Campbellsville KY 42719. 270-465-8884.

**Otari MX-5050** (2) 4 trk r-r machines, BO. David Fisher, WGOW, 821 Pineville Rd, Chattanoga TN 37405. 423-756-6141.

**Otari MX5050BQ2**, 1/4" 4 trk, \$1000. KKS/KRKN, 416 East Main St, Ottumwa IA 52501. 515-684-5563.

**Tascam 32 r-r**, 1/4" 10" reels w/remote, like new in original box w/21 reels of Ampex 456 tape, \$500 +u-ship; Fostex A2 r-r, 1/4", 7" reels w/remote, in original box, \$250 +u-ship. Jerry Fletcher, Trionic Sound, 220 Coral Ct, Williamsburg OH 45176. 513-724-3553.

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**Marti RPT-40** xmtr on 166.25, gd cond, \$350. T Toenjes, KJTY, 6120 Riley Circle, St Marys KS 66536. 785-437-6549.

**Scientific-Atlanta 7300** rcvr & 7325 digital processing unit w/7.5 & 15 kHz cards in gd cond, \$1500. R Meyers, United Radio Network, 4700 SW 75 Ave, Miami FL 33155. 305-264-5963 or email: jrmeyers@bellsouth.net.

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**Gentner EFT 100** digital freq extender; Gentner VRC 1000 remote control; Gentner People Link telephone system, BO for each. Steve, WXTK, West Yarmouth MA. 800-696-9505 ext 212.

**Marti RMC-15** 16 chnl remote control, \$300. Tom Toenjes, KJTY, 6120 Riley Circle, St Marys KS 66536. 785-437-6549.

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**Ariel SR4229** Sedat rcvr, \$1750. T Hodgins, KUJ AM/FM, Rt 5, Box 513, Walla Walla WA 99362. 509-520-3000.

**Scientific Atlanta 7300** sat rcvr w/1-Sedat card, 2-15 kHz cards & 1 7.5 kHz card, BO. David Fisher, WGOW, 821 Pineville Rd, Chattanoga TN 37405. 423-756-6141.

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**Fidelipac WR-25** wire cart racks (90), ea rack holds 25 carts & can be wall mounted, \$15 ea; Also have some bases which hold 8 racks for \$25 ea. All plus shipping, only used 6 mos. Brian Lord, Lord Bdctg Co, 3824 SW Myrtle St, Seattle WA 98126.

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**RCA BTA-5U**, 5 kW AM, excel cond, on 810 kHz, BO. T Toenjes, KJTY, 6120 Riley Circle, St Marys KS 66536. 785-437-6549.

**1997 Harris DX-50**, 50KW AM xmtr in like-new cond. Martin Cooper, 800-441-8454.

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55	Armstrong Transmitters	www.armstrongtx.com
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## ◆ READER'S FORUM ◆

*Reader's Forum will return to its normal location on the inside last page in our next issue.*

**Defending Christian radio**

Dear RW,

In his letter about Christian broadcasting (*Reader's Forum*, April 12), Philip E. Galasso throws out the baby with the bath water, then makes the lame argument that if a minister asks for money, it must be a sham.

As a Christian, I am well aware that there are fakes in the faith. There are fakes at used car lots and fakes selling vitamins, and none of these people get any of my money. But does that mean I never buy a car or take vitamins? Not at all.

If I feel cars or vitamins or faith are important, I take steps to find out who is honest

and who is not. I can't write off Christian radio simply because of a few fakes.

I also don't declare a Christian radio program, or any other program, a fake and a sham just because they ask for money.

We are all asking for money. We all have to eat. We all have to pay the bills. Maybe all the Christian radio people should stop asking for money and start stealing loaves of bread when the baker isn't looking.

Like every other worker they deserve to be paid.

In Christian radio, I get information and a clearer understanding of the faith, or at least somebody's point of view of the faith.

By the way, I am not and never have been a lonely old lady.

*Peter Nowinski  
Independent Audio Editor  
Bay Shore, N.Y.*

Dear RW,

Christian radio is just like secular radio. Demographic groups listen to the stations that are formatted for them.

Philip E. Galasso's area, Kansas City, does not happen to have a Christian station targeting 18-to-34-year-olds. Across the country there are many youth-oriented stations drawing some impressive cumes, not to mention entire networks like K-Love with their translators which recently came to our town and quickly gobbled up whatever 18-34 audience we might have had.

The Bakker-Swaggart thing is ancient history. It has no meaning in the Christian radio scene today.

Actually Kansas City does have a low-power station at William Jewell College, targeting youth. I suggest he give them a call to see how they're doing.

A 31-year Christian radio veteran, I am.

*Warren Wilson  
Station Manager  
KAYA(FM)  
American Family Radio  
Sioux City, Iowa*

Dear RW,

I am amazed that a fine magazine such as yours would print such a scurrilous, slanderous letter.

The reason so few 18-34 listeners listen to Christian radio is that, with some notable exceptions like the Air 1 network and Way-FM, few Christian stations program to that demographic. For Gen-Xers, the Jim Bakker and Jimmy Swaggart scandals are ancient history.

To claim that religious broadcasting is "a scam to separate lonely old ladies from their money" is simply untrue and potentially libelous. I hereby request a retraction and apology.

*Glen Kippel  
General Manager  
KHCS(FM)  
Palm Desert, Calif.*

**Luckoff and radio jocks**

Dear RW,

I'm sure I am not the only radio personality who spins the hits and reads **Radio World**.

I'm also not the only one who read the interesting story of Mickey Luckoff at KGO ("San Fran's No. 1 GM," RW, March 29) and shook my head at the seemingly perpetual stereotype of his: that "music DJs are dime-a-dozen."

Have I spent 30 years wasting my time? Compelling radio, whatever the format, has a faithful following and generates revenue. Though there are plenty of mediocre DJs (as there are mediocre talk-show hosts), to blow off all music personalities as "dime-a-dozen" is something I would expect to hear from the bean-counters, not a broadcaster.

My general manager runs five music stations here in the Seattle metro area. I'm thankful he does not have that opinion. Dime-a-dozen? Tell my wife and kids that, Mr. Luckoff.

*Tom McCarthy  
KRWM(FM)  
Morning Host  
Seattle*

**AudioAir for AudioPhools**

Dear RW,

A recent discussion on the radio-technology listserv of *broadcast.net* was sparked by the introduction of \$500 AC power cords to gullible audiophiles, otherwise known as "AudioPhools."

This made me think that maybe I'm in the wrong business.

If I could get around this "conscience" problem, I could make a whole lot more money selling stuff to AudioPhools ...

Just as the power cord is the beginning of the audio chain, the air between the speakers and one's ears is the final element in the chain. Ordinary air exhibits too much nonlinearity, especially when using horn-type loudspeakers. And then there's the distortion introduced by the relativistic effects of speaker cone motion.

So to cure these nagging problems, we're going to market AudioAir.

AudioAir will improve the listening experience by eliminating the problems of ordinary air. The difference will be particularly noticeable in polluted areas, and at elevations above 3,000 feet where reduced air pressure exaggerates nonlinearities.

**AudioAir will improve the listening experience by eliminating the problems of ordinary air. The difference will be particularly noticeable in polluted areas.**

The AudioPhool will use AudioAir by installing a cylinder of it in his listening environment. Twenty minutes before he turns on his stereo, he will open the cylinder and allow AudioAir to expand into his listening room, pushing the inferior natural air outside.

AudioAir will attenuate stridency by 90.8 percent and reduce raucousness by 78.9 percent, while enhancing timbre, improving definition and projecting aural confidence.

AudioAir will consist of specially selected, homeopathically enhanced molecules of O<sub>2</sub>, N<sub>2</sub>, CO<sub>2</sub>, helium, and argon, with moderate doses of ozone and nitrous oxide. The latter gas will enhance the sense of humor of the AudioPhool.

A further enhancement to the AudioAir system will allow users to experience low-frequency response that goes all the way to DC. By completely sealing off the listening environment, filling it with AudioAir and blocking the Eustachian tubes of the listener with tapioca pudding, it will at last be possible to obtain DC audio response in the listening environment.

A special pressure regulator on the AudioAir cylinder, driven with the subsonic audio components, will allow static air pressure, corresponding to the DC component of the applied audio, to be set anywhere from 3 to 27 PSI (-12 to +12 PSIG).

This enhancement to the AudioAir system will finally allow DC coupled FM exciters to be appreciated to their fullest! :)

*Dave Hershberger  
Principal Engineer  
ADC Broadband Wireless Group,  
Grass Valley Design Center  
Grass Valley, Calif.*

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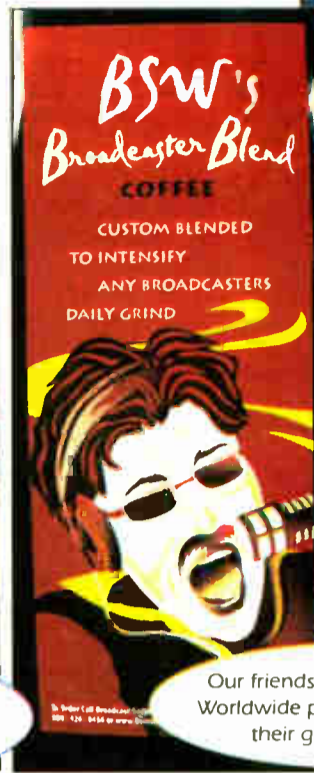
So what's the fun of a trade show without a pile of SWAG (Stuff We All Got) to show for it? RW Managing Editor Sharon Rae Pettigrew (High Priestess of SWAG) seems to have a penchant (that's a nice way of saying potentially dangerous obsession) for gathering kick-butt SWAG, and NAB2000 was no exception. Shown is a collage of Sharon's gathered goodies, with thanks going out to the lovely and talented Bernie Cox (RW Buyer's Guide Editor and Sultan of SWAG) for modeling. Photos by Al Peterson.



Goodies collected from 360 Systems, AccuWeather, Allied Tower, Associated Press, Harris, Inktomi, Intel, Media Central, Orban, Sony, Sun Microsystems, Wam!Net



Squishy balls from AP, Wam!Net



Our friends at Broadcast Supply Worldwide perked things up with their giveaway. Get it?



AccuWeather handed out these neato-torpedo 'tornado globes'



Bernie looks forward to his liquid lunch — cocktail shaker and lunchbox courtesy of SOFTIMAGE



A tasty snack from Richland Towers



Matches from Discreet, Sony flashlight/keychain and Chicklet-sized gum in an itty-bitty FedEx box

**Reader's Forum** is found on page 93 in this issue



More garb from Excalibur, Future TV, Integrix, Killer Tracks, Loudeye, MediaForm, SOFTIMAGE and Utah Scientific.



A classic refrigerator game from Hubbard Broadcasting, a phone-line tester from AETA Audio and a pen maze from A.F. Associates



Blinking, bouncing balls from Orban.

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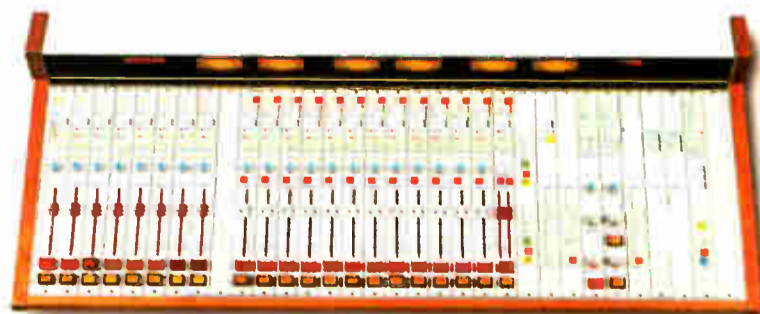


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